



## **NOTICE INVITING TENDER**

**FOR**

**RENOVATION WORKS FOR BARRACK BUILDINGS  
ALONG WITH CONSTRUCTION OF NEW QUARTER  
GUARD BUILDING AND ALLIED WORKS  
AT TALCHER FERTILIZERS LTD.,  
ANGUL, ODISHA**



**NIT NO. : PNP/PC-183/E/203/NCB**

**PREPARED AND ISSUED BY**



**PROJECTS & DEVELOPMENT INDIA LTD.  
(A Govt. of India Enterprise)  
PDIL BHAWAN, A-14, Sector-1,  
NOIDA-201301, U.P., India**

**MARCH, 2021**

	<b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</b>	PC-183/E/203/MI	0	
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<b>MASTER INDEX</b>				

## MASTER INDEX

**NIT NO. : PNP/PC-183/E/203/NCB**

**NIT DESCRIPTION : TENDER DOCUMENT FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA**

Section-I	Invitation for Bid [IFB]
Section-II	BID EVALUATION CRITERIA [BEC] & Evaluation methodology
Section-III	Instructions to Bidders [ITB] Annexure(s) Forms & Formats
Section-IV	General Conditions of Contract [GCC]
Section-V	Special Conditions of Contract [SCC]
Section-VI	Specifications, Scope of Work and Drawing
Section-VII	Schedule of Rates





 पी डी आई एल <b>PDIL</b>	<b>PROJECTS &amp; DEVELOPMENT INDIA LIMITED</b>	PC-183/E/ 203 /S-I	0	
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**TENDER DOCUMENT  
FOR**

**RENOVATION WORKS FOR BARRACK BUILDINGS  
ALONG WITH CONSTRUCTION OF NEW QUARTER  
GUARD BUILDING AND ALLIED WORKS AT  
TALCHER FERTILIZERS LTD., ANGUL, ODISHA**

**NIT NO.:PNPM/PC-183/E/203/NCB**



**(OPEN DOMESTIC COMPETITIVE BIDDING)**

	<p>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</p>	PC-183/E/ 203 /S-I	0	
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**SECTION-I**

**INVITATION FOR BID (IFB)**



	<b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</b>	PC-183/E/ 203 /S-I	0	
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**SECTION-I**

**"INVITATION FOR BID (IFB)"**

Ref No: \_\_\_\_\_

Date: \_\_\_\_\_

To,

**PROSPECTIVE BIDDERS**

**SUB: TENDER DOCUMENT FOR \_\_\_\_\_**



**Dear Sir/Madam,**

1.0 Projects and Development India Limited (PDIL), hereinafter referred to as CONSULTANT on behalf of M/s Talcher Fertilizers Ltd. (TFL), hereinafter referred as OWNER, has the pleasure of inviting eligible bidders to submit Bid ONLINE through Central Public Procurement (CPP) Portal (<https://eprocure.gov.in>) in Single Stage Two Bid System, for the subject Project.



The entire set of Bidding documents is also placed on the website at TFL website (<http://tflonline.co.in>), PDIL website ([www.pdilin.com](http://www.pdilin.com)), GAIL website ([www.gailtenders.in](http://www.gailtenders.in)), RCF website ([www.rcfld.com](http://www.rcfld.com)) and CIL website ([www.coalindia.in](http://www.coalindia.in)).

2.0 The brief details of the tender are as under:

<b>(A)</b>	NAME OF WORK / BRIEF SCOPE OF WORK/JOB	RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA	
		<b>(B)</b>	TENDER NO. & DATE
<b>(C)</b>	TYPE OF BIDDING SYSTEM	SINGLE BID SYSTEM	<input type="checkbox"/>
		TWO BID SYSTEM	<input checked="" type="checkbox"/>
<b>(D)</b>	TYPE OF TENDER	E-TENDER (CPP PORTAL)	<input checked="" type="checkbox"/>
		MANUAL	<input type="checkbox"/>

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<b>(E)</b>	COMPLETION PERIOD	15 (Fifteen) Months from date of issuance of 'FAX OF ACCEPTANCE'				
<b>(F)</b>	BID VALIDITY	120 days from the date of Techno-commercial Bid opening				
<b>(G)</b>	BID SECURITY / EARNEST MONEY DEPOSIT (EMD)	<table border="1"> <tr> <td>APPLICABLE</td> <td>✗</td> </tr> <tr> <td>NOT APPLICABLE</td> <td>✓</td> </tr> </table> <p>Wherever BID SECURITY/ EMD is appearing in the NIT, the same shall be read as "NOT APPLICABLE". In lieu of BID SECURITY/ EMD, bidder has to submit Declaration for Bid Security as per format (F-2)</p>	APPLICABLE	✗	NOT APPLICABLE	✓
APPLICABLE	✗					
NOT APPLICABLE	✓					
<b>(H)</b>	AVAILABILITY OF TENDER DOCUMENT ON WEBSITE(S)	<p>From 24.03.2021 (09:00 Hrs, IST) to 26.04.2021 (15:30 Hrs, IST) on following websites:</p> <p>(i) Govt. CPP Portal <a href="https://eprocure.gov.in">https://eprocure.gov.in</a>  (ii) TFL Website - <a href="http://tflonline.co.in">http://tflonline.co.in</a>  (iii) PDIL website - <a href="http://www.pdil.in">www.pdil.in</a>  (iv) GAIL website - <a href="http://www.gailtenders.in">www.gailtenders.in</a>  (v) RCF website - <a href="http://www.rcfltd.com">www.rcfltd.com</a>  (vi) CIL website - <a href="http://www.coalindia.in">www.coalindia.in</a></p>				
<b>(I)</b>	DATE, TIME & VENUE OF PRE-BID MEETING	05.04.2021 (14:30 Hrs. IST) at PDIL, NOIDA (through Virtual Link)				
<b>(J)</b>	START OF BID SUBMISSION ON CPP PORTAL	15.04.2021 at 15:00 Hrs. (IST)				
<b>(K)</b>	DUE DATE & TIME OF BID-SUBMISSION	Date : 26.04.2021 Time : 15:30 Hrs (IST)				
<b>(L)</b>	DATE AND TIME OF UN-PRICED BID OPENING (IN PRESENCE OF AUTHORIZED REPRESENTATIVE OF BIDDERS)	Date: 27.04.2021 Time :15:30 hrs (IST) Onwards Venue: M/s Projects & Development India Limited, (Project Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida, (PIN 201301) Dist. Gautam Budh Nagar (UP). (India)				
<b>(M)</b>	ADDRESS FOR COMMUNICATION WITH PDIL	Projects & Development India Limited, (Project Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida , (India)				

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		Fax no.:0120-2529801  Kind Attention: Mr. R.R.Kumar/Kailash Joshi Addl. General Manager & HOD (PM) Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 314/304 Fax no. : +91-120-2529801 E-mail : rrkumar@pdilin.com kjoshi@pdilin.com				
<b>(N)</b>	ADDRESS FOR COMMUNICATION WITH OWNER (TFL) AT PROJECT OFFICE	GAIL INDIA LIMITED, PLOT NO. 24, FILM CITY, SECTOR 16A, NOIDA- 201301  Kind Attention : Mr. A. K. Singh E-mail : ak.singh@gail.co.in				
<b>(O)</b>	ADDRESS FOR COMMUNICATION WITH OWNER (TFL) AT SITE FOR SITE VISIT	Mr. Panchanan Haldar-GM (P & E) Mob No. :8360677410 E-mail : phaldar@gail.co.in				
<b>(P)</b>	Reverse Auction	<table border="1"> <tr> <td>APPLICABLE</td> <td><input type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	APPLICABLE	<input type="checkbox"/>	NOT APPLICABLE	<input checked="" type="checkbox"/>
APPLICABLE	<input type="checkbox"/>					
NOT APPLICABLE	<input checked="" type="checkbox"/>					
(Also refer Clause No. 52 of ITB)						

In case the days specified above happens to be a holiday in TFL/PDIL, the next working day shall be implied.

- 3.0 Bids must be submitted strictly in accordance with Clause No. 11 of ITB depending upon Type of Tender as mentioned at Clause no. 2.0 (D) of IFB. The IFB is an integral and inseparable part of the bidding document.
- 4.0 The following documents in addition to uploading in the bid on CPP portal shall also be submitted in Original (in physical form) within 7 (seven) days from the bid due date provided the scanned copies of the same have been uploaded in along with e-bid within the due date and time to the address mentioned in Bidding Data Sheet(BDS):-
- i) Bid Security Declaration
  - ii) Power of Attorney
  - iii) Integrity Pact
- 5.0 Bidder(s) are advised to quote strictly as per terms and conditions of the tender documents and not to stipulate any deviations/exceptions.
- 6.0 Any bidder, who meets the Bid Evaluation Criteria (BEC) and wishes to quote against this Tender Document, may download the complete Tender Document alongwith its amendment(s) if any from websites as mentioned at 2.0 (H) of IFB and submit their Bid complete in all respect as per terms & conditions of Tender Document on or before the Due Date & Time of Bid Submission.

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7.0 Bid(s) received from bidders to whom tender/information regarding this Tender Document has been issued as well as offers received from the bidder(s) by downloading Tender Document from above mentioned website(s) shall be taken into consideration for evaluation & award provided that the Bidder is found responsive subject to provisions contained in Clause No. 2 of ITB.

The Tender Document calls for offers on single point "Sole Bidder" responsibility basis (except where JV/Consortium bid is allowed pursuant to clause no. 3.0 of ITB) and in total compliance of Scope of Works as specified in Tender Document.

8.0 Amendments/Clarification(s)/Corrigendum(s) if any shall also be available on above referred websites. Any revision, Amendment, clarification, addendum, corrigendum, time extension, etc. to this Tender Document will be hosted on the abovementioned website(s) only. Bidders are requested to visit the website regularly to keep themselves updated.

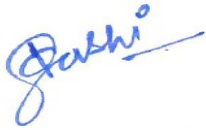
9.0 All the bidders including those who are not willing to submit their bid are required to submit F-6(Acknowledgement cum Consent letter) duly filled within 7 days from receipt of tender information.

10.0 The bidder shall submit the bid ONLINE through Central Public Procurement (CPP) Portal. Bids complete in all respects should be uploaded in the CPP portal on or before the Bid Due Date and time mentioned in at SI No. 2(K) above. Bids through Post/ Fax / E-mail /CD/ any other mode other than that specified in ITB will not be accepted.



11.0 TFL/PDIL reserves the right to reject any or all the bids received at its discretion without assigning any reason whatsoever.

This is not an Order.



For & on behalf of  
(Projects & Development India Limited)



Kailash Joshi  
Project Manager  
E-mail ID : kjoshi@pdilin.com  
Contact No. :0120-2529842/ Ext. 314



 <p>पी डी आई एल <b>PDIL</b></p>	RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA	PC-183/E/ 203 /S-I	0	 <p><b>Talcher</b> Fertilizers</p>
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## SECTION-II

### BID EVALUATION CRITERIA & EVALUATION METHODOLOGY

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## SECTION-II

### BID EVALUATION CRITERIA (BEC) & EVALUATION METHODOLOGY

**Bidder shall submit bid subject to meeting the Bid Evaluation Criteria as stated here. Evaluation of Technical and Commercial offers shall be carried out for only those Bidders who shall meet the Bid Evaluation Criteria.**

#### 1. Technical Criteria

- 1.1 The bidder must have completed one “Similar work“ having completed value not less than **INR 7.81 Crore (including all applicable taxes & duties)**, under a single contract during the last seven (07) years reckoned from the bid opening date.



**"Similar work" shall mean the following:**

“Construction and/or renovation of Building(s) and associated Electrical works, if any in Commercial / Infrastructure / Industrial / Residential Sector”.

To meet the Technical Criteria 1.1 above, only single contract is acceptable. In case bidder has executed and completed composite works which includes any of the qualifying works(s) stated above, then value of such qualifying works out of the total value of composite works shall be considered for the purpose of qualification.

**Note:**

- a. In case more than one contract/order/agreement/DLOA are emanating against same tender, these contracts are to be considered as single contract for evaluation of credentials of a bidder for meeting their experience criteria.
- b. Job executed by a Bidder for its own plant/ project cannot be considered as experience for the purpose of meeting BEC of the tender. However, jobs executed for Subsidiary/ Fellow subsidiary/ Holding company will be considered as experience for the purpose of meeting BEC subject to submission of tax paid invoice(s) duly certified by Statutory Auditor of the Bidder towards payments of statutory tax in support of the job executed for Subsidiary/ Fellow subsidiary/ Holding company. Such Bidders to submit these documents in addition to the documents specified to meet BEC.
- c. The bidder must submit the completion certificate/acceptance certificate issued by end user/ owner (or their consultant who has been duly authorized by them to issue such certificate) only after completion of work/ supply in all aspects.
- d. Only documents (Work order, completion certificate, execution certificate etc.) which have been referred /specified in the bid shall be considered in reply to the queries during evaluation of bids.
- e. Experience of bidder acquired as a subcontractor can be accepted against submission of certificate from end user by such bidder along with other specified documents.

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## 1.2 Applicability of Policy for providing preference to Domestically manufactured Iron & Steel products

### Clause 1.2 not applicable for this Tender

Bidder should have minimum prescribed domestic value addition requirement in line with the Domestic Manufactured iron & Steel Policy (DMI & SP) for the Iron & Steel products involved in execution of the contract. Bidder shall submit affidavit from the domestic manufacturers of such Iron & steel products as per the **Form F-18** enclosed.

A bidder who is not manufacturer of Iron & Steel product and is unable to submit the Affidavit from domestic manufacturers at bidding stage, such bidder can submit the Affidavit issued by domestic manufacturers after placement of order. In this case bidder along with his bid shall submit an undertaking as per attached format **(Annexure - V to IFB)**.

If a bidder does not submit above affidavit/ undertaking as per format, the offer of bidder shall be rejected.

## 2. Financial Criteria



- 2.1 Annual financial turnover in any of the last three (03) preceding financial years i.e. FY 2019-20, FY 2018-19 and FY 2017-18 or Calendar years 2019, 2018 & 2017 of the bidders should be at least **INR 6.25 Crore**.
- 2.2 Net Worth of the Company should be positive as per last audited financial year (F.Y. 2019-20 or Calendar year 2019).
- 2.3 Bidder should have minimum working capital equal to **Rs. 1.25 Crores** as per last audited financial year (F.Y. 2019- 2020 or Calendar year 2019). However, if the bidder's working capital is negative or inadequate, the bidder shall submit a letter from their Bank having Net worth of the bank not less than Rs. 100.0 Corers (or equivalent in **USD**, confirming the availability of line of credit for **Rs. 1.25 Crores**. The line of credit from bank shall be submitted strictly as per prescribed format.

### Note for 2 [(i), (ii) and (iii)]

**Annual Turnover:** In case the tenders having the due date for submission of bid up to 30.09.2021 if audited financial results of the immediate preceding financial years is not available, the bidder has an option to submit the audited financial results of the 3 years immediately prior to that financial year. Wherever the closing date of the bid is after 30.09.2021, bidder has to compulsorily submit the audited financial results for the immediate 3 preceding financial Year. However, in case bidder is meeting the Annual Turnover criteria of BEC based on Audited Financial Statement of any one of the preceding 3 financial years, the same shall suffice and bidders may submit format accordingly.

**Net Worth/Working Capital:** In case the tenders having the due date for submission of bid up to 30.09.2021, if audited financial results of the immediate preceding



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financial year is not available, in such case the audited financial results of the year immediately prior to that year will be considered as last financial year for Net worth/ Working Capital calculation. Wherever the closing date of the bid is after 30.09.2021, Bidder has to compulsorily submit the audited financial results for the immediate preceding financial year.

### 3. **BEC for START-UPS:**

The Technical and Financial BEC as stipulated above shall be applicable for startups.

### 4. **Documents to be submitted for Compliance to BEC**

#### (i) **Technical Criteria of BEC:**



- (a) To meet the criteria as mentioned above at Sl. No. 1.1, the bidder must submit Copy of Detailed Letter of Acceptance (DLOA) / Contract Agreement / Work Order clearly specifying scope of work / relevant Extract of Work Order such as BOQ/SOR and Completion / Acceptance Certificate issued by end user/ owner (or their consultant who has been duly authorized by them to issue such certificate).

The Detailed Letter of Acceptance (DLOA) / Contract Agreement / Work Order must clearly indicate nature of Work, completion / contract period and contract value. Similarly, The Completion/Acceptance Certificate shall clearly indicate the LOA / Work Order /Agreement no., Name of Work, Contract Value, Completed value, Completion period and actual Date of Completion.

- ~~(b) To meet the criteria as mentioned above at Sl. No. 1.2, Affidavit (in original duly notarized) for Domestically Manufactured Iron & Steel Policy as per **Form F-18/ Undertaking from bidder as per Annexure-A.**~~

#### (ii) **Financial Criteria of BEC:**

- (a) To meet the criteria mentioned at Sl. No. 2.0 (i) above, bidder shall submit Audited Annual Financial Statements of the company for any one of the preceding three (03) financial years/ (i.e. FY 2019-2020/ FY 2018-19/ FY 2017-18 or Calendar years 2019, 2018 & 2017) whichever meets the annual turnover criteria.
- (b) To meet the criteria mentioned at Sl. No. 2.0 (ii) above, bidder shall submit Audited Annual Financial Statements for financial year 2019-20 or calendar year 2019 alongwith "Details of Financial Capability of the Bidder" in prescribed format duly signed and stamped by Chartered Accountant.
- (c) To meet the criteria for Sr. No. 2.0 (iii), Bidder shall submit the last Audited Financial Statements (FY 2019-20 or calendar year 2019) alongwith (i) Bank's Letter (if applicable) and (ii) "Details of Financial Capability of the Bidder" in prescribed format duly signed and stamped by Chartered Accountant.
- (d) If the bidder's working capital is negative or inadequate, the bidder shall submit a letter from their bank having net worth not less than Rs.100 Crores (or

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equivalent USD), confirming the availability of line of credit for working capital amount mentioned herein above. The line of credit letter from bank to be submitted strictly as per format.

For 4.0 (ii) above, the "Note for 2[(i), (ii) and (iii) under 2.0 (Financial Criteria of BEC) shall apply.

## 5. Authentication of all documents submitted against BEC

- 5.1 All documents in support of Sl. No. 1.1 of Technical Criteria of BEC to be furnished by the Bidder shall necessarily be duly certified/ attested by Chartered Engineer and Notary Public with legible stamp.
- 5.2 For authentication of document submitted in support of Financial Criteria of Bid Evaluation criteria (BEC), copy of audited annual financial statements submitted with bid shall be duly certified / attested by Notary Public with legible stamp. Further, bidder shall submit "Details of financial capability of Bidder" in prescribed format duly signed and stamped by a Chartered Accountant/ Certified Public Accountant (CPA).



**Note:** In case, bidder submits 'Details of financial capability of bidder' in prescribed format in support of financial criteria of PQC duly signed and stamped by its **Statutory Auditor**, authentication of audited financial statements as mentioned above may not be necessary.

## 6. Evaluation Methodology:



The subject work is indivisible and complete work shall be awarded to successful overall lowest bidder as per evaluation methodology described below. In other words, evaluation of bids shall be done on overall L-1 basis considering all applicable taxes & duties including GST as under:

- (i) Total quoted price as per SOR inclusive of all taxes & duties including GST after arithmetic correction of errors (if any).
- (ii) In case any cess on GST is applicable, same shall also be considered in evaluation.
- (iii) In case any unregistered bidder is submitting their bid, their prices will be loaded with applicable GST (CGST & SGST/UTGST or IGST) while evaluation of bid (if applicable as per Govt. Act/Law in vogue).

Correction of error, if any shall be done as per clause no. 30.0 of ITB.



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### **SECTION-III**

#### **INSTRUCTION TO BIDDERS [TO BE READ IN CONJUNCTION WITH BIDDING DATA SHEET (BDS)]**

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### INSTRUCTION TO BIDDERS

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34. PURCHASE PREFERENCE



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45. DISPUTE RESOLUTION MECHANISM
46. INAM-PRO (PLATFORM FOR INFRASTRUCTURE AND MATERIALS PROVIDERS)
47. PROMOTION OF PAYMENT THROUGH CARDS AND DIGITAL MEANS
48. CONTRACTOR TO ENGAGE CONTRACT MANPOWER BELONGING TO SCHEDULED CASTES AND WEAKER SECTIONS OF THE SOCIETY
49. QUARTERLY CLOSURE OF THE CONTRACT
50. PROVISION FOR STARTUPS
51. PROVISION REGARDING INVOICE FOR REDUCED VALUE OR CREDIT NOTE TOWARDS PRS
52. PROVISION REGARDING REVERSE AUCTION
53. UNIQUE DOCUMENT IDENTIFICATION NUMBER BY PRACTICING CHARTERED ACCOUNTANTS
54. CLAUSE REGARDING PROVISION FOR PROCUREMENT FROM A BIDDER WHICH SHARES A LAND BORDER WITH INDIA

**[G] ANNEXURES:**

1. ANNEXURE-I: PROCEDURE FOR ACTION IN CASE CORRUPT/FRAUDULENT/COLLUSIVE/COERCIVE PRACTICES
2. ANNEXURE-II: VENDOR PERFORMANCE EVALUATION PROCEDURE
3. ANNEXURE-III : ADDENDUM TO INSTRUCTIONS TO BIDDERS (INSTRUCTION FOR PARTICIPATION IN E-TENDER)
4. ANNEXURE-IV: BIDDING DATA SHEET (BDS)
5. ANNEXURE-V: POLICY TO PROVIDE PURCHASE PREFERENCE (LINKED WITH LOCAL CONTENT)
6. ANNEXURE-VI: FORMS AND FORMATS

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**INSTRUCTIONS TO BIDDERS [ITB]**  
**[TO BE READ IN CONJUNCTION WITH BIDDING DATA SHEET (BDS)]**

**[A] – GENERAL**

**1 SCOPE OF BID**

- 1.1 The Employer as defined in the "General Conditions of Contract [GCC]", wishes to receive Bids as described in the Bidding Document/Tender document issued by Employer. Employer/Owner/TFL occurring herein under shall be considered synonymous.
- 1.2 SCOPE OF BID: The scope of work/ Services shall be as defined in the Bidding documents.
- 1.3 The successful bidder will be expected to complete the scope of Bid within the period stated in Special Conditions of Contract.
- 1.4 Throughout the Bidding Documents, the terms 'Bid', 'Tender' & 'Offer' and their derivatives [Bidder/Tenderer, Bid/Tender/Offer etc.] are synonymous. Further, 'Day' means 'Calendar Day' and 'Singular' also means 'Plural'.

**2 ELIGIBLE BIDDERS**



- 2.1 The Bidder shall not be under a declaration of ineligibility by Employer for Corrupt/ Fraudulent/ Collusive/ Coercive practices, as defined in "Instructions to Bidders [ITB], Clause No. 39" (Action in case Corrupt/ Fraudulent/ Collusive/ Coercive Practices).
- 2.2 The Bidder is not put on 'Holiday' by any of the JV partners of OWNER (viz. GAIL, RCF, CIL) or Public Sector Project Management Consultant (like PDIL, EIL, Mecon only due to "poor performance" or "corrupt and fraudulent practices") or banned/blacklisted by Government department/ Public Sector on due date of submission of bid.

If the bidding documents were issued inadvertently/ downloaded from website, offers submitted by such bidders shall not be considered for opening/ evaluation/Award and will be returned immediately to such bidders.

In case there is any change in status of the declaration prior to award of contract, the same has to be promptly informed to TFL/PDIL by the bidder.

It shall be the sole responsibility of the bidder to inform TFL/PDIL in case the bidder is put on 'Holiday' by JV partners of OWNER (viz. GAIL, RCF, CIL) or Public Sector Project Management Consultant (like PDIL, EIL, Mecon. only due to "poor performance" or "corrupt and fraudulent practices") or banned/blacklisted by Government department/ Public Sector on due date of submission of bid and during the course of finalization of the tender. Concealment of the facts shall tantamount to misrepresentation of facts and shall lead to action against such Bidders as per clause 39 of ITB.

- 2.3 The Bidder should not be under any liquidation court receivership or similar proceedings on due date of submission of bid.

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In case there is any change in status of the declaration prior to award of contract, the same has to be promptly informed to TFL/PDIL by the bidder.

It shall be the sole responsibility of the bidder to inform TFL/PDIL in case the bidder is under any liquidation court receivership or similar proceedings on due date of submission of bid and during the course of finalization of the tender. Concealment of the facts shall tantamount to misrepresentation of facts and shall lead to action against such Bidders as per clause no.39 of ITB.

2.4 Bidder shall not be affiliated with a firm or entity:

- (i) that has provided consulting services related to the work to the Employer during the preparatory stages of the work or of the project of which the works/services forms a part of or
- (ii) That has been hired (or proposed to be hired) by the Employer as an Engineer/ Consultant for the contract.

2.5 Neither the firm/entity appointed as the Project Management Consultant (PMC) for a contract nor its affiliates/ JV'S/ Subsidiaries shall be allowed to participate in the tendering process unless it is the sole Licensor/Licensor nominated agent/ vendor.

2.6 Pursuant to qualification criteria set forth in the bidding document, the Bidder shall furnish all necessary supporting documentary evidence to establish Bidder's claim of meeting qualification criteria.

### 2.7 Power of Attorney (POA):



Power of Attorney to be issued by the bidder in favour of the authorized employee(s), in respect of the particular tender, for purpose of signing the documents including bid, all subsequent communications, agreements, documents etc. pertaining to the tender and act and take any and all decision on behalf of the bidder (including Consortium). Any consequence resulting due to such signing shall be binding on the Bidder (including Consortium).

In case of a single Bidder, the power of Attorney shall be issued **(as per format F-15)** as per the constitution of the bidder as below:

- a) **In case of Proprietorship:** By Proprietor
- b) **In case of Partnership:** by all Partners or Managing Partner.
- c) **In case of Limited Liability Partnership:** by any bidder's employee authorized in terms of Deed of LLP.
- d) **In case of Public /Limited Company:** POA in favour of authorized employee(s) by Board of Directors through Board Resolution or by the designated officer authorized by Board to do so. Such Board Resolution should be duly countersigned by Company Secretary / MD / CMD / CEO.

***The Power of Attorney should be valid till award of contract/order to successful bidder.***



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### 3 **BIDS FROM "JOINT VENTURE"/"CONSORTIUM"**

Not applicable for this tender.

### 4. **ONE BID PER BIDDER**

4.1 Bidder shall submit only 'one [01] Bid' in the same Bidding Process either as single entity or as a member of any consortium (wherever consortium bid is allowed). A Bidder who submits or participates in more than 'one [01] Bid' will cause all the proposals in which the Bidder has participated to be disqualified.

4.2 More than one bid means bid(s) by bidder(s) having same Proprietor / Partners / Limited Liability Partner in any other Bidder(s). Further, more than one bids shall also include two or more bidders having common power of attorney holder.

Failure to comply this clause during tendering process will disqualify all such bidders from process of evaluation of bids.

4.3 Alternative Bids shall not be considered.

4.4 The provisions mentioned at Sl. no. 4.1 and 4.2 shall not be applicable wherein bidders are quoting for different Items / Sections / Parts / Groups/ SOR items of the same tender which specifies evaluation on Items / Sections / Parts / Groups/ SOR items basis.

Further, the Details of Partner(s) / Proprietor / Power of Attorney holders of bidder are to be necessarily sought in Format for 'Bidder's General Information' in the tender document.



### 5. **COST OF BIDDING**

The Bidder shall bear all costs associated with the preparation and submission of the Bid including but not limited to Bank charges all courier charges including taxes & duties etc. incurred thereof. Further, TFL/PDIL will in no case, be responsible or liable for these costs, regardless of the outcome of the bidding process.

### 6. **SITE VISIT**

6.1 The Bidder is advised to visit and examine the site of works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a Contract for the required job. The costs of visiting the site shall be borne by the Bidder.

6.2 The Bidder or any of its personnel or agents shall be granted permission by the Employer to enter upon its premises and land for the purpose of such visits, but only upon the express conditions that the Bidder, its personnel and agents will release and indemnify the Employer and its personnel, agents from and against all liabilities in respect thereof, and will be responsible for death or injury, loss or damage to property, and any other loss, damage, costs, and expenses incurred as a result of inspection.

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- 6.3 The Bidder shall not be entitled to hold any claim against TFL/PDIL for non-compliance due to lack of any kind of pre-requisite information as it is the sole responsibility of the Bidder to obtain all the necessary information with regard to site, surrounding, working conditions, weather etc. on its own before submission of the bid.

## **[B] – BIDDING DOCUMENTS**

### **7. CONTENTS OF BIDDING DOCUMENTS**

- 7.1 The contents of Bidding Documents / Tender Documents are those stated below, and should be read in conjunction with any 'Addendum / Corrigendum' issued in accordance with "ITB: Clause-9":



- Section-I : Invitation for Bid [IFB]
- Section-II : BID EVALUATION CRITERIA [BEC] & Evaluation methodology
- Section-III : Instructions to Bidders [ITB]  
Annexure  
Forms & Format
- Section-IV : General Conditions of Contract [GCC]
- Section-V : Special Conditions of Contract [SCC]
- Section-VI : Technical Specifications, Scope of Work and Drawings
- Section-VII : Schedule of Rates

\*Request for Quotation', wherever applicable, shall also form part of the Bidding Document.

- 7.2 The Bidder is expected to examine all instructions, forms, terms & conditions in the Bidding Documents. The "Request for Quotation [RFQ] & Invitation for Bid (IFB)" together with all its attachments thereto, shall be considered to be read, understood and accepted by the Bidders. Failure to furnish all information required by the Bidding Documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect will be at Bidder's risk and may result in the rejection of his Bid.

### **8. CLARIFICATION OF BIDDING DOCUMENTS**

- 8.1 A prospective Bidder requiring any clarification(s) of the Bidding Documents may notify PDIL in writing or by fax or email at PDIL's mailing address indicated in the BDS no later than 02 (two) days prior to pre-bid meeting (in cases where pre-bid meeting is scheduled) or 05 (five) days prior to the due date of submission of bid in cases where pre-bid meeting is not held. TFL/PDIL reserves the right to ignore the bidders request for clarification if received after the aforesaid period. TFL/PDIL may respond in writing to the request for clarification. TFL/PDIL's response including an explanation of the query, but without identifying the source of the query will be uploaded on web sites as indicated at Sl. No. 2.0 (H) IFB / communicated to prospective bidders by e-mail/ fax.

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8.2 Any clarification or information required by the Bidder but same not received by the Employer at clause 8.1 (refer BDS for address) above is liable to be considered as "no clarification / information required".

## 9. **AMENDMENT OF BIDDING DOCUMENTS**

9.1 At any time prior to the 'Bid Due Date', Owner may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by addenda/ corrigendum.

9.2 Any addendum/ corrigendum thus issued shall be integral part of the Tender Document and shall be hosted on the websites as provided at clause no. 2.0 (H) of IFB. Bidders have to take into account all such addendum/ corrigendum before submitting their Bid.

9.3 The Employer, if consider necessary, may extend the date of submissions of Bid in order to allow the Bidders a reasonable time to furnish their most competitive bid taking into account the amendment issued thereof.

## **[C] – PREPARATION OF BIDS**

### 10. **LANGUAGE OF BID:**

The bid prepared by the Bidder and all correspondence, drawing(s), document(s), certificate(s) etc. relating to the Bid exchanged by Bidder and PDIL shall be written in English language only. In case a document, certificate, printed literature etc. furnished by the Bidder in a language other than English, the same should be accompanied by an English translation duly authenticated by the Chamber of Commerce of Bidders Country, in which case, for the purpose of interpretation of the Bid, the English translation shall govern.



### 11. **DOCUMENTS COMPRISING THE BID**

11.1 In case the Bids are invited under the Manual two Bid system **(Not applicable for this Tender)**:

The Bid prepared by the Bidder shall comprise the following components sealed in 2 different envelopes:

11.1.1 **ENVELOPE-I: "TECHNO-COMMERCIAL / UN-PRICED BID"** shall contain the following:

- (a) 'Covering Letter' on Bidder's 'Letterhead' clearly specifying the enclosed contents.
- (b) 'Bidder's General Information', as per 'Form F-1'.
- (c) 'Letter of Authority' on the Letter Head, as per 'Form F-3'
- (d) 'Agreed Terms and Conditions', as per 'Form F-5'
- (e) 'ACKNOWLEDGEMENT CUM CONSENT LETTER', as per 'Form F-6'
- (f) Duly attested documents in accordance with the "BID EVALUATION CRITERIA [BEC]" establishing the qualification as per SECTION II of tender document.

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- (g) Power of Attorney as per Format F-15 /copy of Board Resolution, in favour of the authorized signatory of the Bid, as per clause no.2.7 of ITB
- (h) Bid security Declaration as per Form F-2
- (i) All forms and Formats including Annexures.
- (j) Copies of documents defining constitution of legal status of firm, place of registration and principal place of Business of the firm.
- (k) 'Integrity Pact' as per 'Form F-13'
- (l) 'Indemnity Bond' as per 'Form F-14'
- (m) Tender Document duly signed/ digitally signed by the Authorized Signatory (as applicable).
- (n) Copies of document related to ESI No., EPF No., GST No. and PAN No. of Company
- (o) Declaration by Bidder towards Minimum Local Content as per Form F-22.
- (p) Undertaking regarding provisions for procurement from a bidder which shares a land border with India as per Form F-20 and Form F-21.

**Note:**

1. All the pages of the Bid must be duly signed/ digitally signed by the "Authorized Signatory" of the Bidder.
2. Forms F-4 & F-16 are not to be filled-up/ submitted at this stage as these will be executed only with the successful bidder. However, successful bidder will have to submit the formats strictly as per the prescribed content without any deviation.

**11.1.2 ENVELOPE-II: Price Bid**

- i) The Prices are to be submitted strictly as per the Schedule of Rate of the bidding documents. TFL/PDIL shall not be responsible for any failure on the part of the bidder to follow the instructions.
- ii) Bidders are advised NOT to mention Rebate/Discount separately, either in the SOR format or anywhere else in the offer. In case Bidder(s) intend to offer any Rebate/Discount, they should include the same in the item rate(s) itself under the "Schedule of Rates (SOR)" and indicate the discounted unit rate(s) only.
- iii) If any unconditional rebate has been offered in the quoted rate the same shall be considered in arriving at evaluated price. However no cognizance shall be taken for any conditional discount for the purpose of evaluation of the bids.
- iv) In case, it is observed that any of the bidder(s) has/have offered suo-moto Discount/Rebate after opening of unpriced bid but before opening of price bids such discount /rebate(s) shall not be considered for evaluation. However, in the event of the bidder emerging as the lowest evaluated bidder without considering the discount/rebate(s), then such discount/rebate(s) offered by the bidder shall be considered for Award of Work and the same will be conclusive and binding on the bidder.
- v) In the event as a result of techno-commercial discussions or pursuant to seeking clarifications / confirmations from bidders, while evaluating the un-priced part of the bid, any of the bidders submits a sealed envelope stating that it contains revised prices; such bidder(s) will be requested to withdraw the revised prices failing which the bid will not be considered for further evaluation.
- vi) In case any bidder does not quote for any item(s) of "Schedule of Rates" and the estimated price impact is more than 10% of the quoted price, then the bid will be rejected. If such price impact of unquoted items is 10% or less of his quoted price, then the unquoted item(s) shall be loaded highest of the price quoted by the other bidders. If such bidder happens to be lowest evaluated bidder, price of unquoted items shall be considered as included in the quoted bid price.

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11.2 In case the bids are invited through CPP portal, bidders are requested to refer instructions for participating in CPP portal enclosed herewith as **Annexure-III**. Bids submitted manually shall be rejected. The bids must be submitted on CPP portal only as follows :-

11.2.1 **PART-I: “TECHNO-COMMERCIAL/UN-PRICED BID”** comprising all the above documents mentioned at 11.1.1 along with EMD/Bid Bond, copy of Power of Attorney and copy of integrity pact should be uploaded in the area earmarked in the CPP portal.

Further, Bidders must submit the **original** EMD, Power of Attorney and Integrity Pact and any other documents specified in the Tender Document to the address mentioned in IFB, in a sealed envelope, superscribing the details of Tender Document (i.e. tender number & tender for) within 7 days from the date of un-priced bid opening.

~~Bidders are required to submit the EMD in original by Due Date and Time of Bid Submission or upload a scanned copy of the same in the Part-I of the Bid. If the Bidder is unable to submit EMD in original by Due Date and Time of Bid Submission, the Bidder is required to upload a scanned copy of the EMD in the e-bid, provided the original EMD, copy of which has been uploaded, is received within 7 days from the Due Date of Bid Opening, failing which the Bid will be rejected irrespective of their status/ranking in tendering process and notwithstanding the fact that a copy of EMD was earlier uploaded by the Bidder.~~

11.2.2 **PART-II: PRICE BID**

The Prices are to be filled strictly in the “Schedule of Rates” of the bidding documents and provision mentioned at para 11.1.2 hereinabove and to be uploaded in CPP portal.

11.3 In case of bids invited under *single bid system*, a single envelope containing all documents specified at Clause 11.1.1 & 11.1.2 of ITB above form the BID. All corresponding conditions specified at Clause 11.1.1 & 11.1.2 of ITB shall become applicable in such a case.



## 12. **SCHEDULE OF RATES / BID PRICES**

12.1 Unless stated otherwise in the Bidding Documents, the Contract shall be for the whole works as described in Bidding Documents, based on the rates and prices submitted by the Bidder and accepted by the Employer.

12.2 Prices must be filled in format for "Schedule of Rates [SOR]" enclosed as part of Tender document. If quoted in separate typed sheets and any variation in item description, unit or quantity is noticed; the Bid is liable to be rejected.

12.3 Bidder shall quote for all the items of "SOR" after careful analysis of cost involved for the performance of the completed item considering all parts of the Bidding Document. In case any activity though specifically not covered in description of item under "SOR" but is required to complete the works as per Specifications, Scope of Work/ Service, Standards, General Conditions of Contract (“GCC”), Special Conditions of Contract (“SCC”) or any other part of Bidding Document, the prices quoted shall deemed to be inclusive of cost incurred for such activity.

12.4 All duties, taxes and other levies [if any] payable by the Contractor under the Contract, or for any other cause except final **GST (CGST & SGST/ UTGST or IGST)** shall be included in the rates / prices and the total bid-price submitted by the Bidder.

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12.5 Prices quoted by the Bidder, shall remain firm and fixed and valid until completion of the Contract and will not be subject to variation on any account. Any new taxes & Duties, if imposed by the State/ Govt. of India after due date of bid submission but before the Contractual Delivery Date, shall be reimbursed to the contractor on submission of documentary evidence for proof of payment to State/ Govt. Authorities and after ascertaining it's applicability with respect to the contract.

If any new taxes and/or duties are imposed beyond Completion/ Contract period for reasons not due to Owner's default, such taxes and duties shall be to *Contractor's account*.

If any new taxes and/or duties are imposed beyond Completion / Contract period for reasons due to Owner's default, such taxes and duties shall be to Owner's account.

12.6 The Bidder shall quote the unit rates in 'figures' & words. There should not be any discrepancy between the prices indicated in figures and the price indicated in words. In case of any discrepancy, the same shall be dealt as per clause no. 30 of ITB.

### 13. **GST (CGST & SGST/ UTGST or IGST)**



13.1 Bidders are required to submit copy of the GST Registration Certificate while submitting the bids wherever **GST (CGST & SGST/UTGST or IGST)** is applicable.

13.2 Quoted prices should be inclusive of all taxes and duties, except **GST (CGST & SGST or IGST or UTGST)**. Please note that the responsibility of payment of **GST (CGST & SGST or IGST or UTGST)** lies with the Supplier of Goods / Services only. Supplier of Goods / Services (Service Provider) providing taxable service shall issue an Invoice/ Bill/e-Invoice, as the case may be as per rules/ regulation of GST. Further, returns and details required to be filled under GST laws & rules should be timely filed by Supplier of Goods / Services (Service Provider) with requisite details.

Payments to Service Provider for claiming **GST (CGST & SGST/UTGST or IGST)** amount will be made provided the above formalities are fulfilled. Further, OWNER may seek copies of challan and certificate from Chartered Accountant for deposit of **GST (CGST & SGST/UTGST or IGST)** collected from Owner.

13.3 The bidder confirms that it has included all taxes, duties, levies etc., as applicable at prevailing rates, in its CONTRACT PRICE. In case, bidder has not included any such taxes, duties, levies etc., at all and/or at prevailing rates (deliberately or otherwise) and it becomes leviable during execution of the contract, then such bidder has to pay all such taxes, duties, levies etc. and OWNER shall not be liable for payment of such liabilities and/or OWNER shall not reimburse such taxes, duties, levies etc. to the CONTRACTOR.



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13.4 In case CBIC (Central Board of Indirect Taxes and Customs)/ any equivalent Central Government agency/ State Government agency brings to the notice of OWNER that the Supplier of Goods / Services (Service Provider) has not remitted the amount towards **GST (CGST & SGST/UTGST or IGST)** collected from OWNER to the government exchequer, then, that Supplier of Goods/ Services (Service Provider) shall be put under Holiday list of OWNER for period of six months as mentioned in Procedure for Evaluation of Performance of Vendors/ Suppliers/Contractors/ Consultants. This action will be in addition to the right of recovery of financial implication arising on TFL.

13.5 In case of statutory variation in **GST (CGST & SGST/UTGST or IGST)**, other than due to change in turnover, payable on the contract value during contract period, the Supplier of Goods / Services (Service Provider) shall submit a copy of the 'Government Notification' to evidence the rate as applicable on the Bid due date and on the date of revision.

Beyond the contract period, any increase in the rate of **GST (CGST & SGST/UTGST or IGST)** beyond the contractual delivery period shall be to Service Provider's account whereas any decrease in the rate **GST (CGST & SGST/UTGST or IGST)** shall be passed on to the Owner.

Claim for payment of **GST (CGST & SGST/UTGST or IGST)**/ Statutory variation, should be raised within two [02] months from the date of issue of 'Government Notification' for payment of differential (in %) **GST (CGST & SGST/UTGST or IGST)**, otherwise claim in respect of above shall not be entertained for payment of arrears.



The base date for the purpose of applying statutory variation shall be the Bid Due Date.

OWNER will reimburse **GST (CGST & SGST/UTGST or IGST)** to the Service Provider at actuals against submission of Tax Invoices as per format specified in rules/ regulation of GST subject to the ceiling amount of **GST (CGST & SGST/UTGST or IGST)** as quoted by the bidder, subject to any statutory variations, except variations arising due to change in turnover. In case of any variation in the executed quantities (If directed and/or certified by the Engineer-In-Charge) the ceiling amount on which **GST (CGST & SGST/UTGST or IGST)** is applicable will be modified on pro-rata basis.

Any reduction in the amount of GST resulting from a reduction in the rate of GST or remission or exemption from GST with respect to Services provided to the OWNER shall be refundable to the OWNER at actuals during the Completion / Contract Period and also during the delayed Completion / Contract Period, if any.

In case of delayed completion beyond the COMPLETION PERIOD, even though extension of completion time is allowed by OWNER, for reasons solely attributable to Contractor, all extra costs on account of changes of statutory regulations/ acts, or shall not apply to the Contract price and shall be borne by the CONTRACTOR. However, any decrease in taxes and duties during the delayed period shall be passed on to the OWNER.

In case the COMPLETION PERIOD is extended for reasons solely attributable to OWNER, then any increase on account of statutory changes in GST until the extended period shall be borne by OWNER. Further, any new taxes, duties, cess, levies notified or imposed after the submission of Price Bid during such extended COMPLETION PERIOD shall be to OWNER's Account

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13.6 OWNER will prefer to deal with registered supplier of goods/ services under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet.

However, in case any unregistered bidder is submitting their bid, their prices will be loaded with applicable **GST (CGST & SGST/UTGST or IGST)** while evaluation of bid (if applicable as per Govt. Act/ Law in vogue).

13.7 In case OWNER is required to pay entire/certain portion of applicable **GST (CGST & SGST/UTGST or IGST)** and remaining portion, if any, is to be deposited by Bidder directly as per **GST (CGST & SGST/UTGST or IGST)** laws, entire applicable rate/amount of **GST (CGST & SGST/UTGST or IGST)** to be indicated by bidder in the SOR.

Where OWNER has the obligation to discharge **GST (CGST & SGST/UTGST or IGST)** liability under reverse charge mechanism and OWNER has paid or is liable to pay **GST (CGST & SGST/UTGST or IGST)** to the Government on which interest or penalties becomes payable as per GST laws for any reason which is not attributable to TFL or ITC with respect to such payments is not available to OWNER for any reason which is not attributable to OWNER, then OWNER shall be entitled to deduct/ setoff / recover such amounts against any amounts paid or payable by OWNER to Contractor / Supplier.

13.8 Contractor shall ensure timely submission of e-Invoice(s)/invoice(s) as per rules/ regulations of GST with all required supporting document(s) within a period specified in Contracts/ LOA to enable OWNER to avail input tax credit. Further, returns and details required to be filled under GST laws & rules should be timely filed by supplier with requisite details.



If input tax credit with respect to **GST (CGST & SGST/ UTGST or IGST)** is not available to OWNER for any reason which is not attributable to OWNER, then OWNER shall not be obligated or liable to pay or reimburse **GST (CGST & SGST/UTGST or IGST)** charged in the invoice(s) and shall be entitled to / deduct/ setoff /recover the such **GST (CGST & SGST/UTGST or IGST UTGST)** thereupon together with all penalties and interest if any, against any amounts paid or payable by OWNER in future to the Service Provider under this contract or under any other contract.

### 13.9 RECONCILIATION BETWEEN GSTR2A AND INPUT TAX CREDIT

Supplier shall ensure timely submission of correct e-Invoice(s)/invoice(s), as per GST rules/ regulation, with all required supporting document(s) within a period specified in Contract to enable TFL to avail input credit of GST (CGST &SGST/UTGST or IGST). Further, returns and details required to be filled under GST laws & rules should be timely filed by Supplier of Goods/ Services with requisite details.

If input Tax credit is not available to TFL for any reason not attributable to TFL, then TFL shall not be obligated or liable to pay or reimburse GST (CGST &SGST/ UTGST or IGST) claimed in the invoice(s) and shall be entitled to deduct/ setoff/ recover such GST amount (CGST &SGST/ UTGST or IGST) or Input Tax Credit amount together with penalties and interest, if any, against any amounts paid or becomes payable by TFL in future to the Supplier/Contractor under this contract or under any other contract.



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In case CBIC (Central Board of Indirect Taxes and Customs)/ any tax authority/ any equivalent government agency brings to the notice of TFL that the Supplier has not remitted the amount towards GST (CGST & SGST/IGST) collected from TFL to the government exchequer, then, that Supplier shall be put under Holiday list of TFL for period of six months as mentioned in Procedure for Evaluation of Performance of Vendors/Suppliers/ Contractors/ Bidders. This action will be in addition to the right of recovery of financial implication arising on TFL.

**13.10** The amount of statutory levies like, CGST, SGST & IGST will be released when the same will appear in the GSTR-2A of OWNER, in the common portal of GST and Bidder has filed the valid return in accordance with the provisions of the GST act and the rules made there under. If, input tax credit is not available to OWNER for any reason attributable to the bidder, then OWNER shall not be obligatory or liable to pay or reimburse GST claimed in invoice and shall be entitled to deduct /setoff/ recover such GST together with all the penalty and interest if any, against any amount paid or payable to bidder. Further in this case, OWNER reserves the right to upload the name of such defaulter on the Company website and may also consider for putting under Holiday list of OWNER for period of six months as mentioned in Procedure for Evaluation of Performance of Vendors/ Suppliers/ Contractors/Bidders.

**13.11 Anti-profiteering clause**

As per Clause 171 of GST Act it is mandatory to pass on the benefit due to reduction in rate of tax or from input tax credit to the consumer by way of commensurate reduction in prices. The Supplier of Goods / Services may note the above and quote their prices accordingly.



**13.12** In case the GST rating of vendor on the GST portal / Govt. official website is negative/ black listed, then the bids may be rejected by OWNER. Further, in case rating of bidder is negative / black listed after award of work for supply of goods/ services, then OWNER shall not be obligated or liable to pay or reimburse GST to such vendor and shall also be entitled to deduct / recover such GST along with all penalties/ interest, if any, incurred by OWNER.

Wherever TDS under GST Laws has been deducted from the Tax invoices raised /payments made to the vendors, as per the provisions of the GST law / Rules, Vendors should accept the corresponding GST-TDS amount populated in the relevant screen on GST common portal ([www.gst.gov.in](http://www.gst.gov.in)). Further, Vendors should also download the GST TDS certificate from GST common portal (reference path: Services>User Services>View/Download Certificates option).

**13.13 Provision w.r.t. E- Invoicing requirement as per GST laws**

Contractor (s) who is required to comply with the requirements of E-invoice for B2B transactions as per the requirement of GST Law will ensure the compliance of requirement of E Invoicing under GST law. If the invoice issued without following this process, such invoice can-not be processed for payment by TFL as no ITC is allowed on such invoices.

Therefore, all the payments to such contractor who is liable to comply with e-invoice as per GST Laws shall be made against the proper e-invoice(s) only. Further, returns and details required to be filled under GST laws & rules against such e-invoices should be timely filed by Contractor with requisite details.

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If input tax credit is not available to TFL for any reason attributable to contractor (both for E-invoicing cases and non-E-invoicing cases), then TFL shall not be obligated or liable to pay or reimburse GST (CGST & SGST/UTGST or IGST) claimed in the invoice(s) and shall be entitled to deduct / setoff / recover such GST amount (CGST & SGST/UTGST or IGST) or Input Tax Credit amount together with penalties and interest, if any, by adjusting against any amounts paid or becomes payable in future to the contractor under this contract or under any other contract.

To ensure compliance, undertaking in requisite format is to be submitted by Contractor as per format enclosed at Form **F-25** along with documents for release of payment.

**13.14 Provision w.r.t. TCS on Sale of Goods under section 206C(1H) of Income Tax Act (Applicable only in case of procurement of Goods)**

As per section 206C(1H) of the Income Tax Act, 1961 inserted by Finance Act 2020, a seller (as defined under the said section), who receives any amount as consideration for sale of any goods to a buyer (as defined under the provision) of the value or aggregate of such value exceeding fifty lakh rupees in any previous year, shall levy at the time of sale, TCS for a sum equal to % as defined (Presently 0.1 per cent) of the sale consideration exceeding fifty lakh rupees (or limit as specified in the Act) and deposit the same with Government on receipt/collection of consideration from TFL.

TFL will avail TCS credit and adjust such TCS credit against its income tax liability on the basis of TCS certificate to be issued by seller to TFL.

**14 BID CURRENCIES:**

Bidders must submit bid in Indian Rupees only.

**15 BID VALIDITY**

15.1 Bids shall be kept valid for period specified in BDS from the final Due date of submission of bid'. A Bid valid for a shorter period may be rejected by OWNER as 'non-responsive'.



15.2 In exceptional circumstances, prior to expiry of the original 'Bid Validity Period', the Employer may request the Bidders to extend the 'Period of Bid Validity' for a specified additional period. The request and the responses thereto shall be made in writing or by fax/email. A Bidder may refuse the request without forfeiture of his EMD. A Bidder agreeing to the request will not be required or permitted to modify his Bid, but will be required to extend the validity of its EMD for the period of the extension and in accordance with "ITB: Clause-16" in all respects.

**16 EARNEST MONEY DEPOSIT**

16.1 Wherever BID SECURITY/ EMD is appearing in the NIT, the same shall be read as "NOT APPLICABLE". In lieu of BID SECURITY/ EMD, bidder has to submit Declaration for Bid Security as per format (F-2).

**17 PRE-BID MEETING**

17.1 The Bidder(s) or his designated representative are invited to attend a "Pre-Bid Meeting" which will be held at address specified in IFB, SI No. **2.0 (I) of IFB**. It is expected that a bidder shall not depute more than 02 representatives for the meeting.

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- 17.2 Purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 17.3 Text of the questions raised and the responses given, together with any responses prepared after the meeting, will be uploaded on websites as mentioned at Sl. No. **2.0 (H) of IFB**. Any modification of the Contents of Bidding Documents listed in "ITB: Clause-7.1", that may become necessary as a result of the Pre-Bid Meeting shall be made by the Employer exclusively through the issue of an Addendum / Corrigendum pursuant to "ITB: Clause-9", and not through the minutes of the Pre-Bid Meeting.
- 17.4 Non-attendance of the Pre-Bid Meeting will not be a cause for disqualification of Bidder.

**18. FORMAT AND SIGNING OF BID**

- 18.1 The original and all copies of the Bid shall be typed or written in indelible ink [in the case of copies, photocopies are also acceptable] and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder (as per POA). The name and position held by each person signing, must be typed or printed below the signature. All pages of the Bid except for un-amended printed literature where entry(s) or amendment(s) have been made shall be initialed by the person or persons signing the Bid.
- 18.2 The Bid shall contain no alterations, omissions, or additions, unless such corrections are initiated by the person or persons signing the Bid.
- 18.3 In case of e-tendering, digitally signed documents to be uploaded as detailed in addendum to ITB.



**19. ZERO DEVIATION AND REJECTION CRITERIA**

- 19.1 ZERO DEVIATION: Deviation to terms and conditions of "Bidding Documents" may lead to rejection of bid. OWNER will accept bids based on terms & conditions of "Bidding Documents" only. Bidder may note OWNER will determine the substantial responsiveness of each bid to the Bidding Documents pursuant to provision contained in clause 29 of ITB. For purpose of this, a substantially responsive bid is one which conforms to all terms and conditions of the Bidding Documents without deviations or reservations. OWNER's determination of a bid's responsiveness is based on the content of the bid itself without recourse to extrinsic evidence.

OWNER reserves the right to raise technical and/or commercial query(s), if required, may be raised on the bidder(s).

The response(s) to the same shall be in writing, and no change in the price(s) or substance of the bids shall be sought, offered or permitted. The substance of the bid includes but not limited to prices, completion, scope, technical specifications, etc. Bidders are requested to not to take any deviation/exception to the terms and conditions laid down in this "Tender Documents", and submit all requisite documents as mentioned in this "Tender Documents", failing which their offer will be liable for rejection. If a bidder does not reply to the queries in the permitted time frame then its bid shall be evaluated based on the documents available in the bid.

- 19.2 **REJECTION CRITERIA:** Notwithstanding the above, deviation to the following clauses of Tender document shall lead to summarily rejection of Bid:

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- (a) Firm Price
- (b) Bid Security Declaration
- (c) Specifications & Scope of Work
- (d) Schedule of Rates / Price Schedule / Price Basis
- (e) Duration / Period of Contract/ Completion schedule
- (f) Period of Validity of Bid
- (g) Price Reduction Schedule
- (h) Contract Performance Security
- (i) Guarantee / Defect Liability Period
- (j) Arbitration / Resolution of Dispute/Jurisdiction of Court
- (k) Force Majeure & Applicable Laws
- (l) Integrity Pact, if Applicable
- (m) Undertaking forms, Form-20 & Form-21 of Annexure-VI.
- (n) Bidder quoting less than 20% as minimum Local content (as per make in India PP-LC policy 2020)
- (o) Any other condition specifically mentioned in the tender document elsewhere that non-compliance of the clause lead to rejection of bid

## 20. **PAYMENT**

OWNER has initiated payments to Suppliers and Contractors through RTGS/ NEFT. The successful bidder should give the details of his bank account as per the E-Banking Mandate Form (F-12).



## **[D] – SUBMISSION OF BIDS**

### 21. **SUBMISSION, SEALING AND MARKING OF BIDS**

- 21.1 Bids shall be submitted through CPP portal in the manner specified in tender document. No Manual/ Hard Copy (Original) offer shall be acceptable.
- 21.2 All the bids shall be addressed to the Consultant at address specified in IFB.
- 21.3 Bids submitted under the name of AGENT/ CONSULTANT/ REPRESENTATIVE/ RETAINER/ ASSOCIATE etc. on behalf of a bidder/affiliate shall not be accepted.

### 22. **DEADLINE FOR SUBMISSION OF BIDS**

- 22.1 Bids must be submitted through CPP portal not later than the date and time specified in the tender documents/BDS.
- 22.2 OWNER may, in exceptional circumstances and at its discretion, extend the deadline for submission of Bids (Clause 9 of ITB refers), in which case all rights and obligations of OWNER and the Bidders, previously subject to the original deadline will thereafter be subject to the deadline as extended. Notice for extension of due date of submission of bid will be uploaded on website/ communicated to the bidders.

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### 23. **LATE BIDS**

- 23.1 Any bids received after the notified date and time of closing of tenders will be treated as late bids.
- 23.2 Tender on CPP portal shall close immediately after the due date for submission of bid and no bids can be submitted thereafter.

Where the bid bond/physical documents have been received but the bid is not submitted by the bidder in the CPP portal, such bid bond/ physical documents shall be returned immediately.



- 23.3 Unsolicited Bids or Bids received to address other than one specifically stipulated in the tender document will not be considered for evaluation/opening/award if not received to the specified destination within stipulated date & time.

### 24. **MODIFICATION AND WITHDRAWAL OF BIDS**

- 24.1 The bidder may withdraw or modify its bid after bid submission but before the due date and time for submission as per tender document.
- 24.2 The modification shall also be prepared, sealed, marked and dispatched in accordance with the provisions of the clause 11 & 22 of ITB with relevant 'Cut-Out Slip' duly pasted and mentioning on top of the envelope as "MODIFICATION". In case of withdrawal of bid, the Envelope containing withdrawal letter duly super scribing the envelope as "WITHDRAWAL" and "Tender Document number :...."/ communication regarding withdrawal of bid with "Tender Document number :...."/ must reach concerned dealing official of OWNER within Due date & Time of submission of Bid. No bid shall be modified/ withdrawn after the Due Date & Time for Bid submission.
- 24.3 Any withdrawal/ modification/substitution of Bid in the interval between the Due Date & Time for Bid submission and the expiration of the period of bid validity specified by the Bidder in their Bid shall result in the Bidder's forfeiture of EMD pursuant to clause 16 of ITB and rejection of Bid.
- 24.4 The latest Bid submitted by the Bidder shall be considered for evaluation and all other Bid(s) shall be considered to be unconditionally withdrawn.
- 24.5 In case after price bid opening, the lowest evaluated bidder (L1) is not awarded the job for any mistake committed by him in bidding or withdrawal of bid or modification of bid or varying any term in regard thereof leading to re-tendering, OWNER shall forfeit EMD paid by the bidder and such bidders shall be debarred from participation in re-tendering of the same job(s)/item(s). Further, such bidder will be put on holiday for a period of six months after following the due procedure.

### 25. **EMPLOYER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

OWNER reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids, at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligations to inform the affected Bidder or Bidders of the ground for OWNER's action. However, bidder, if so desires, may seek the reason (in writing) for rejection of their Bid to which OWNER shall respond quickly.

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## **[E] – BID OPENING AND EVALUATION**

### **26. BID OPENING**

#### **26.1 *Un-priced Bid Opening :***

OWNER will open bids, in the presence of bidders' designated representatives who choose to attend, at date, time and location stipulated in the BDS. The bidders' representatives, who are present, shall sign a bid opening register evidencing their attendance.

#### **26.2 *Priced Bid Opening:***

26.2.1 OWNER will open the price bids of those bidders who meet the qualification requirement and whose bid is determined to be technically and commercially responsive. Bidders selected for opening of their price bids shall be informed about the date of price bid opening. Bidders may depute their authorized representative to attend the bid opening. The bidders' representatives, who are present shall sign a register evidencing their attendance and may be required to be present on a short notice.

26.2.2 The price bids of those Bidders who were not found to be techno-commercially responsive shall not be opened.

26.3 In case of bids invited under the single bid system, bid shall be opened on the specified due date & time.

### **27. CONFIDENTIALITY**

Information relating to the examination, clarification, evaluation and comparison of Bids, and recommendations for the award of a Contract, shall not be disclosed to Bidder(s) or any other persons not officially concerned with such process.



### **28. CONTACTING THE EMPLOYER**

28.1 From the time of Bid opening to the time of award of Contract, if any Bidder wishes to contact the Employer on any matter related to the Bid, it should do so in writing. Information relating to the examination, clarification, evaluation & recommendation for award shall not be disclosed.

28.2 Any effort by the Bidder to influence the Employer in the Employer's 'Bid Evaluation', 'Bid Comparison', or 'Contract Award' decisions may result in the rejection of the Bidder's Bid and action shall be initiated as per procedure in this regard.

### **29. EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS**



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29.1 The owner's determination of a bid's responsiveness is based on the content of the bid only. Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid:-

- (a) Meets the "Bid Evaluation Criteria" of the Bidding Documents;
- (b) Has been properly signed;
- (c) Is accompanied by the required 'Earnest Money / Bid Security';
- (d) Is substantially responsive to the requirements of the Bidding Documents; and
- (e) Provides any clarification and/or substantiation that the Employer may require to determine responsiveness pursuant to "ITB: Clause-29.2"

29.2 A substantially responsive Bid is one which conforms to all the terms, conditions and specifications of the Bidding Documents without material deviations or reservations or omissions for this purpose employer defines the foregoing terms below:-

- a) "Deviation" is departure from the requirement specified in the tender documents.
- b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirement in the tender documents.
- c) "Omission" is the failure to submit part or all of the information or documentation required in the tender document.

29.3 A material deviation, reservation or omission is one that,

- a) If accepted would,
  - i) Affect in any substantial way the scope, quality, or performance of the job as specified in tender documents.
  - ii) Limit, in any substantial way, inconsistent with the Tender Document, the Employer's rights or the tenderer's obligations under the proposed Contract.
- b) If rectified, would unfairly affect the competitive position of other bidders presenting substantially responsive bids.

29.4 The employer shall examine all aspects of the bid to confirm that all requirements have been met without any material deviation, reservation or omission.

29.5 If a Bid is not substantially responsive, it may be rejected by the Employer and may not subsequently be made responsive by correction or withdrawal of the of material deviation, reservation or omission.

### **30. CORRECTION OF ERRORS**



Arithmetic Correction of Errors (if any) in multiplication to derive the total cost of an individual item shall be done by the Consultant based on the quoted Unit Price by the Bidder. If the bidder does not accept the corrected amount of bid, its bid will be rejected, and the Bid security shall be forfeited.

### **31. CONVERSION TO SINGLE CURRENCY FOR COMPARISON OF BIDS**

**Not Applicable.** All bids submitted must be in the currency specified at clause 14 of ITB.

### **32. EVALUATION AND COMPARISON OF BIDS**

Bid shall be evaluated as per evaluation criteria mentioned in Section-II of bidding documents.

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In case of a tie at the lowest bid (L1) position between two or more startup/non-startup bidders, the order/LOA will be placed on the bidder who has higher/ highest turnover in last audited financial year.

**33. COMPENSATION FOR EXTENDED STAY [FOR APPLICABILITY OF THIS CLAUSE REFER BDS]:-**

33.1 In the event of the time of completions of work getting delayed beyond the time schedule indicated in the bidding document plus a grace period equivalent to 1/5<sup>th</sup> of the time schedule or 2 months whichever is more, due to reasons solely attributable to Employer, the Contractor shall be paid compensation for extended stay (ESC) to maintain necessary organizational set up and construction tools, tackles, equipment etc. at site of work.

33.2 The bidder is required to specify the rate for ESC on per month basis in the “PRICE PART” of his bid, which shall be considered for loading on total quoted price during price bid evaluation. The loading shall be done of a period of 1/5<sup>th</sup> of the time schedule or 1 month whichever is less. In case bidder does not indicate the rate for ESC in price part of his bid, it will be presumed that no ESC is required by the bidder and evaluation shall be carried out accordingly.

**34. PURCHASE PREFERENCE**

Considering that the subject work falls under "Works Contract Services", Purchase preference to MSE Bidders shall not be applicable as per government guidelines.

Purchase preference to Central government public sector Undertaking shall be allowed as per Government instructions in vogue.

**[F] – AWARD OF CONTRACT**

**35. AWARD**



Subject to "ITB: Clause-29", OWNER will award the Contract to the successful Bidder whose Bid has been determined to be substantially responsive and has been determined as the lowest provided that bidder, is determined to be qualified to satisfactorily perform the Contract.

***“OWNER intent to place the order/contract directly on the address from where Goods are produced/dispatched are Services are rendered. In case, bidder wants order/ contract at some other address or supply of Goods/ Services from multiple locations, bidder is required to provide in their bid address on which order is to be placed”.***

**36. NOTIFICATION OF AWARD / FAX OF ACCEPTANCE**

36.1 Prior to the expiry of ‘Period of Bid Validity’, Notification of Award for acceptance of the Bid will be intimated to the successful Bidder by OWNER either by Fax/ E - mail /Letter or like means defined as the “Fax of Acceptance (FOA)”.



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The Contract shall enter into force on the date of FOA and the same shall be binding on OWNER and successful Bidder (i.e. Contractor/Service Provider). The Notification of Award/FOA will constitute the formation of a Contract. The "Detailed Letter of Acceptance (DLOA)" shall be issued thereafter incorporating terms & conditions of Tender Document, Amendments, Corrigendum, Clarification(s), Bid and agreed variation(s)/acceptable deviation(s), if any. OWNER may choose to issue Notification of Award in form of detailed Letter of Acceptance without issuing FOA and in such case the Contract shall enter into force on the date of detailed Letter of Acceptance only.

- 36.2 Contract period shall commence from the date of "Notification of Award" or as mentioned in the Notification of Award. The "Notification of Award" will constitute the formation of a Contract, until the Contract has been effected pursuant to signing of Contract Agreement as per "ITB: Clause-37".

Upon the successful Bidder's / Contractor's furnishing of 'Contract Performance Security / Security Deposit', pursuant to "ITB: Clause-38", OWNER will promptly discharge his 'Earnest Money / Bid Security', pursuant to "ITB: Clause-16"

- 36.3 The Order/ contract value mentioned above is subject to Price Reduction Schedule clause.

### **37. SIGNING OF AGREEMENT**



- 37.1 OWNER will award the Contract to the successful Bidder, who, within 'fifteen [15] days' of receipt of the same, shall sign and return the acknowledged copy to OWNER.

- 37.2 The successful Bidder/Contractor shall be required to execute an 'Agreement' in the proforma given in this Bidding Document (**Format F-16**) on a 'non-judicial stamp paper' of appropriate value [cost of the 'stamp-paper' shall be borne by the successful Bidder/Contractor] and of 'state' specified in Bidding Data Sheet (BDS) only, within 'fifteen [15] days' of receipt of the "Fax of Acceptance [FOA]" of the Tender by the successful Bidder/ Contractor failure on the part of the successful Bidder/ Contractor to sign the 'Agreement' within the above stipulated period, shall constitute sufficient grounds for forfeiture of EMD/ Security Deposit.

### **38. CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT**

- 38.1 Within 30 days of the receipt of the notification of award/ Fax of Acceptance from OWNER, the successful bidder shall furnish the Contract Performance Security (CPS) in accordance with 'General Conditions of the Contract'. The CPS shall be in the form of either Banker's Cheque or Demand Draft or Bank Guarantee as per **Form F-4** and shall be in the currency of the Contract. **However, CPS shall not be applicable in cases where in the individual order/contract value as specified in Notification of Award is less than INR 5 Lakh (exclusive of GST).**

- 38.2 The contract performance security shall be for an amount equal to specified in Bidding Data Sheet (BDS) towards faithful performance of the contractual obligations and performance of equipment. For the purpose of CPS, Contract/order value shall be exclusive of **GST (CGST & SGST/UTGST or IGST).**

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Bank Guarantee towards CPS shall be from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank in case of Indian bidder as well as foreign bidder. However, in case of bank guarantees from banks other than the Nationalized Indian banks, the bank must be a commercial bank having net worth in excess of Rs 100 crores and a declaration to this effect should be made by such commercial bank either in the Bank Guarantee itself or separately on its letterhead.

- 38.3 Failure of the successful bidder to comply with the requirements of this article shall constitute sufficient grounds for the annulment of the award and forfeiture of the EMD.
- 38.4 CPBG/ Security Deposit will not be accepted in case the same has reference of 'remitter' / 'financer' other than bidder on the aforementioned financial instrument of CPBG/ Security.
- 38.5 The CPS has to cover the entire contract value including extra works/services also. As long as the CPS submitted at the time of award take cares the extra works/ services executed and total executed value are within the awarded contract price, there is no need for additional CPS. As soon as the total executed value is likely to burst the ceiling of awarded contract price, the contractor should furnish additional CPS.
- 38.6 In case of forfeiture of Contract Performance Security/ Security Deposit, the forfeited amount will be considered inclusive of tax and tax invoice will be issued by TFL. The forfeiture amount will be subject to final decision of TFL based on other terms and conditions of order/ contract.
- 38.7 The Contractor will also submit covering letter along with CPS as per format at **F-4**.
- 38.8 The Bidder shall submit the "Undertaking regarding submission of Contract Performance Security within stipulated time line" as per **Form F-24** with their bid.

**39. PROCEDURE FOR ACTION IN CASE CORRUPT/ FRAUDULENT/COLLUSIVE/ COERCIVE PRACTICES**

- 39.1 Procedure for action in case Corrupt/ Fraudulent/Collusive/Coercive Practices is enclosed at **Annexure-I**.
- 39.2 **NON-APPLICABILITY OF ARBITRATION CLAUSE IN CASE OF BANNING OF VENDORS/ SUPPLIERS/ CONTRACTORS/BIDDERS/ CONSULTANTS INDULGED IN FRAUDULENT/ COERCIVE PRACTICES**

Notwithstanding anything contained contrary in GCC and other "CONTRACT DOCUMENTS", in case it is found that the Vendors/ Suppliers / Contractors/Bidders/ Consultants indulged in fraudulent/ coercive practices at the time of bidding, during execution of the contract etc., and/or on other grounds as mentioned in OWNER's "Procedure for action in case Corrupt/Fraudulent/Collusive/Coercive Practices" (Annexure-I), the contractor/bidder shall be banned (in terms of aforesaid procedure) from the date of issuance of such order by OWNER, to such Vendors/ Suppliers / Contractors/Bidders/ Consultants.

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The Vendor/ Supplier/ Contractor/ Bidder/Consultant understands and agrees that in such cases where Vendor/ Supplier / Contractor/ Bidder/Consultant has been banned (in terms of aforesaid procedure) from the date of issuance of such order by OWNER, such decision of OWNER shall be final and binding on such Vendor/ Supplier / Contractor/ Bidder/Consultant and the 'Arbitration clause' in the GCC and other "CONTRACT DOCUMENTS" shall not be applicable for any consequential issue /dispute arising in the matter.

#### **40. PUBLIC PROCUREMENT POLICY FOR MICRO AND SMALL ENTERPRISES**

40.1 Following provision has been incorporated in tender for MSEs, in line with notification of Government of India, vide Gazette of India No. 503 dated 26.03.2012 proclaiming the Public Procurement Policy on procurement of goods and services from Micro and Small Enterprises (MSEs)

- i) Issue of tender document to MSEs free of cost.
- ii) Exemption to MSEs from payment of EMD/Bid Security.

40.2 In case bidder is a Micro or Small Enterprise under the Micro, Small and Medium Enterprises Development Act, 2006, the bidder shall submit the following:

- (i) Ministry of MSME vide Gazette notification no. CG-DL-E-26062020-220191 dated 26.06.2020 has notified certain criteria for classifying the enterprises as Micro, Small and Medium Enterprises and specified, form and procedure for filing the memorandum (Udyam Registration) w.e.f. 01.07.2020 (for complete details of policy refer website of Ministry of MSME i.e. <https://msme.gov.in>)

Accordingly, Micro and Small Enterprises (MSEs) shall be required to submit Udyam Registration Certificate for availing benefit under Public Procurement Policy for MSEs-2012



- (ii) An enterprises registered prior to 30.06.2020 and who are not re-registered with Udyam Registration, shall continue to be valid for a period upto 31.03.2021. Such enterprises shall submit EM Part-II or Udyog Aadhar Memorandum (UAM) for availing benefits of PPP-2012.

The above documents submitted by the bidder shall be duly certified by the Chartered Accountant (not being an employee or a Director or not having any interest in the bidder's company/firm) and notary public with legible stamp.

If the bidder does not provide the above confirmation or appropriate document or any evidence, then it will be presumed that they do not qualify for any preference admissible in the Public Procurement Policy (PPP) 2012.

Further, MSEs who are availing the benefits of the Public Procurement Policy (PPP) 2012 get themselves registered with MSME Data Bank being operated by NSIC, under SME Division, M/o MSME, in order to create proper data base of MSEs which are making supplies to CPSUs.

40.3 If against an order placed by TFL, successful bidder(s) (other than Micro/Small Enterprise) is procuring material/services from their sub-vendor who is a Micro or Small Enterprise registered with District Industries Centres or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of

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Handicrafts and Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises with prior consent in writing of the purchasing authority/Engineer-in-charge, the details like Name, Registration No., Address, Contact No. details of material & value of procurement made, etc. of such Enterprises shall be furnished by the successful bidder at the time of submission of invoice/Bill.

40.4 The benefit of policy is not extended to the traders/dealers/ Distributors/Stockiest/Wholesalers.

40.5 NSIC has initiated a scheme of “Consortia and Tender Marketing Scheme” under which they are assisting the Micro & Small enterprises to market their products and services through tender participation on behalf of the individual unit or through consortia.

Accordingly, if the MSEs or the consortia, on whose behalf the bid is submitted by NSIC, is meeting the BEC and other terms and conditions of tender their bid will be considered for further evaluation. Further, in such cases a declaration is to be submitted by MSE/ consortia on their letter head (s) that all the terms and conditions of tender document shall be acceptable to them.

Further, in such cases a declaration is to be submitted by MSE/ consortia on their letter head (s) that all the terms and conditions of tender document shall be acceptable to them.

#### **41. AHR ITEMS**

In item rate contract where the quoted rates for the items exceed 50% of the estimate rates, such items will be considered as Abnormally High Rates (AHR) items and payment of AHR items beyond the SOR stipulated quantities shall be made at the lowest amongst the following rates:

- i) Rates as per SOR, quoted by the Contractor/Bidder.
- ii) Rate of the item, which shall be derived as follows:
  - a. Based on rates of Machine and labour as available from the contract (which includes contractor’s supervision, profit, overheads and other expenses).
  - b. In case rates are not available in the contract, rates will be calculated based on prevailing market rates of machine, material and labour plus 15% to cover contractor’s supervision profit, overhead & other expenses.

#### **42. VENDOR PERFORMANCE EVALUATION**



Shall be as stipulated **Annexure II** to ITB herewith.

#### **43. INCOME TAX & CORPORATE TAX**

43.1 Income tax deduction shall be made from all payments made to the contractor as per the rules and regulations in force and in accordance with the Income Tax Act prevailing from time to time.

43.2 Corporate Tax liability, if any, shall be to the contractor’s account.

43.3 TDS, wherever applicable shall be deducted as per applicable act/law/rule.

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43.4 Wherever TDS under GST Laws has been deducted from the invoices raised/ payments made to the vendors, as per the provisions of the GST law/ Rules, Vendors should accept the corresponding GST-TDS amount populated in the relevant screen on GST common portal (www.gst.gov. in).

Further, Vendors should also download the GST TDS certificate from GST common portal (reference path: · Services > User Services >View/Download Certificates option).

**43.5 MENTIONING OF PAN NO. IN INVOICE/BILL**

As per CBDT Notification No. 95/2015 dated 30.12.2015, mentioning of PAN no. is mandatory for procurement of goods/ services/works/consultancy services exceeding Rs. 2 Lacs per transaction.

Accordingly, supplier/ contractor/ service provider/ consultant should mention their PAN no. in their invoice/ bill for any transaction exceeding Rs. 2 lakhs. As provided in the notification, in case supplier/ contractor/ service provider/ consultant do not have PAN no., they have to submit declaration in Form 60 along with invoice/ bill for each transaction.

Payment of supplier/ contractor / service provider/ consultant shall be processed only after fulfillment of above requirement

**44. DISPUTES BETWEEN CPSE'S / GOVERNMENT DEPARTMENT'S / ORGANIZATION**

Subject to conciliation as provided in Clause No. 45, in the event of any dispute (other than those related to taxation matters) or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs / Port Trusts) inter se and also between CPSEs and Government Departments / Organizations, such dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in OPE OM No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22-05-2018.

Any party aggrieved with the decision of the Committee at the First level (tier) may prefer an appeal before the Cabinet Secretary at the Second level (tier) within 15 days from the date of receipt of decision of the Committee at First level, through it's administrative Ministry/Department, whose decision will be final and binding on all concerned.



The provisions mentioned at clause no. 44 & 45 shall supersede provisions relating to Conciliation, Arbitration, Governing Law & Jurisdiction and Disputes between CPSE's/ Government Department's/ Organizations mentioned in General Conditions of Contract (GCC) and elsewhere in tender document.

**45. DISPUTE RESOLUTION MECHANISM**

**1.0 CONCILIATION**

Where invitation for Conciliation has been accepted by the other party, the Parties shall attempt to settle such dispute(s) amicably under Part-III of the Arbitration and Conciliation Act, 1996. It would be only after exhausting the option of Conciliation as an Alternate Dispute Resolution Mechanism that the Parties hereto shall invoke Arbitration Clause. For the purpose of this clause, the option of 'Conciliation' shall be deemed to have been exhausted, even in case of rejection of 'Conciliation' by any of the Parties.



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## 2.0 ARBITRATION

All issue(s)/dispute(s) excluding the matters that have been specified as excepted matters and listed at clause no. 2.6 and which cannot be resolved through Conciliation, such issue(s)/dispute(s) shall be referred to arbitration for adjudication by Sole Arbitrator. The party invoking the Arbitration shall have the option to either opt for Ad-hoc Arbitration as provided at Clause 2.1 below or Institutionalized Arbitration as provided at Clause 2.2 below, the remaining clauses from 2.3 to 2.7 shall apply to both Ad-hoc and Institutional Arbitration:-

2.1 On invocation of the Arbitration clause by either party, TFL shall suggest a panel of three independent and distinguished persons (Retd Supreme Court & High Court Judges only) to the other party from the Panel of Arbitrators maintained by 'Delhi International Arbitration Centre (DIAC) to select any one among them to act as the Sole Arbitrator. In the event of failure of the other party to select the Sole Arbitrator within 30 days from the receipt of the communication from TFL suggesting the panel of arbitrators, the right of selection of the sole arbitrator by the other party shall stand forfeited and TFL shall appoint the Sole Arbitrator from the suggested panel of three Arbitrators for adjudication of dispute(s). The decision of TFL on the appointment of the sole arbitrator shall be final and binding on the other party. The fees payable to Sole Arbitrator shall be governed by the fee Schedule of "Delhi International Arbitration Centre".

OR

2.2 If a dispute arises out of or in connection with this contract, the party invoking the Arbitration shall submit that dispute to any one of the Arbitral Institutions i.e ICADR/ICA/DIAC/SFCA and that dispute shall be adjudicated in accordance with their respective Arbitration Rules. The matter shall be adjudicated by a Sole Arbitrator who shall necessarily be a Retd. Supreme Court/High Court Judge to be appointed/nominated by the respective institution. The cost/expenses pertaining to the said Arbitration shall also be governed in accordance with the Rules of the respective Arbitral Institution. The decision of the party invoking the Arbitration for reference of dispute to a specific Arbitral institution for adjudication of that dispute shall be final and binding on both the parties and shall not be subject to any change thereafter. The institution once selected at the time of invocation of dispute shall remain unchanged.



2.3 The cost of arbitration proceedings shall be shared equally by the parties.

2.4 The Arbitration proceedings shall be in English language and the seat, venue and place of Arbitration shall be New Delhi, India only.

2.5 Subject to the above, the provisions of Arbitration & Conciliation Act 1996 and any amendment thereof shall be applicable. All matter relating to this Contract and arising out of invocation of Arbitration clause are subject to the exclusive jurisdiction of the Court(s) situated at New Delhi.

2.6 List of Excepted matters:

a) Dispute(s)/issue(s) involving claims below Rs 25 lakhs and above Rs 25 crores.

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- b) Dispute(s)/issue(s) relating to indulgence of Contractor/Vendor/Bidder in corrupt/fraudulent/collusive/coercive practices and/or the same is under investigation by CBI or Vigilance or any other investigating agency or Government.
- c) Dispute(s)/issue(s) wherein the decision of Engineer-In-Charge/owner/ TFL has been made final and binding in terms of the Contract.

2.7. Disputes involving claims below Rs 25 Lakhs and above Rs. 25 crores:- Parties mutually agree that dispute(s)/issue(s) involving claims below Rs 25 Lakhs and above Rs 25 crores shall not be subject matter of Arbitration and are subject to the exclusive jurisdiction of the Court(s) situated at New Delhi.

**3.0 GOVERNING LAW AND JURISDICTION:**

The Contract shall be governed by and construed in accordance with the laws in force in India. The Parties hereby submit to the exclusive jurisdiction of the Courts situated at New Delhi for adjudication of disputes, injunctive reliefs, actions and proceedings, if any, arising out of this Contract.

**46. INAM-PRO (PLATFORM FOR INFRASTRUCTURE AND MATERIALS PROVIDERS)**

INAM-Pro (Platform for infrastructure and materials providers) is a web based platform for infrastructure provides and materials suppliers and was developed by Ministry of Road Transport and Highways (MoRT&H) with a view to reduce project execution delays on account of supply shortages and inspire greater confidence in contractors to procure cement to start with directly from the manufacturers.



Presently, numerous cement companies are registered in the portal and offering cement for sale on the portal with a commitment period of 3 years. These companies have bound themselves by ceiling rates for the entire commitment period, wherein they are allowed to reduce or increase their cement rates any number of times within the ceiling rate, but are not permitted to exceed the said ceiling rate.

MoRT&H is expanding the reach of this web-portal by increasing both the product width as well as the product depth. They are working on incorporating 60 plus product categories. The product range will span from large machineries like Earth Movers and Concrete Mixers, to even the smallest items like road studs. MoRT&H intend to turn it into a portal which services every infrastructure development related need of a modern contractor.

OWNER's contractors may use this innovative platform, wherever applicable. The usage of web – Portal is a completely voluntary exercise. The platform, however, can serve as a benchmark for comparison of offered prices and products.

**47. PROMOTION OF PAYMENT THROUGH CARDS AND DIGITAL MEANS**

To promote cashless transactions, the onward payments by Contractors to their employees, service providers, sub-contractors and suppliers may be made through Cards and Digital means to the extent possible

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**48. CONTRACTOR TO ENGAGE CONTRACT MANPOWER BELONGING TO SCHEDULED CASTES AND WEAKER SECTIONS OF THE SOCIETY**

While engaging the contractual manpower, Contractors are required to make efforts to provide opportunity of employment to the people belonging to Scheduled Castes and weaker sections of the society also in order to have a fair representation of these sections.

**49. QUARTERLY CLOSURE OF THE CONTRACT [FOR APPLICABILITY OF THIS CLAUSE REFER BDS]:-**

During execution of contracts/orders, various issues may arise. In order to timely detect and to address the contractual issue (s) during the execution of contracts, OWNER has introduced a mechanism of quarterly closure of the contract, under which all the issues related to the contract execution will be monitored on quarterly basis for resolution.

Vendors/Contractors are required to co-operate with EIC for proper implementation of this mechanism for smooth execution of the contract.

**50. PROVISIONS FOR STARTUP (AS DEFINED IN GAZETTENOTIFICATION NO. D.L-33004/99 DATED 18.02.2016 AND 23.05.2017 OF MINISTRY OF COMMERCE AND INDUSTRY AND AS AMENDED FROM TIME TO TIME) [FOR APPLICABILITY REFER BDS]**

**Clause 50.0 is not applicable for this Tender**

As mentioned in Section-II, Technical BEC and Financial BEC shall not be applicable for Start-ups.



However, the Startups are exempted from submission of EMD. For availing the relaxation of EMD, bidder is required to submit requisite certificate towards Startup enterprise registration issued by Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry. Further, all the documents should be certified by the Chartered Accountant (not being an employee or a Director or not having any interest in the bidder's company/firm) and notary public with legible stamp."

The relaxation of prior experience and prior turnover to Startups [whether Micro & Small Enterprises (MSEs) or otherwise] is to be given to the specific goods/ job domains wherein they are registered for. Since certificate of DPIIT towards recognition do not specify the goods/ job domain, startups are required to submit the documents for the same including the application submitted to DPIIT.

Further, above document should also be certified by the Chartered Accountant (not being an employee or a Director or not having any interest in the bidder's company/firm) and notary public with legible stamp.

If a Startup emerge lowest bidder, the LoA on such Startup shall be placed for entire tendered quantity/group/item/part (as the case may be). However, during the Kick of Meeting monthly milestones/ check points would be drawn. Further, the performance



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of such contractor/ service provider will be reviewed more carefully and action to be taken as per provision of contract in case of failure/ poor performance.

**51. PROVISION REGARDING INVOICE FOR REDUCED VALUE OR CREDIT NOTE TOWARDS PRS**

As mentioned in GCC, PRS is the reduction in the consideration / contract value for the goods / services covered under this contract. In case of delay in execution of contract, contractor should raise Tax invoice for reduced value as per Price Reduction Schedule Clause (PRS clause). If contractor has raised the Tax invoice for full value, then contractor should issue Credit Note towards the applicable PRS amount with applicable taxes.

In such cases if contractor fails to submit the Tax invoice with reduced value or does not issue credit note as mentioned above, Owner will release the payment to contractor after giving effect of the PRS clause with corresponding reduction of taxes charged on vendor's Tax invoice, to avoid delay in delivery/ collection of material.

In case any financial implication arises on Owner due to issuance of Tax invoice without reduction in price or non-issuance of Credit Note, the same shall be to the account of contractor. Owner shall be entitled to deduct/ setoff/ recover such GST amount (CGST & SGST/ UTGST or IGST) together with penalties and interest, if any, against any amounts paid or becomes payable by Owner in future to the Contractor under this contract or under any other contract.

**52. PROVISION REGARDING REVERSE AUCTION \*\***  
**\*\* (This Clause is NOT APPLICABLE for this NIT)**

~~On-line reverse auction shall be applicable for this tender. Accordingly, the decision to conduct reverse auction shall be communicated to shortlisted bidders prior to opening of price bid.~~

~~TFL shall finalize tender after conducting reverse auction except in those cases where less than four techno-commercially acceptable offers are available. In case, after techno-commercial evaluation in a tender, number of technically & commercially acceptable offers are less than 04 (four) then no reverse auction will be conducted (but the TFL/PDIL shall take appropriate decision regarding conducting offline price negotiation, if required).~~



~~Accordingly, the decision to conduct reverse auction shall be communicated to shortlisted bidders prior to opening of price bid.~~

**53. UNIQUE DOCUMENT IDENTIFICATION NUMBER BY PRACTICING CHARTERED ACCOUNTANTS**

Practicing Chartered Accountants shall generate Unique Document Identification Number (UDIN) for all certificates issued by them as per provisions of Tender Document.

However, UDIN may not be required for documents being attested by Chartered Accountants in terms of provisions of Tender Document.

**54. CLAUSE REGARDING PROVISION FOR PROCUREMENT FROM A BIDDER WHICH SHARES A LAND BORDER WITH INDIA**

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i. Order (Public Procurement No. 1) dated 23.07.2020, Order (Public Procurement No. 2) dated 23.07.2020 and Order (Public Procurement No. 3) dated 24.07.2020, Department of Expenditure, Ministry of Finance, Govt. of India refers. The same are available at website <https://doe.gov.in/procurement-policy-divisions>.

ii. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. For details of competent authority refer to Annexure I of Order (Public Procurement No. 1) dated 23.07.2020.

Further the above will not apply to bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of creditor in which the Government of India is engaged in development projects. Updated lists of countries to which lines of credit have been extended or in which development projects are undertaken are given in the website of the Ministry of External Affairs, Govt. of India

iii. "**Bidder**" (including the term 'tenderer', 'consultant' 'vendor' or 'service provider' in certain contexts) **for purpose of this provision** means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency, branch or office controlled by such person, participating in a procurement process.

iv. "**Bidder from a country which shares a land border with India**" for the purpose of this:



- a. An entity incorporated, established or registered in such a country; or
- b. A subsidiary of an entity incorporated, established or registered in such a country; or
- c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
- d. An entity whose beneficial owner is situated in such a country; or
- e. An Indian (or other) agent of such an entity; or
- f. A natural person who is a citizen of such a country; or
- g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

v. "**Beneficial owner**" for the purpose of above (iv) will be as under:

- a. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), has a controlling ownership interest or who exercises control through other means.



Explanation—

- i) "Controlling ownership interest" means ownership of, or entitlement to, more than twenty-five per cent of shares or capital or profits of the company;
- ii) "Control" shall include the right to appoint the majority of the directors or to control the management or policy decisions, including by virtue of



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their shareholding or management rights or shareholders agreements or voting agreements;

- b. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
  - c. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
  - d. Where no natural person is identified under (a) or (b) or (c) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
  - e. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- vi. **"Agent"** for the purpose of this Order is a person employed to do any act for another, or to represent another in dealings with third persons
- vii. **SUBMISSION OF CERTIFICATE IN BIDS:**  
Bidder shall submit a certificate in this regard as Form **F-20**. If such certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate rejection of the bid/termination and further action as per "Procedure for Action in case of Corrupt/Fraudulent/ Collusive / Coercive Practices" of tender document.
- viii. **SUBMISSION OF CERTIFICATE IN BIDS:**  
The registration, wherever applicable, should be valid at the time of submission of bids and at the time of acceptance of bids. In respect of supply otherwise than by tender, registration should be valid at the time of placement of order. If the bidder was validly registered at the time of acceptance / placement of order, registration shall not be a relevant consideration during contract execution.
- ix. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority. The definition of "contractor from a country which shares a land border with India" shall be as in Para (iv) herein above. A Certificate to this regard is to be submitted by bidder is placed at Form **F-21**.

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**[G] – ANNEXURES**



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**Annexure-I**

**PROCEDURE FOR ACTION IN  
CASE CORRUPT/FRAUDULENT/COLLUSIVE/COERCIVE  
PRACTICES**

**A Definitions:**

- A.1 “Corrupt Practice” means the offering, giving, receiving or soliciting, directly or indirectly, anything of value to improperly influence the actions in selection process or in contract execution.
- “Corrupt Practice” also includes any omission for misrepresentation that may mislead or attempt to mislead so that financial or other benefit may be obtained or an obligation avoided.
- A.2 “Fraudulent Practice” means and include any act or omission committed by a agency or with his connivance or by his agent by misrepresenting/ submitting false documents and/ or false information or concealment of facts or to deceive in order to influence a selection process or during execution of contract/order.
- A.3 “Collusive Practice amongst bidders (prior to or after bid submission)” means a scheme or arrangement designed to establish bid prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.
- A.4 “Coercive practice” means impairing or harming or threatening to impair or harm directly or indirectly, any agency or its property to influence the improperly actions of an agency, obstruction of any investigation or auditing of a procurement process.
- A.5 “Vendor/Supplier/Contractor/Consultant/Bidder” is herein after referred as “Agency”
- A.6 “Appellate Authority” shall mean Committee of Directors consisting of Director (Finance) and Director (BD) for works centers under Director (Projects). For all other cases committee of Directors shall consist of Director (Finance) & Director(Projects).
- A.7 “Competent Authority” shall mean the authority, who is competent to take final decision for Suspension of business dealing with an Agency/ (ies) and Banning of business dealings with Agency/ (ies) and shall be the “Director” concerned.
- A.8 “Allied Agency” shall mean all the concerns within the sphere of effective influence of banned/ suspended agencies. In determining this, the following factors may be taken into consideration:
- (a) Whether the management is common;
  - (b) Majority interest in the management is held by the partners or directors of banned/ suspended firm.
  - (c) substantial or majority shares are owned by banned/ suspended agency and by virtue of this it has a controlling voice.
- A.9 “Investigating Agency” shall mean any department or unit of TFL investigating into the conduct of Agency/ party and shall include the Vigilance Department of the TFL,

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Central Bureau of Investigation, State Police or any other agency set up by the Central or state government having power to investigate.

**B Actions against bidder(s) indulging in corrupt /fraudulent/ collusive/ coercive practice**

**B.1 Irregularities noticed during the evaluation of the bids:**

If it is observed during bidding process/ bids evaluation stage that a bidder has indulged in corrupt/fraudulent /collusive/coercive practice, the bid of such Bidder (s) shall be rejected and its Earnest Money Deposit (EMD) shall be forfeited.

Further, such agency shall be banned for future business with TFL for a period specified in para B 2.2 below from the date of issue of banning order.

**B.2 Irregularities noticed after award of contract**

**(i) During execution of contract:**

If an agency, is found to have indulged in corrupt/fraudulent/ collusive /coercive practices, action shall be initiated as per procedure mentioned at Clause no. E for putting the agency on banning list.



After conclusion of process and issuance of Speaking order for putting party on banning list as per process defined in para E, the order (s)/ contract (s) where it is concluded that such irregularities have been committed shall be terminated and Contract cum Performance Bank Guarantee (CPBG) submitted by agency against such order (s)/ contract (s) shall also be forfeited. Further such order/ contract will be closed following the due procedure in this regard.

The amount that may have become due to the contractor on account of work already executed by him shall be payable to the contractor and this amount shall be subject to adjustment against any amounts due from the contractor under the terms of the contract. No risk and cost provision will be enforced in such cases.

**Suspension of order/ contract:**

Further, only in the following situations, the concerned order (s)/ contract(s) (where Corrupt/Fraudulent/ Collusive/ Coercive Practices are observed) and payment shall be suspended after issuance of Suspension cum Show Cause Notice:

- (i) Head of Corporate Vigilance Department/CVO based on the investigation by them, recommend for specific immediate action against the agency.
- (ii) Head of Corporate Vigilance Department/CVO based on the input from investigating agency, forward for specific immediate action against the agency.

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Suspension cum Show Cause Notice being issued in above cases after approval of the competent authority (as per provisions mentioned under Clause no. D) shall also include the provision for suspension of Order (s)/ Contract (s) and payment. Accordingly, after issuance of Suspension cum Show Cause Notice by Corporate C&P Department, the formal communication for suspension of Order (s)/ Contract (s) and payment with immediate effect will be issued by the following with copy to concerned F&A:

- (i) For Projects cases: concerned Project Managers in case of Purchase Orders and concerned Construction-in Charge (where PMC is EIC)/ Engineer-in-Charge (EIC) in case of Contracts
- (ii) For other than Projects cases: concerned Dealing officer in case of Purchase Orders and concerned Engineer-in-Charge (EIC) in case of Contracts.

During suspension, Contractor/ Service Providers will be allowed to visit the plant/ site for upkeep of their items/ equipment, TFL's issued materials (in case custody of same is not taken over), demobilizing the site on confirmation of EIC, etc.

However, no suspension of contract/ order will be initiated in Exceptional Cases mentioned at Clause no. B.2.3.

**(ii) After execution of contract and during Defect liability period (DLP)/ Warranty/Guarantee Period:**

If an agency is found to have indulged in corrupt/fraudulent/ collusive/coercive practices, after execution of contract and during DLP/ Warranty/Guarantee Period, the agency shall be banned for future business with TFL for a period specified in para B 2.2 below from the date of issue of banning order.

Further, the Contract cum Performance Bank Guarantee (CPBG)/Contract Performance Security (CPS) submitted by agency against such order (s)/ contract (s) shall be forfeited.



**(iii) After expiry of Defect liability period (DLP)/ Warranty/Guarantee Period**

If an agency is found to have indulged in corrupt/fraudulent/ collusive/coercive practices, after expiry of Defect liability period (DLP)/ Warranty/Guarantee Period, the agency shall be banned for future business with TFL for a period specified in para B 2.2 below from the date of issue of banning order.

**B.2.2 Period of Banning**



The period of banning of agencies indulged in Corrupt/ Fraudulent/ Collusive/Coercive Practices shall be as under and to be reckoned from the date of banning order:



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S. No.	Description	Period of banning from the date of issuance of Banning order
1	<p>Misrepresentation/False information other than pertaining to BEC of tender but having impact on the selection process.</p> <p>For example, if an agency confirms not being in holiday in TFL/PSU"s PMC or banned by PSUs/ Govt. Dept., liquidation, bankruptcy &amp; etc. and subsequently it is found otherwise, such acts shall be considered in this category.</p>	02 years
2	Corrupt/Fraudulent (pertaining to BEC of tender) /Collusive/Coercive Practices	03 years
2.1	<p>If an agency again commits Corrupt/Fraudulent (pertaining to BEC of tender) /Collusive/ Coercive Practices in subsequent cases after their banning, such situation of repeated offense to be dealt with more severity and following shall be the period of banning:</p> <p>(i) Repeated once</p> <p>(ii) Repeated twice or more</p>	<p>7 years (in addition to the period already served)</p> <p>15 years (in addition to the period already served)</p>
3	Indulged in unauthorized disposal of materials provided by TFL	7 years
4	If act of vendor/ contractor is a threat to the National Security	15 years



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## **C Effect of banning on other ongoing contracts/tenders**

- C.1 If an agency is put on Banning, such agency should not be considered in ongoing tenders/future tenders.
- C.2 However, if such an agency is already executing other order (s)/ contract (s) where no corrupt/fraudulent/ collusive/coercive practice is found, the agency should be allowed to continue till its completion without any further increase in scope except those incidental to original scope mentioned in the contract.
- C.3 If an agency is put on the Banning List during tendering and no irregularity is found in the case under process:
- C.3.1 after issue of the enquiry /bid/tender but before opening of Technical bid, the bid submitted by the agency shall be ignored.
- C.3.2 after opening Technical bid but before opening the Price bid, the Price bid of the agency shall not be opened and BG/EMD submitted by the agency shall be returned to the agency.
- C.3.3 after opening of price, BG/EMD made by the agency shall be returned; the offer of the agency shall be ignored & will not be further evaluated. If the agency is put on banning list for fraud/ mis-appropriation of facts committed in the same tender/other tender where errant agency emerges as the lowest (L1), then such tender shall also be cancelled and re-invited.

## **D. Procedure for Suspension of Bidder**



### **D.1 Initiation of Suspension**

Action for suspension business dealing with any agency/(ies) shall be initiated by Corporate C&P Department when

- (i) Corporate Vigilance Department based on the fact of the case gathered during investigation by them recommend for specific immediate action against the agency.
- (ii) Corporate Vigilance Department based on the input from Investigating agency, forward for specific immediate action against the agency.
- (iii) Non performance of Vendor/Supplier/Contractor/Consultant leading to termination of Contract/Order.

### **D.2 Suspension Procedure:**

- D.2.1 The order of suspension would operate initially for a period not more than six months and is to be communicated to the agency and also to Corporate Vigilance Department. Period of suspension can be extended with the approval of the Competent Authority by one month at a time with a ceiling of six months pending a conclusive decision to put the agency on banning list.

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- D.2.2 During the period of suspension, no new business dealing may be held with the agency.
- D.2.3 Period of suspension shall be accounted for in the final order passed for banning of business with the agency.
- D.2.4 The decision regarding suspension of business dealings should also be communicated to the agency.
- D.2.5 If a prima-facie, case is made out that the agency is guilty on the grounds which can result in banning of business dealings, proposal for issuance of suspension order and show cause notice shall be put up to the Competent Authority. The suspension order and show cause notice must include that (i) the agency is put on suspension list and (ii) why action should not be taken for banning the agency for future business from TFL.

The competent authority to approve the suspension will be same as that for according approval for banning.

**D 3 Effect of Suspension of business:**



Effect of suspension on other on-going/future tenders will be as under:

- D.3.1 No enquiry/bid/tender shall be entertained from an agency as long as the name of agency appears in the Suspension List.
- D.3.2 If an agency is put on the Suspension List during tendering:
- D.3.2.1 after issue of the enquiry /bid/tender but before opening of Technical bid, the bid submitted by the agency shall be ignored.
- D.3.2.2 after opening Technical bid but before opening the Price bid, the Price bid of the agency shall not be opened and BG/EMD submitted by the agency shall be returned to the agency.
- D.3.2.3 after opening of price, BG/EMD made by the agency shall be returned; the offer of the agency shall be ignored & will not be further evaluated. If the agency is put on Suspension list for fraud/ mis-appropriation of facts conducted in the same tender/other tender where errant agency emerges as the lowest (L1), then such tender shall also be cancelled and re-invited.
- D.3.3 The existing contract (s)/ order (s) under execution shall continue.
- D.3.4 Tenders invited for procurement of goods, works and services shall have provision that the bidder shall submit a undertaking to the effect that (i) neither the bidder themselves nor their allied agency/(ies) are on banning list of TFL and (ii) bidder is not banned by any Government department/ Public Sector.

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**F. Appeal against the Decision of the Competent Authority:**

- F.1 The agency may file an appeal against the order of the Competent Authority for putting the agency on banning list. The appeal shall be filed to Appellate Authority. Such an appeal shall be preferred within one month from the of receipt of banning order.
- F.2 Appellate Authority would consider the appeal and pass appropriate order which shall be communicated to the party as well as the Competent Authority.
- F.3 Appeal process may be completed within 45 days of filing of appeal with the Appellate Authority.
- G.** Wherever there is contradiction with respect to terms of „Integrity pact“, GCC and „Procedure for action in case of Corrupt/Fraudulent/ Collusive/Coercive Practice“, the provisions of „Procedure for action in case of Corrupt/Fraudulent/ Collusive/Coercive Practice“ shall prevail.
-

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## ANNEXURE-II

### PROCEDURE FOR EVALUATION OF PERFORMANCE OF VENDORS/ SUPPLIERS/ CONTRACTORS/ CONSULTANTS

#### 1.0 OBJECTIVE

The objective of Evaluation of Performance aims to recognize, and develop reliable Vendors/ Suppliers/Contractors/ Consultants so that they consistently meet or exceed expectations and requirements.

The purpose of this procedure is to put in place a system to monitor performance of Vendors/ Suppliers/Contractors/ Consultants associated with OWNER in Projects and in O&M so as to ensure timely completion of various projects, timely receipt of supplies including completion of works & services for operation and maintenance of operating plants and quality standards in all respects.

#### 2.0 METHODOLOGY

##### i) Preparation of Performance Rating Data Sheet

Performance rating data Sheet for each and every Vendor/ Supplier/Contractor/ Consultant for all orders/Contracts with a value of Rs. 7 Lakhs and above is recommended to be drawn up. These data sheets are to be separately prepared for orders/ contracts related to Projects and O&M. Format, Parameters, Process, responsibility for preparation of Performance Rating Data Sheet are separately mentioned.

##### ii) Measurement of Performance

Based on the parameters defined in Data Sheet, Performance of concerned Vendor/ Supplier/Contractor/ Consultant would be computed and graded accordingly. The measurement of the performance of the Party would be its ability to achieve the minimum scoring of 60% points in the given parameters.



##### iii) Initiation of Measures:

Depending upon the Grading of Performance, corrective measures would be initiated by taking up the matter with concerned Vendor/ Supplier/Contractor/ Consultant. Response of Vendor/ Supplier/Contractor/ Consultant would be considered before deciding further course of action.

##### iv) Implementation of Corrective Measures:

Based on the response of Vendor/ Supplier/Contractor/ Consultant, concerned Engineer-in-Charge for the Projects and/or OIC in case of O&M would recommend for continuation or discontinuation of such party from the business of OWNER.

##### v) Orders/contracts placed on Proprietary/OEM basis for O&M will be evaluated and, if required, corrective action will be taken for improvement in future.

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### 3.0 PROCESS OF EVALUATION OF PERFORMANCE OF VENDORS/ SUPPLIERS/ CONTRACTORS/ CONSULTANTS

#### 3.1 FOR PROJECTS

- i) Evaluation of performance of Vendors/ Suppliers/Contractors/ Consultants in case of PROJECTS shall be done immediately with commissioning of any Project.
- ii) On commissioning of any Project, EIC (Engineer-in-charge)/ Project-in-charge shall prepare a Performance Rating Data Sheet (Format at Appendix-1) for all Orders and Contracts.
- iii) Depending upon the Performance Rating, following action need to be initiated by Engineer-in-charge/Project-in-charge:

Sl.No.	Performance Rating	Action
1	POOR	Seek explanation for Poor performance
2	FAIR	Seek explanation for Fair performance
3	GOOD	Letter to the concerned for improving performance in future
4	VERY GOOD	No further action



- iv) Reply from concerned Vendor/ Supplier/Contractor/ Consultant shall be examined. In case of satisfactory reply, Performance Rating data Sheet to be closed with a letter to the concerned for improving performance in future.
- v) When no reply is received or reasons indicated are unsatisfactory, the following actions need to be taken:

A) Where Performance rating is "POOR":

Recommend such defaulting Vendor/ Supplier/Contractor/ Consultant for putting on Holiday for a period from one to three years as given below:

- (i) Poor Performance due to reasons other than Quality : **One Year**
- (ii) Poor Performance on account of Quality (if any mark obtained against Quality parameter is less than 30): **Two Years**
- (iii) Poor Performance leading to termination of contract or Offloading of contract due to poor performance solely attributable to Vendor/ Supplier/Contractor/ Consultant or Repeated Offence: **Three Years**

Non performance of a Vendor/Supplier/Contractor/Consultant leading to termination of Contract/ Order, such Vendor/ Supplier/ Contractor/Consultant are also to be considered for Suspension.

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In all such cases, concerned site will put up recommendation for issuance of SCN and putting the party on suspension list as per process defined for suspension in “Procedure for Action in case of Corrupt/ Fraudulent/ Collusive/ Coercive Practices”

(B) Where Performance rating is “FAIR”:

Recommend for issuance of warning to such defaulting Vendor/ Supplier/Contractor/ Consultant to improve their performance.

3.2 FOR CONSULTANCY JOBS

Monitoring and Evaluation of consultancy jobs will be carried out in the same way as described in para 3.1 for Projects.

3.3 FOR OPERATION & MAINTENANCE

- i) Evaluation of performance of Vendors/ Suppliers/Contractors/ Consultants in case of Operation and Maintenance shall be done immediately after execution of order/ contract.
- ii) After execution of orders a Performance Rating Data Sheet (Format at Apendix-2) shall be prepared for Orders by Site C&P and for Contracts/Services by respective Engineer-In-Charge.
- iii) Depending upon Performance Rating, following action need to be initiated by Site C&P:



Sl. No.	Performance Rating	Action
1	<b>POOR</b>	Seek explanation for Poor performance
2.	<b>FAIR</b>	Seek explanation for Fair performance
3	<b>GOOD</b>	Letter to the concerned for improving performance in future.
4	<b>VERY GOOD</b>	No further action

- iv) Reply from concerned Vendor/ Supplier/Contractor/ Consultant shall be examined. In case of satisfactory reply, Performance Rating data Sheet to be closed with a letter to the concerned for improving performance in future.
- v) When no reply is received or reasons indicated are unsatisfactory, the following actions need to be taken:

A) Where performance rating is “POOR”

Recommend such defaulting Vendor/Supplier/Contractor/ Consultant for putting on Holiday for a period from one to three years as given below:

- (i) Poor Performance due to reasons other than Quality : **One Year**

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- (ii) Poor Performance on account of Quality (if any mark obtained against Quality parameter is less than 30): **Two Years**
- (iv) Poor Performance leading to termination of contract or Offloading of contract due to poor performance solely attributable to Vendor/Supplier/Contractor/Consultant or Repeated Offence: **Three Years**

Non-performance of a Vendor/Supplier/Contractor/Consultant leading to termination of Contract/ Order such Vendor/ Supplier/ Contractor/Consultant are also to be considered for Suspension.

In all such cases, concerned site will put up recommendation for issuance of SCN and putting the party on suspension list as per process defined for suspension in "Procedure for Action in case of Corrupt/ Fraudulent/ Collusive/ Coercive Practices"

(B) Where Performance rating is "FAIR"

Recommend for issuance of warning to such defaulting Vendors/Contractors/Consultants to improve their performance.

4.0 **EXCLUSIONS:**

The following would be excluded from the scope of evaluation of performance of Vendors/ Suppliers/Contractors/ Consultants:

- i) Orders/Contracts below the value of Rs. 7 Lakhs.
- ii) One time Vendor/ Supplier/Contractor/ Consultant.
- iii) Orders for Misc./Administrative items/ Non stock Non valuated items.

However, concerned Engineer-in-Charge /OICs will continue to monitor such cases so as to minimize the impact on Projects/O&M plants due to non performance of Vendors/ Suppliers/Contractors/ Consultants in all such cases.

5.0 **REVIEW & RESTORATION OF PARITES PUT ON HOLIDAY**



- 5.1 An order for Holiday passed for a certain specified period shall deemed to have been automatically revoked on the expiry of that specified period and it will not be necessary to issue a specific formal order of revocation.

Further, in case Vendor/ Supplier/Contractor/ Consultant is put on holiday due to quality, and new order is placed on bidder after restoration of Vendor/ Supplier/Contractor/ Consultant, such order will be properly monitored during execution stage by the concerned site.

6.0 **EFFECT OF HOLIDAY**

- 6.1 If a Vendor/ Supplier/Contractor/ Consultant is put on Holiday, such Vendor/ Supplier/Contractor/ Consultant should not be considered in ongoing tenders/future tenders.



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6.2 However, if such Vendor/ Supplier/Contractor/ Consultant is already executing any other order/ contract and their performance is satisfactory in terms of the relevant contract, should be allowed to continue till its completion without any further increase in scope except those incidental to original scope mentioned in the contract. In such a case CPBG will not be forfeited and payment will be made as per provisions of concerned contract. However, this would be without prejudice to other terms and conditions of the contract.

6.3. Effect on other ongoing tendering:

6.3.1 After issue of the enquiry /bid/tender but before opening of Technical bid, the bid submitted by the party shall be ignored.

6.3.2 After opening Technical bid but before opening the Price bid, the Price bid of the party shall not be opened and BG/EMD submitted by the party shall be returned to the party.

6.3.3 After opening of price, BG/EMD made by the party shall be returned; the offer of the party shall be ignored & will not be further evaluated. If errant party emerges as the lowest (L1), then such tender shall also be cancelled and re-invited.

7.0 While putting the Vendor/ Supplier/Contractor/ Consultant on holiday as per the procedure, the holding company, subsidiary, joint venture, sister concerns, group division of the errant Vendor/ Supplier/Contractor/ Consultant shall not be considered for putting on holiday list.

Any bidder, put on holiday, will not be allowed to bid through consortium route also in new tender during the period of holiday.

8.0 If an unsuccessful bidder makes any vexatious, frivolous or malicious complaint against the tender process with the intention of delaying or defeating any procurement or causing loss to OWNER or any other bidder, such bidder will be put on holiday for a period of six months, if such complaint is proved to be vexatious, frivolous or malicious, after following the due procedure.



**9. APPEAL AGAINST THE DECISION OF THE COMPETENT AUTHORITY:**

(a) The party may file an appeal against the order of the Competent Authority for putting the party on Holiday list. The appeal shall be filed to Appellate Authority. Such an appeal shall be preferred within one month from the date of receipt of Holiday order.

(b) Appellate Authority would consider the appeal and pass appropriate order which shall be communicated to the party as well as the Competent Authority.

(c) Appeal process may be completed within 45 days of filing of appeal with the Appellate Authority.

(d) "Appellate Authority" shall mean Board of Directors of OWNER.



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10. **ERRANT BIDDER**

In case after price bid opening the lowest evaluated bidder (L1) is not awarded the job for any mistake committed by him in bidding or withdrawal of bid or modification of bid or varying any term in regard thereof leading to re-tendering, OWNER shall forfeit EMD paid by the bidder and such bidders shall be debarred from participation in re-tendering of the same job(s)/item(s).

Further, such bidder will be put on holiday for a period of six months after following the due procedure.

11. In case CBIC (Central Board of Indirect Taxes and Customs)/ any equivalent Central Government agency/ State Government agency brings to the notice of OWNER that the Supplier of Goods / Services (Service Provider) has not remitted the amount towards GST (CGST & SGST/UTGST or IGST) collected from OWNER to the government exchequer, then party will be put on holiday for a period of six months after following the due procedure.

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Appendix-1

**TALCHER FERTILIZERS LIMITED  
PERFORMANCE RATING DATA SHEET  
(FOR PROJECTS/ CONSULTANCY JOBS)**

- i) Project/Work Centre :
- ii) Order/ Contract No. & date :
- iii) Brief description of Items Works/Assignment :
- iv) Order/Contract value (Rs.) :
- v) Name of Vendor/Supplier/ Contractor/ Consultant :
- vi) Contracted delivery/ Completion Schedule :
- vii) Actual delivery/ Completion date :

Performance Parameter	Delivery/ Completion Performance	Quality Performance	Reliability Performance#	Total
Maximum Marks	40	40	20	100
Marks Allocated				

Note:

Remarks (if any)

PERFORMANCE RATING (\*\*)

Note :

(#) Vendor/Supplier/Contractor/Consultant who seek repeated financial assistance or deviation beyond contract payment term or seeking direct payment to the sub-vendor/sub-contractor due to financial constraints, then '0' marks should be allotted against Reliability Performance.

(\*) Allocation of marks should be as per enclosed instructions



(\*\*) Performance rating shall be classified as under :

Sl. No.	Range (Marks)	Rating
1	60 & below	POOR
2	61-75	FAIR
3	76-90	GOOD
4	More than 90	VERY GOOD

Signature of  
Authorised Signatory:

Name:

Designation:

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### Instructions for allocation of marks

1. Marks are to be allocated as under :

#### 1.1 DELIVERY/ COMPLETION PERFORMANCE 40 Marks

Delivery Period/ Completion Schedule	Delay in Weeks	Marks
a) Upto 3 months	Before CDD	40
	Delay upto 4 weeks	35
	" 8 weeks	30
	" 10 weeks	25
	" 12 weeks	20
	" 16 weeks	15
	More than 16 weeks	0
b) Above 3 months	Before CDD	40
	Delay upto 4 weeks	35
	" 8 weeks	30
	" 10 weeks	25
	" 16 weeks	20
	" 20 weeks	15
	" 24 weeks	10
More than 24 weeks	0	



#### 1.2 QUALITY PERFORMANCE 40 Marks

For Normal Cases : No Defects/ No Deviation/ No failure: 40 marks



i) Rejection/Defects	Marks to be allocated on prorata basis for acceptable quantity as compared to total quantity for normal cases	10 marks
ii) When quality failure endanger system integration and safety of the system	- Failure of severe nature	0 marks
	- Moderate nature	5 marks
	- low severe nature	10-25 marks
iii) Number of deviations	1. No deviation	5 marks
	2. No. of deviations $\leq 2$	2 marks
	3. No. of deviations $> 2$	0 marks

#### 1.3 RELIABILITY PERFORMANCE 20 Marks

A.	FOR WORKS/CONTRACTS	
i)	Submission of order acceptance, agreement, PBG, Drawings and other documents within time	4 marks

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ii)	Mobilization of resources as per Contract and in time	4 marks
iii)	Liquidation of Check-list points	4 marks
iv)	Compliance to statutory and HS&E requirements or Reliability of Estimates/Design/Drawing etc. in case of Consultancy jobs	4 marks
v)	Timely submission of estimates and other documents for Extra, Substituted & AHR items	4 marks
<b>B.</b>	<b>FOR SUPPLIES</b>	
i)	Submission of order acceptance, PBG, Drawings and other documents within time	5 marks
ii)	Attending complaints and requests for after sales service/ warranty repairs and/ or query/ advice (upto the evaluation period).	5 marks
iii)	Response to various correspondence and conformance to standards like ISO	5 marks
iv)	Submission of all required documents including Test Certificates at the time of supply	5 marks

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Apendix-2

**TALCHER FERTILIZERS LIMITED  
PERFORMANCE RATING DATA SHEET  
(FOR O&M)**

- i) Location :
- ii) Order/ Contract No. & date :
- iii) Brief description of Items Works/Assignment :
- iv) Order/Contract value (Rs.) :
- v) Name of Vendor/Supplier/ Contractor/ Consultant :
- vi) Contracted delivery/ Completion Schedule :
- vii) Actual delivery/ Completion date :

Performance Parameter	Delivery Performance	Quality Performance	Reliability Performance#	Total
Maximum Marks	40	40	20	100
Marks Allocated (*)				

Remarks (if any)

PERFORMANCE RATING (\*\*)

Note :



(#) Vendor/Supplier/Contractor/Consultant who seek repeated financial assistance or deviation beyond contract payment term or seeking direct payment to the sub-vendor/sub-contractor due to financial constraints, then '0' marks should be allotted against Reliability Performance

(\*) Allocation of marks should be as per enclosed instructions

(\*\*) Performance rating shall be classified as under :

Sl. No.	Range (Marks)	Rating
1	60 & below	POOR
2	61-75	FAIR
3	76-90	GOOD
4	More than 90	VERY GOOD

Signature of  
Authorised Signatory:  
Name:  
Designation:

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### Instructions for allocation of marks (For O&M)

1. Marks are to be allocated as under :

#### 1.1 DELIVERY/ COMPLETION PERFORMANCE 40 Marks

Delivery Period/ Completion Schedule	Delay in Weeks	Marks
a) Upto 3 months	Before CDD	40
	Delay upto 4 weeks	35
	" 8 weeks	30
	" 10 weeks	25
	" 12 weeks	20
	" 16 weeks	15
	More than 16 weeks	0
b) Above 3 months	Before CDD	40
	Delay upto 4 weeks	35
	" 8 weeks	30
	" 10 weeks	25
	" 16 weeks	20
	" 20 weeks	15
	" 24 weeks	10
More than 24 weeks	0	

#### 1.2 QUALITY PERFORMANCE 40 Marks



For Normal Cases : No Defects/ No Deviation/ No failure: 40 marks

i) Rejection/Defects	Marks to be allocated on prorata basis for acceptable quantity as compared to total quantity for normal cases	10 marks
ii) When quality failure endanger system integration and safety of the system	- Failure of severe nature	0 marks
	- Moderate nature	5 marks
	- low severe nature	10-25 marks
iii) Number of deviations	1. No deviation	5 marks
	2. No. of deviations $\leq 2$	2 marks
	3. No. of deviations $> 2$	0 marks



#### 1.3 RELIABILITY PERFORMANCE 20 Marks

A.	FOR WORKS/CONTRACTS	
i)	Submission of order acceptance, agreement, PBG, Drawings and other documents within time	4 marks



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ii)	Mobilization of resources as per Contract and in time	4 marks
iii)	Liquidation of Check-list points	4 marks
iv)	Compliance to statutory and HS&E requirements or Reliability of Estimates/Design/Drawing etc. in case of Consultancy jobs	4 marks
v)	Timely submission of estimates and other documents for Extra, Substituted & AHR items	4 marks
<b>B.</b>	<b>FOR SUPPLIES</b>	
i)	Submission of order acceptance, PBG, Drawings and other documents within time	5 marks
ii)	Attending complaints and requests for after sales service/ warranty repairs and/ or query/ advice (upto the evaluation period).	5 marks
iii)	Response to various correspondence and conformance to standards like ISO	5 marks
iv)	Submission of all required documents including Test Certificates at the time of supply	5 marks



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### ANNEXURE-III



#### **ADDENDUM TO INSTRUCTIONS TO BIDDERS (INSTRUCTIONS FOR PARTICIPATION IN CPP PORTAL)**

**Instructions to the Bidders to submit the bids online through the Central Public Procurement Portal for e-Procurement at <https://eprocure.gov.in/eprocure/app>**

1. Possession of valid Digital Signature Certificate (DSC) and enrolment/registration of the contractors/bidders on the e-procurement/ e-tender portal is a prerequisite for e-tendering.
2. Bidder should do the enrolment in the e-procurement site using the "Click here to Enroll" option available on the home page. Portal enrolment is generally free of charge. During enrolment/registration, the bidders should provide the correct/true information including valid email id. All the correspondence shall be made directly with the contractors/bidders through email id provided.
3. Bidder need to login to the site thro' their user ID/ password chosen during enrolment/registration.
4. Then the Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by SIFY / TCS / nCode / eMudra or any Certifying Authority recognized by CCA India on eToken / Smart Card, should be registered.
5. The DSC that is registered only should be used by the bidder and should ensure safety of the same.
6. Bidder may go through the NIT / tenders published on the site and download the required NIT documents/schedules for the tenders he/she is interested.
7. After downloading / getting the NIT/ Tender document/schedules, the Bidder should go thru' them carefully and then submit the documents as asked, otherwise bid will be rejected.
8. If there are any clarifications, this may be obtained online thro' the tender site, or thro' the contact details. Bidder should take into account the corrigendum published before submitting the bids online.
9. Bidder then logs in to the site through the secured log in by giving the user id/ password chosen during enrolment/registration and then by giving the password of the e-Token / Smart Card to access DSC.
10. Bidder selects the tender which he/she is interested in by using the search option & then moves it to the 'my tenders' folder.
11. From my tender folder, he / she selects the tender to view all the details indicated.
12. It is construed that the bidder has read all the terms and conditions before submitting their offer. Bidder should go through the tender schedules carefully and upload the documents as asked otherwise, the bid will be rejected.

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13. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document/schedule and generally, they can be in PDF/xls/rar/zip/dwf formats. If there is more than one document, they can be clubbed together and can be provided in the requested format. Each document to be uploaded through online for the tenders should be less than 2 MB. If any document is more than 2MB, it can be reduced through zip/rar and the same can be uploaded, if permitted. Bidders Bid documents may be scanned with 100 dpi with black and white option. However of the file size is less than 1 MB the transaction uploading time will be very fast.
14. If there are any clarifications, this may be obtained through the site, or during the pre-bid meeting if any. Bidder should take into account the corrigendum published from time to time before submitting the online bids.
15. The Bidders can update well in advance, the documents such as certificates, annual report details etc., under My Space option and these can be selected as per tender requirements and then send along with bid documents during bid submission. This will facilitate the bid submission process faster by reducing upload time of bids.
16. Bidder should submit the EMD as specified in the tender. The original should be posted/couriered/given in person to the Tender Inviting Authority, within the bid submission due date & time for the tender. Scanned copy of the instrument should be uploaded as part of the offer.
17. While submitting the bids online, the bidder reads the terms & conditions and accepts the same to proceed further to submit the bid packets.
18. The bidder has to select the payment option as offline to pay the Tender Fee/ EMD as applicable and enter details of the instruments.
19. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise submitted bid will not be acceptable.
20. The bidder has to digitally sign and upload the required bid documents one by one as indicated. Bidders to note that the very act of using DSC for downloading the bids and uploading their offers shall be deemed to be a confirmation that they have read all sections and pages of the bid document including General conditions of contract without any exception and have understood the entire document and are clear about the requirements of the tender requirements.
21. The bidder has to upload the relevant files required as indicated in the cover content. In case of any irrelevant files, the bid will be rejected.
22. If the price bid format is provided in a spread sheet file like BoQ\_xxxx.xls, the rate offered should be entered in the allotted space only and uploaded after filling the relevant columns. The Price Bid / BOQ template must not be modified/ replaced by the bidder; else the bid submitted is liable to be rejected for this tender.
23. The bidders are requested to submit the bids through online e-tendering system to the Tender Inviting Authority (TIA) well before the bid submission end date & time (as per Server System Clock). The TIA will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders at the eleventh hour.

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24. After the bid submission (i.e. after Clicking “Freeze Bid Submission” in the portal), the acknowledgement number, given by the system should be printed by the bidder and kept as a record of evidence for online submission of bid for the particular tender and will also act as an entry pass to participate in the bid opening date.
25. The time settings fixed in the server side & displayed at the top of the tender site, will be valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system. The bidders should follow this time during bid submission.
26. All the data being entered by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered will not viewable by unauthorized persons during bid submission & not be viewable by any one until the time of bid opening.
27. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.
28. The confidentiality of the bids is maintained since the secured Socket Layer 128 bit encryption technology is used. Data storage encryption of sensitive fields is done.
29. The bidder should logout of the tendering system using the normal logout option available at the top right hand corner and not by selecting the (X) exit option in the browser.

**Note:**

A bidder shall submit only one bid in the same bidding process. A Bidder who submits more than one bid will cause all their bids disqualified in the said bidding process.



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**ANNEXURE-IV**



**BIDDING DATA SHEET (BDS)**

**ITB TO BE READ IN CONJUNCTION WITH THE FOLLOWING:**

<b>A. GENERAL</b>					
<b>ITB clause</b>	<b>Description</b>				
1.2	The Invitation for Bids/ Tender no is : PNP/PC-183/E/203/NCB				
1.1	The Employer/Owner is: TALCHER FERTILIZERS LIMITED				
2.1	The name of the Works/Services to be performed is: RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA				
3.0	BIDS FROM CONSORTIUM/ JOINT VENTURE <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>APPLICABLE</td> <td align="center"><input type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td align="center"><input checked="" type="checkbox"/></td> </tr> </table>	APPLICABLE	<input type="checkbox"/>	NOT APPLICABLE	<input checked="" type="checkbox"/>
APPLICABLE	<input type="checkbox"/>				
NOT APPLICABLE	<input checked="" type="checkbox"/>				
<b>B. BIDDING DOCUMENT</b>					
<b>ITB clause</b>	<b>Description</b>				
8.1	For <b><u>clarification purposes</u></b> only, the communication address is: Projects & Development India Limited, (Project Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida , (India) Fax no.:0120-2529801  Kind Attention: Mr. R.R.Kumar/ Mr. Kailash Joshi Addl. General Manager & HOD (PM) Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 314/304 Fax no. : +91-120-2529801 E-mail : <a href="mailto:rrkumar@pdilin.com">rrkumar@pdilin.com</a> <a href="mailto:kjoshi@pdilin.com">kjoshi@pdilin.com</a>				
<b>C. PREPARATION OF BIDS</b>					
<b>ITB clause</b>	<b>Description</b>				
12.0	Additional Provision for Schedule of Rate/ Bid Price are as under: <b>[Please refer Section VII, Schedule of Rate]</b>				
14.0	The currency of the Bid shall be INR				
15.0	The bid validity period shall be <b>120 days from final 'Bid Due Date'</b> .				



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<b>D. SUBMISSION AND OPENING OF BIDS</b>					
<b>ITB clause</b>	<b>Description</b>				
<b>22.3 and 4.0 of IFB</b>	<p>For <b>bid submission purposes</b>, submission of physical document as per clause no. 4.0 of IFB, the address to which documents are to be sent is : Projects &amp; Development India Limited, (Project Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida , (India) Fax no.:0120-2529801</p> <p>Kind Attention: Mr. R.R.Kumar / Mr. Kailash Joshi Addl. General Manager &amp; HOD (PM)</p>				
<b>E. EVALUATION, AND COMPARISON OF BIDS</b>					
<b>ITB clause</b>	<b>Description</b>				
<b>32.0</b>	Evaluation Methodology is mentioned in Section-II.				
<b>33.0</b>	Compensation for Extended Stay: <table border="1" style="margin-left: 40px;"> <tr> <td>APPLICABLE</td> <td><input type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	APPLICABLE	<input type="checkbox"/>	NOT APPLICABLE	<input checked="" type="checkbox"/>
APPLICABLE	<input type="checkbox"/>				
NOT APPLICABLE	<input checked="" type="checkbox"/>				
<b>F. AWARD OF CONTRACT</b>					
<b>ITB clause</b>	<b>Description</b>				
<b>37.0</b>	State of which stamp paper is required for Contract Agreement: Uttar Pradesh / State where Bidder's registered office is located				
<b>38.0</b>	Contract Performance Security/ Security Deposit <table border="1" style="margin-left: 40px;"> <tr> <td>APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td><input type="checkbox"/></td> </tr> </table> <p>Contract Performance Security @ 3% of Total Order/ Contract Value (excluding GST) within 30 days of FOA/ notification of award.</p>	APPLICABLE	<input checked="" type="checkbox"/>	NOT APPLICABLE	<input type="checkbox"/>
APPLICABLE	<input checked="" type="checkbox"/>				
NOT APPLICABLE	<input type="checkbox"/>				
<b>40.0</b>	Whether tendered item is splitable or divisible : <table border="1" style="margin-left: 40px;"> <tr> <td>YES</td> <td><input type="checkbox"/></td> </tr> <tr> <td>NO</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
YES	<input type="checkbox"/>				
NO	<input checked="" type="checkbox"/>				

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<b>41.0</b>	Provision of AHR Item :	APPLICABLE	<input checked="" type="checkbox"/>
		NOT APPLICABLE	<input type="checkbox"/>
<b>49.0</b>	Quarterly Closure of Contract	APPLICABLE	<input checked="" type="checkbox"/>
		NOT APPLICABLE	<input type="checkbox"/>
<b>50.0</b>	Provisions for Startups	APPLICABLE	<input type="checkbox"/>
		NOT APPLICABLE	<input checked="" type="checkbox"/>
<b>Clause no. 27.3 of GCC</b>	Bonus for Early Completion:	APPLICABLE	<input type="checkbox"/>
		NOT APPLICABLE	<input checked="" type="checkbox"/>



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**ANNEXURE-V**

**POLICY TO PROVIDE PURCHASE PREFERENCE (LINKED WITH LOCAL CONTENT)**

No. P-45021/2/2017-PP (BE-II)  
Government of India  
Ministry of Commerce and Industry  
Department for Promotion of Industry and Internal Trade  
(Public Procurement Section)

Udyog Bhawan, New Delhi  
Dated: 16<sup>th</sup> September, 2020

To

All Central Ministries/Departments/CPSUs/All concerned

**ORDER**

**Subject: Public Procurement (Preference to Make in India), Order 2017– Revision; regarding.**

Department for Promotion of Industry and Internal Trade, in partial modification [Paras 2, 3, 5, 10 & 13] of Order No.P-45021/2/2017-B.E.-II dated 15.6.2017 as amended by Order No.P-45021/2/2017-B.E.-II dated 28.05.2018, Order No.P-45021/2/2017-B.E.-II dated 29.05.2019 and Order No.P-45021/2/2017-B.E.-II dated 04.06.2020, hereby issues the revised 'Public Procurement (Preference to Make in India), Order 2017' dated 16.09.2020 effective with immediate effect.

**Whereas** it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

**Whereas** procurement by the Government is substantial in amount and can contribute towards this policy objective, and

**Whereas** local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them,

**Now therefore the following Order is issued:**

1. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017.
2. **Definitions:** For the purposes of this Order:

*'Local content'* means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

*'Class-I local supplier'* means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-I local supplier' under this Order.

.....Contd. p/2



'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-II local supplier' but less than that prescribed for 'Class-I local supplier' under this Order.

'Non - Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for 'Class-II local supplier' under this Order.

'L1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

'Margin of purchase preference' means the maximum extent to which the price quoted by a "Class-I local supplier" may be above the L1 for the purpose of purchase preference.

'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services or works.

'Procuring entity' means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

'Works' means all works as per Rule 130 of GFR- 2017, and will also include 'turnkey works'.

### **3. Eligibility of 'Class-I local supplier'/ 'Class-II local supplier'/ 'Non-local suppliers' for different types of procurement**

(a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.

(b) Only 'Class-I local supplier' and 'Class-II local supplier', as defined under the Order, shall be eligible to bid in procurements undertaken by procuring entities, except when Global tender enquiry has been issued. In global tender enquiries, 'Non-local suppliers' shall also be eligible to bid along with 'Class-I local suppliers' and 'Class-II local suppliers'. In procurement of all goods, services or works, not covered by sub-para 3(a) above, and with estimated value of purchases less than Rs. 200 Crore, in accordance with Rule 161(iv) of GFR, 2017, Global tender enquiry shall not be issued except with the approval of competent authority as designated by Department of Expenditure.

(c) For the purpose of this Order, works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.

.....Contd. p/3



### 3A. Purchase Preference

(a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to 'Class-I local supplier' in procurements undertaken by procuring entities in the manner specified here under.

(b) In the procurements of goods or works, which are covered by para 3(b) above and which are divisible in nature, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.
- ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L1 bidder.

(c) In the procurements of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.
- ii. If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
- iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.

.....Contd. p/4



(d) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by procuring entities.

**3B. Applicability in tenders where contract is to be awarded to multiple bidders -** In tenders where contract is awarded to multiple bidders subject to matching of L1 rates or otherwise, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

a) In case there is sufficient local capacity and competition for the item to be procured, as notified by the nodal Ministry, only Class I local suppliers shall be eligible to bid. As such, the multiple suppliers, who would be awarded the contract, should be all and only 'Class I Local suppliers'.

b) In other cases, 'Class II local suppliers' and 'Non local suppliers' may also participate in the bidding process along with 'Class I Local suppliers' as per provisions of this Order.

c) If 'Class I Local suppliers' qualify for award of contract for at least 50% of the tendered quantity in any tender, the contract may be awarded to all the qualified bidders as per award criteria stipulated in the bid documents. However, in case 'Class I Local suppliers' do not qualify for award of contract for at least 50% of the tendered quantity, purchase preference should be given to the 'Class I local supplier' over 'Class II local suppliers' / 'Non local suppliers' provided that their quoted rate falls within 20% margin of purchase preference of the highest quoted bidder considered for award of contract so as to ensure that the 'Class I Local suppliers' taken in totality are considered for award of contract for at least 50% of the tendered quantity.

d) First purchase preference has to be given to the lowest quoting 'Class-I local supplier', whose quoted rates fall within 20% margin of purchase preference, subject to its meeting the prescribed criteria for award of contract as also the constraint of maximum quantity that can be sourced from any single supplier. If the lowest quoting 'Class-I local supplier', does not qualify for purchase preference because of aforesaid constraints or does not accept the offered quantity, an opportunity may be given to next higher 'Class-I local supplier', falling within 20% margin of purchase preference, and so on.

e) To avoid any ambiguity during bid evaluation process, the procuring entities may stipulate its own tender specific criteria for award of contract amongst different bidders including the procedure for purchase preference to 'Class-I local supplier' within the broad policy guidelines stipulated in sub-paras above.

**4. Exemption of small purchases:** Notwithstanding anything contained in paragraph 3, procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.

**5. Minimum local content:** The 'local content' requirement to categorize a supplier as 'Class-I local supplier' is minimum 50%. For 'Class-II local supplier', the 'local content' requirement is minimum 20%. Nodal Ministry/ Department may prescribe only a higher

.....Contd. p/5



percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier'/ 'Class-II local supplier'. For the items, for which Nodal Ministry/ Department has not prescribed higher minimum local content notification under the Order, it shall be 50% and 20% for 'Class-I local supplier'/ 'Class-II local supplier' respectively.

6. **Margin of Purchase Preference:** The margin of purchase preference shall be 20%.
7. **Requirement for specification in advance:** The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.
8. **Government E-marketplace:** In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.
9. **Verification of local content:**
  - a. The 'Class-I local supplier'/ 'Class-II local supplier' at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier'/ 'Class-II local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made.
  - b. In cases of procurement for a value in excess of Rs. 10 crores, the 'Class-I local supplier'/ 'Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
  - c. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.
  - d. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.
  - e. Nodal Ministries and procuring entities may prescribe fees for such complaints.
  - f. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.



- g. A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9h below.
- h. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:
  - i. The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner;
  - ii. on a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s);
  - iii. in respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted.

**10. Specifications in Tenders and other procurement solicitations:**

- a. Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.
- b. Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of 'Class-I local supplier'/ 'Class-II local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.
- c. Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above.

**d. Reciprocity Clause**

- i. When a Nodal Ministry/Department identifies that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, due to restrictive tender conditions which have direct or indirect effect of barring Indian companies such as registration in the procuring country, execution of projects of specific value in the procuring country etc., it shall provide such details to all its procuring entities including CMDs/CEOs of PSEs/PSUs, State Governments and other procurement agencies under their administrative control and GeM for appropriate reciprocal action.

.....Contd. p/7



- ii. Entities of countries which have been identified by the nodal Ministry/Department as not allowing Indian companies to participate in their Government procurement for any item related to that nodal Ministry shall not be allowed to participate in Government procurement in India for all items related to that nodal Ministry/ Department, except for the list of items published by the Ministry/ Department permitting their participation.
  - iii. The stipulation in (ii) above shall be part of all tenders invited by the Central Government procuring entities stated in (i) above. All purchases on GeM shall also necessarily have the above provisions for items identified by nodal Ministry/ Department.
  - iv. State Governments should be encouraged to incorporate similar provisions in their respective tenders.
  - v. The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.
- e. Specifying foreign certifications/ unreasonable technical specifications/ brands/ models in the bid document is restrictive and discriminatory practice against local suppliers. If foreign certification is required to be stipulated because of non-availability of Indian Standards and/or for any other reason, the same shall be done only after written approval of Secretary of the Department concerned or any other Authority having been designated such power by the Secretary of the Department concerned.
- f. "All administrative Ministries/Departments whose procurement exceeds Rs. 1000 Crore per annum shall notify/ update their procurement projections every year, including those of the PSEs/PSUs, for the next 5 years on their respective website."

**10A. Action for non-compliance of the Provisions of the Order:** In case restrictive or discriminatory conditions against domestic suppliers are included in bid documents, an inquiry shall be conducted by the Administrative Department undertaking the procurement (including procurement by any entity under its administrative control) to fix responsibility for the same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such actions shall be sent to the Standing Committee.

**11. Assessment of supply base by Nodal Ministries:** The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing the higher minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.

**12. Increase in minimum local content:** The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.



**13. Manufacture under license/ technology collaboration agreements with phased indigenization:** While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content.

13A. In procurement of all goods, services or works in respect of which there is substantial quantity of public procurement and for which the nodal ministry has not notified that there is sufficient local capacity and local competition, the concerned nodal ministry shall notify an upper threshold value of procurement beyond which foreign companies shall enter into a joint venture with an Indian company to participate in the tender. Procuring entities, while procuring such items beyond the notified threshold value, shall prescribe in their respective tenders that foreign companies may enter into a joint venture with an Indian company to participate in the tender. The procuring Ministries/Departments shall also make special provisions for exempting such joint ventures from meeting the stipulated minimum local content requirement, which shall be increased in a phased manner.

**14. Powers to grant exemption and to reduce minimum local content:** The administrative Department undertaking the procurement (including procurement by any entity under its administrative control), with the approval of their Minister-in-charge, may by written order, for reasons to be recorded in writing,

- a. reduce the minimum local content below the prescribed level; or
- b. reduce the margin of purchase preference below 20%; or
- c. exempt any particular item or supplying entities from the operation of this Order or any part of the Order.

A copy of every such order shall be provided to the Standing Committee and concerned Nodal Ministry / Department. The Nodal Ministry / Department concerned will continue to have the power to vary its notification on Minimum Local Content.

**15. Directions to Government companies:** In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order.

**16. Standing Committee:** A standing committee is hereby constituted with the following membership:

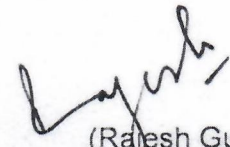
Secretary, Department for Promotion of Industry and Internal Trade—Chairman  
Secretary, Commerce—Member  
Secretary, Ministry of Electronics and Information Technology—Member  
Joint Secretary (Public Procurement), Department of Expenditure—Member  
Joint Secretary (DPIIT)—Member-Convenor

.....Contd. p/9



The Secretary of the Department concerned with a particular item shall be a member in respect of issues relating to such item. The Chairman of the Committee may co-opt technical experts as relevant to any issue or class of issues under its consideration.



17. **Functions of the Standing Committee:** The Standing Committee shall meet as often as necessary, but not less than once in six months. The Committee
- a. shall oversee the implementation of this order and issues arising therefrom, and make recommendations to Nodal Ministries and procuring entities.
  - b. shall annually assess and periodically monitor compliance with this Order
  - c. shall identify Nodal Ministries and the allocation of items among them for issue of notifications on minimum local content
  - d. may require furnishing of details or returns regarding compliance with this Order and related matters
  - e. may, during the annual review or otherwise, assess issues, if any, where it is felt that the manner of implementation of the order results in any restrictive practices, cartelization or increase in public expenditure and suggest remedial measures
  - f. may examine cases covered by paragraph 13 above relating to manufacture under license/ technology transfer agreements with a view to satisfying itself that adequate mechanisms exist for enforcement of such agreements and for attaining the underlying objective of progressive indigenization
  - g. may consider any other issue relating to this Order which may arise.
18. **Removal of difficulties:** Ministries /Departments and the Boards of Directors of Government companies may issue such clarifications and instructions as may be necessary for the removal of any difficulties arising in the implementation of this Order.
19. **Ministries having existing policies:** Where any Ministry or Department has its own policy for preference to local content approved by the Cabinet after 1<sup>st</sup> January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order.
20. **Transitional provision:** This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.



(Rajesh Gupta)  
Director

Tel: 23063211

[rajesh.gupta66@gov.in](mailto:rajesh.gupta66@gov.in)



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### **POLICY TO PROVIDE PURCHASE PREFERENCE (LINKED WITH LOCAL CONTENT)**

In tune with Make in India (MII), the government has decided to incentivize the growth of local content in goods and services with objective to Support and boost the growth of Domestic Manufacturing sector.

#### **Salient Points of Public Procurement (Preference to Make in India) Policy**

<b>Sr. No.</b>	<b>Description</b>	<b>Parameter / Document</b>
<b>1</b>	<b>Minimum Local Content for Availing Preference under this Policy</b>	50%
<b>2</b>	<b>Margin of Purchase Preference</b>	20%
<b>3</b>	<b>Documents to be submitted by bidder for availing Purchase Preference under this Policy (*)</b>	<p><del>(a) Self-Certificate from bidder as per <b>Form F-22</b></del></p> <p>OR</p> <p>(b) Certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant as per <b>Form F-23</b>.</p>
<b>4</b>	<b>Whether tender is divisible or not divisible</b>	Not Divisible

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**ANNEXURE-VI**

**FORMS & FORMAT**

**LIST OF FORMS & FORMAT**

<b>Form No.</b>	<b>Description</b>
F-1	BIDDER'S GENERAL INFORMATION
F-2	DECLARATION FOR BID SECURITY
F-3	LETTER OF AUTHORITY
F-4	PROFORMA OF "BANK GUARANTEE" FOR "CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT"
F-5	AGREED TERMS & CONDITIONS
F-6	ACKNOWLEDGEMENT CUM CONSENT LETTER
F-7	BIDDER'S EXPERIENCE
F-8	CHECK LIST
F-9	FORMAT FOR CERTIFICATE FROM BANK IF BIDDER'S WORKING CAPITAL IS INADEQUATE
F-10	FORMAT FOR CHARTERED ACCOUNTANT CERTIFICATE FOR FINANCIAL CAPABILITY OF THE BIDDER
F-11	BIDDER'S QUERIES FOR PRE BID MEETING
F-12	E-BANKING FORMAT
F-13	INTEGRITY PACT
F-14	INDEMNITY BOND
F-15	POWER OF ATTORNEY
F-16	PROFORMA OF CONTRACT AGREEMENT
F-17	FAQ
F-18	SELF DECLARATION AGAINST POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS IN GOVERNMENT PROCUREMENT
F-19	FORMAT FOR UNDERTAKING FROM TPIA
F-20	UNDERTAKING ON LETTERHEAD REGARDING PROVISIONS FOR PROCUREMENT FROM A BIDDER WHICH SHARES A LAND BORDER WITH INDIA
F-21	CERTIFICATE FOR TENDERS FOR WORKS INVOLVING POSSIBILITY OF SUB-CONTRACTING
F-22	DECLARATION BY BIDDER TOWARDS MINIMUM LOCAL CONTENT (FOR SUPPLY OF GOODS / SERVICES / WORKS / EPC / LSTK )
F-23	CERTIFICATE FROM STATUTORY AUDITOR OR COST AUDITOR OF THE COMPANY (IN THE CASE OF COMPANIES) OR FROM A PRACTICING COST ACCOUNTANT OR PRACTICING CHARTERED ACCOUNTANT (IN RESPECT OF SUPPLIERS OTHER THAN COMPANIES) TOWARDS MINIMUM LOCAL CONTENT
F-24	UNDERTAKING REGARDING SUBMISSION CONTRACT PERFORMANCE SECURITY(CPS) / SECURITY DEPOSIT (SD) WITHIN STIPULATED TIME LINE
F-25	UNDERTAKING REGARDING SUBMISSION OF ELECTRONIC INVOICE (E-INVOICE AS PER GST LAWS)

**Note : For Applicability of above, refer to relevant Forms.**

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**F-1**



**BIDDER'S GENERAL INFORMATION**

To,

**M/s TALCHER FERTILIZERS LIMITED  
NOIDA**

TENDER NO.:

1	Bidder Name	
2	Status of Firm	Proprietorship Firm/Partnership firm/ Limited/Others If Others Specify: _____ [Enclose certificate of Registration]
3	Name of Proprietor/Partners/Directors of the firm/company	
4	Number of Years in Operation	
5	Address of Registered Office: *In case of Partnership firm, enclose letter mentioning current address of the firm and the full names and current addresses of all the partners of the firm.	City: District: State: PIN/ZIP:
6	<b>Bidder's address where order/contract is to be placed</b>	City: District: State: PIN/ZIP:
7	Address from where Goods/ Services are to be dispatched/ provided along with GST no. <b>(In case supply of Goods/ Services are from multiple locations, addresses and GST no. of all such locations are to be provided).</b>	City: District: State: PIN/ZIP: GST No.:
8	Telephone Number of address where order is to be placed	_____ (Country Code) (Area Code) (Telephone No.)
9	E-mail address	
10	Website	



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11	ISO Certification, if any	{If yes, please furnish details}
12	PAN No.	[Enclose copy of PAN Card]
13	GST No.(refer sl. no. 8 above)	[Enclose copy of GST Certificate]
14	EPF Registration No.	[Enclose copy of EPF Registration Certificate]
15	ESI code No.	[Enclose copy of relevant document]
16	Whether Micro or Small Enterprise	Yes / No (If Yes, Bidder to submit requisite documents as specified in ITB: Clause No. 40)
17	Bidder's Offer no. and date	
18	Whether Bidder is Startups or not	Yes / No (If Yes, Bidder to submit requisite documents as specified in ITB: Clause No. 50)
19	In case of Start-up confirm the following:  (i) Date of its incorporation/ registration (ii) Whether turnover for any financial years since incorporation/ registration has exceed Rs.25 Crores.	

Place:  
Date:

[Signature of Authorized Signatory of Bidder]  
Name:  
Designation:  
Seal:



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**F-2**

**DECLARATION FOR BID SECURITY  
(To be submitted on Letter head of Bidder)**

To,

M/s TALCHER FERTILIZERS LIMITED

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SUB:

TENDER NO:

Dear Sir,

After examining / reviewing provisions of above referred tender documents (including all corrigendum/ Addenda), we M/s \_\_\_\_\_ (Name of Bidder) have submitted our offer/ bid no. \_\_\_\_\_.

We, M/s \_\_\_\_\_ (Name of Bidder) hereby understand that, according to your conditions, we are submitting this Declaration for Bid Security.

We understand that we will be put on watch list/holiday/ banning list (as per policies of TALCHER FERTILIZERS LIMITED in this regard), if we are in breach of our obligation(s) as per following:

- (a) have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid during the period of bid validity specified in the form of Bid; or
- (b) having been notified of the acceptance of our Bid by the TALCHER FERTILIZERS LIMITED during the period of bid validity:
  - (i) fail or refuse to execute the Contract, if required, or
  - (ii) fail or refuse to furnish the Contract Performance Security, in accordance provisions of tender document.
  - (iii) fail or refuse to accept 'arithmetical corrections' as per provision of tender document.
- (c) having indulged in corrupt/fraudulent /collusive/coercive practice as per procedure.

Place:



Date:

[Signature of Authorized Signatory of Bidder]

Name:

Designation:

Seal:

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**F-3**  
**LETTER OF AUTHORITY**

[Proforma for Letter of Authority for Attending Subsequent 'Negotiations' / 'Pre-Bid Meetings'  
/'Un-priced Bid Opening' / 'Price Bid Opening']

Ref:  
To,

Date:

**M/s TALCHER FERTILIZERS LIMITED  
NOIDA**

SUB:  
TENDER NO:

**Dear Sir,**

I/We, \_\_\_\_\_ hereby authorize the following representative(s) for attending any 'Negotiations' / 'Meetings [Pre-Bid Meeting]', 'Un-priced Bid Opening', 'Price Bid Opening' and for any subsequent correspondence / communication against the above Bidding Documents:



[1] Name & Designation \_\_\_\_\_ Signature \_\_\_\_\_  
 Phone/Cell:  
 Fax:  
 E-mail: ..... @ .....

[2] Name & Designation \_\_\_\_\_ Signature \_\_\_\_\_  
 Phone/Cell:  
 Fax:  
 E-mail: ..... @ .....

We confirm that we shall be bound by all commitments made by aforementioned authorised representative(s).

Place: [Signature of Authorized Signatory of Bidder]  
 Date: Name:  
 Designation:  
 Seal:

Note: This "Letter of Authority" should be on the "**letterhead**" of the Firm / Bidder and should be signed by a person competent and having the 'Power of Attorney' to bind the Bidder. Not more than 'two [02] persons per Bidder' are permitted to attend "Techno-commercial / Un-priced" & "Price Bid" Openings. Bidders authorized representative is required to carry a copy of this authority letter while attending the un-priced and priced bid opening, the same shall be submitted to OWNER.

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**F-4**

**PROFORMA OF "BANK GUARANTEE" FOR "CONTRACT PERFORMANCE SECURITY /  
SECURITY DEPOSIT"  
(ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)**

To, M/s Talcher Fertilizers Limited, Noida	<b>Bank Guarantee No.</b>	
	<b>Date of BG</b>	
	<b>BG Valid up to</b>	
	<b>Claim period upto (There should be three months gap between expiry date of BG &amp; Claim period)</b>	
	<b>Stamp No./e-Stamp Certificate No.</b>	

**Dear Sir(s),**



M/s. \_\_\_\_\_ having registered office at \_\_\_\_\_ (herein after called the "contractor/supplier" which expression shall wherever the context so require include its successors and assignees) have been placed/ awarded the job/work of

vide PO/DLOA /FOA No. \_\_\_\_\_ dated \_\_\_\_\_ for Talcher Fertilizers Limited having registered office at Plot 2/H, Kalpana Area, BJB Nagar, Khorda, Bhubaneswar-751014, Odisha (herein after called the "TFL" which expression shall wherever the context so require include its successors and assignees).

The Contract conditions provide that the SUPPLIER/CONTRACTOR shall pay a sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_) as full Contract Performance Guarantee in the form therein mentioned. The form of payment of Contract Performance Guarantee includes guarantee executed by Nationalized Bank/Scheduled Commercial Bank, undertaking full responsibility to indemnify Talcher Fertilizers Limited, in case of default.



The said M/s. \_\_\_\_\_ has approached us and at their request and in consideration of the premises we having our office at \_\_\_\_\_ have agreed to give such guarantee as hereinafter mentioned.

1. We \_\_\_\_\_ hereby undertake to give the irrevocable & unconditional guarantee to you that if default shall be made by M/s. \_\_\_\_\_ in performing any of the terms and conditions of the tender/order/contract or in payment of any money payable to Talcher Fertilizers Limited we shall on first demand pay without demur, contest, protest and/ or without any recourse to the contractor to TFL in such manner as TFL may direct the said amount of Rupees \_\_\_\_\_ only or

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such portion thereof not exceeding the said sum as you may require from time to time.

2. You will have the full liberty without reference to us and without affecting this guarantee, postpone for any time or from time to time the exercise of any of the powers and rights conferred on you under the order/contract with the said M/s. \_\_\_\_\_ and to enforce or to forbear from endorsing any powers or rights or by reason of time being given to the said M/s. \_\_\_\_\_ and such postponement forbearance would not have the effect of releasing the bank from its obligation under this debt.
3. Your right to recover the said sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_) from us in manner aforesaid is absolute & unequivocal and will not be affected or suspended by reason of the fact that any dispute or disputes have been raised by the said M/s. \_\_\_\_\_ and/or that any dispute or disputes are pending before any officer, tribunal or court or arbitrator or any other authority/forum and any demand made by you in the bank shall be conclusive and binding. The bank shall not be released of its obligations under these presents by any exercise by you of its liberty with reference to matter aforesaid or any of their or by reason or any other act of omission or commission on your part or any other indulgence shown by you or by any other matter or changed what so ever which under law would, but for this provision, have the effect of releasing the bank.
4. The guarantee herein contained shall not be determined or affected by the liquidation or winding up dissolution or changes of constitution or insolvency of the said supplier/contractor but shall in all respects and for all purposes be binding and operative until payment of all money due to you in respect of such liabilities is paid.
5. The bank undertakes not to revoke this guarantee during its currency without your previous consent and further agrees that the guarantee shall continue to be enforceable until it is discharged by TFL in writing. However, if for any reason, the supplier/contractor is unable to complete the supply/work within the period stipulated in the order/contract and in case of extension of the date of delivery/completion resulting extension of defect liability period/guarantee period of the supplier/contractor fails to perform the supply/work fully, the bank hereby agrees to further extend this guarantee at the instance of the supplier/contractor till such time as may be determined by TFL. If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instruction from M/s. \_\_\_\_\_ (contractor) on whose behalf this guarantee is issued.
6. Bank also agrees that TFL at its option shall be entitled to enforce this Guarantee against the bank (as principal debtor) in the first instant, without proceeding against the supplier/contractor and notwithstanding any security or other guarantee that TFL may have in relation to the supplier's/contractor's liabilities.
7. The amount under the Bank Guarantee is payable forthwith without any delay by Bank upon the written demand raised by TFL. Any dispute arising out of or in relation to the said Bank Guarantee shall be subject to the exclusive jurisdiction of courts at New Delhi.



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8. Therefore, we hereby affirm that we are guarantors and responsible to you on behalf of the Supplier/ Contractor up to a total amount of \_\_\_\_\_ (amount of guarantees in words and figures) and we undertake to pay you, upon your first written demand declaring the Supplier/Contractor to be in default under the order/contract and without caveat or argument, any sum or sums within the limits of (amounts of guarantee) as aforesaid, without your needing to prove or show grounds or reasons for your demand or the sum specified therein.
9. We have power to issue this guarantee in your favor under Memorandum and Articles of Association and the undersigned has full power to do under the Power of Attorney, dated \_\_\_\_\_ granted to him / her by the Bank.
10. Notwithstanding anything contained herein: 11.
- The Bank's liability under this Guarantee shall not exceed (currency in figures) \_\_\_\_\_ (currency in words only) \_\_\_\_\_
  - This Guarantee shall remain in force upto \_\_\_\_\_ (this date should be expiry date of defect liability period of the Contract) and any extension(s) thereof; and
  - The Bank shall be released and discharged from all liability under this Guarantee unless a written claim or demand is issued to the Bank on or before the midnight of \_\_\_\_\_ (indicate date of expiry of claim period which includes minimum three months from the expiry of this Bank Guarantee) and if extended, the date of expiry of the last extension of this Guarantee. If a claim has been received by us within the said date, all the rights of TFL under this Guarantee shall be valid and shall not cease until we have satisfied that claim.

Yours faithfully,



\_\_\_\_\_  
Bank by its Constituted Attorney

Signature of a person duly  
Authorized to sign on behalf of  
the Bank

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**INSTRUCTIONS FOR FURNISHING**  
**"CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT" BY "BANK**  
**GUARANTEE"**

1. The Bank Guarantee by successful Bidder(s) will be given on non-judicial stamp paper as per 'stamp duty' applicable. The non-judicial stamp paper should be in name of the issuing bank. In case of foreign bank, the said Bank Guarantee to be issued by its correspondent bank in India on requisite nonjudicial stamp paper and place of Bid to be considered as Delhi.
2. The Bank Guarantee by Bidders will be given from bank as specified in Tender.
3. A letter from the issuing bank of the requisite Bank Guarantee confirming that said Bank Guarantee and all future communication relating to the Bank Guarantee shall be forwarded to Employer.
4. If a Bank Guarantee is issued by a commercial bank, then a letter to Employer and copy to Consultant (if applicable) confirming its net worth is more than Rs. 100,00,00,000.00 [Rupees One Hundred Crores] or its equivalent in foreign currency alongwith documentary evidence.



	<b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</b>	PC-183/E/ 203 /S-III	0	
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**ANNEXURE**

**MATTER TO BE MENTIONED IN COVERING LETTER TO BE SUBMITTED BY  
VENDOR ALONG WITH BANK GUARANTEE (BG)**

<b>1. Bank Guarantee No.</b>			
<b>2. Vendor Name</b>			
<b>3. Nature of Bank Guarantee [Please Tick(✓)whichever is applicable]</b>	Contract Performance Security (CPS)	Earnest Money Deposit (EMD)	Advance
<b>4. Purchase Order(PO)/Fax of Acceptance(FOA)/Detailed Letter of Acceptance (DLOA)No.</b>			
<b>5. Details of Bank issuing Bank Guarantee(BG)</b>			
<b>(A)Name of Contact Person</b>			
<b>(B)E-mail ID</b>			
<b>(C)Address</b>			
<b>(D)Phone No. /Mobile No.</b>			



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**F-5**  
**AGREED TERMS & CONDITIONS**

To,  
**M/s TALCHER FERTILIZERS LIMITED**  
**NOIDA**



SUB:  
TENDER NO:

This Questionnaire duly filled in, signed & stamped must form part of Bidder's Bid and should be returned along with Un-priced Bid. Clauses confirmed hereunder need not be repeated in the Bid.



SI.	DESCRIPTION	BIDDER'S CONFIRMATION
1	Bidder's name and address	
2.	Bidder confirms currency of quoted prices is in Indian Rupees	
3.	Bidder confirms quoted prices will remain firm and fixed till complete execution of the order.	
4.1	Bidder confirms that they have quoted rate of <b>GST (CGST &amp; SGST/ UTGST or IGST)</b> in Price Schedule / Schedule of Rates (SOR)	Confirmed
4.2	Service Accounting Codes (SAC)/ Harmonized System of Nomenclature (HSN)	
4.3	Bidder hereby confirms that the quoted prices are in compliance with the Section 171 of CGST Act/ SGST Act as mentioned as clause no. 13.10 of ITB	
4.4	a. Whether bidder is liable to raise E-Invoice as per GST Act. b. If yes, bidder will raise E-Invoice and confirm compliance to provision of tender in this regard.	a. b.
4.5	i. Whether bidder as a seller is liable to levy TCS on sale of goods as defined under the said provision of Income Tax. ii. If yes, bidder as a seller will raise proper tax invoice on sale of goods to TFL showing TCS component. iii. Bidder as a seller will comply with all the statutory requirements of TCS regarding deposit of TCS with Government on receipt/collection of consideration from TFL and issue of TCS certificate to TFL timely. iv. If TFL is unable to avail the benefit of TCS Credit on such amount collected by the Supplier, for any reason attributable to Supplier, then TFL shall be entitled to deduct / recover such amount together with penalties and interest, if any, by adjusting any amounts to be paid or becomes payable in future to the Supplier under this contract or under any other contract.	i. ii. iii. iv.
5.	Bidder confirms acceptance of relevant Terms of Payment specified in the Bid Document.	

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Sl.	DESCRIPTION	BIDDER'S CONFIRMATION				
6.	Bidder confirms that Contract Performance Security will be furnished as per Bid Document.					
7.	Bidder confirms that Contract Performance Security shall be from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve bank of India as scheduled foreign bank. However, in case of bank guarantees from banks other than the Nationalized Indian banks, the bank must be a commercial bank having net worth in excess of Rs 100 crores and a declaration to this effect shall be made by such commercial bank either in the Bank Guarantee itself or separately on its letterhead.					
8.	Bidder confirms compliance to Completion Schedule as specified in Bid document. Confirm contract period shall be reckoned from the date of Fax of Acceptance.					
9.	Bidder confirms acceptance of Price Reduction Schedule (PRS) for delay in completion schedule specified in Bid document. In case of delay, the bills shall be submitted after deducting the Price Reduction Schedule due to delay (refer PRS Clause).					
10.	a) Bidder confirms acceptance of all terms and conditions of Bid Document (all sections). b) Bidder confirms that printed terms and conditions of bidder are not applicable.					
11.	Bidder confirms that their offer is valid for period specified in BDS from Final/Extended due date of opening of Techno-commercial Bids.					
12.	As per requirement of tender, bidder (having status as Pvt. Ltd. or Limited company) must upload bid duly digitally signed on e-portal through class-3B digital signature (DS). In case, class of DS or name of employee or name of employer is not visible in the digitally signed documents, the bid digitally signed as submitted by the person shall be binding on the bidder.					
13.	Bidder confirms that (i) none of Directors (in Board of Director) of bidder is a relative of any Director (in Board of Director) of Owner or (ii) the bidder is not a firm in which any Director (in Board of Director) of Owner or their relative is not a partner.	<table border="1"> <tr> <td>Confirmed</td> <td></td> </tr> <tr> <td>Not confirmed</td> <td></td> </tr> </table>	Confirmed		Not confirmed	
Confirmed						
Not confirmed						
14.	All correspondence must be in ENGLISH language only					
15.	Bidder confirms the contents of this Tender Document have not been modified or altered by them. In case, it is found that the tender document has been modified / altered by the bidder, the bid submitted by them shall be liable for rejection.					
16.	Bidder confirms that all Bank charges associated with Bidder's Bank shall be borne by Bidder.					
17.	<b>No Deviation Confirmation:</b> It may be note that any 'deviation / exception' in any form may result in rejection of Bid. Therefore, Bidder confirms that they have not taken any 'exception / deviation' anywhere in the Bid. In case					

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SI.	DESCRIPTION	BIDDER'S CONFIRMATION
	any 'deviation / exception' is mentioned or noticed, Bidder's Bid may be rejected.	
18.	<p>If Bidder becomes a successful Bidder and pursuant to the provisions of the Tender Document, award is given to them against subject Tender Document, the following Confirmation shall be automatically enforceable:</p> <p>"We agree and acknowledge that the Employer is entering into the Contract/Agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood &amp; agreed that the Government of India is not a party to the Contract/Agreement and has no liabilities, obligations or rights there under. It is expressly understood and agreed that the Purchaser is authorized to enter into Contract/Agreement, solely on its own behalf under the applicable laws of India. We expressly agree, acknowledge and understand that the Purchaser is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Agreement. Accordingly, we hereby expressly waive, release and forego any and all actions or claims, including cross claims, VIP claims or counter claims against the Government of India arising out of the Agreement and covenants not to sue to Government of India as to any manner, claim, cause of action or things whatsoever arising of or under the Agreement."</p>	
19.	Bidder to ensure all documents as per tender including clause 11 of Section III and all Formats are included in their bid.	
20.	Bidder understands that Tender Document is not exhaustive. In case any activity though specifically not covered in description of 'Schedule of Rates' but is required to complete the work as per Scope of Work, Conditions of Contract, or any other part of Tender Document, the quoted rates will deemed to be inclusive of cost incurred for such activities unless otherwise specifically excluded. Bidder confirms to perform for fulfillment of the contract and completeness of the supplies in all respect within the scheduled time frame and quoted price.	
21.	<p>Bidder hereby confirms that they are not on 'Holiday' by OWNER or any of the JV partners of OWNER (viz. GAIL, RCF, CIL, FCIL) or Public Sector Project Management Consultant (like PDIL, EIL, Mecon only due to "poor performance" or "corrupt and fraudulent practices") or banned by Government department/ Public Sector on due date of submission of bid.</p> <p>Further, neither bidder nor their allied agency/(ies) (as defined in the Procedure for Action in case of Corrupt/Fraudulent/Collusive/Coercive Practices) are on banning list of TFL or any of the JV partner of OWNER viz. GAIL, RCF, CIL, FCIL.</p>	

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SI.	DESCRIPTION	BIDDER'S CONFIRMATION
	<p>Bidder also confirms that they are not under any liquidation, court receivership or similar proceedings or 'bankruptcy'.</p> <p>In case it comes to the notice of TFL/PDIL that the bidder has given wrong declaration in this regard, the same shall be dealt as 'fraudulent practices' and action shall be initiated as per the Procedure for action in case of Corrupt/Fraudulent/ Collusive/ Coercive Practices.</p> <p>Further, Bidder also confirms that in case there is any change in status of the declaration prior to award of contract, the same will be promptly informed to TFL/PDIL by them.</p>	
22.	Bidder confirms that, in case of contradiction between the confirmations provided in this format and terms & conditions mentioned elsewhere in the offer, the confirmations given in this format shall prevail.	

Place:  
Date:

[Signature of Authorized Signatory of Bidder]  
Name:  
Designation:  
Seal:

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**F-6**  
**ACKNOWLEDGEMENT CUM CONSENT LETTER**

(On receipt of tender document/information regarding the tender, Bidder shall acknowledge the receipt and confirm his intention to bid or reason for non-participation against the enquiry /tender through e-mail/fax to concerned executive in OWNER issued the tender, by filling up the Format)

To,

**M/s TALCHER FERTILZERS LIMITED  
NOIDA**

SUB:  
TENDER NO:

Dear Sir,

We hereby acknowledge receipt of a complete set of bidding document along with enclosures for subject item/job and/or the information regarding the subject tender.

- We intend to bid as requested for the subject item/job and furnish following details with respect to our quoting office:

Postal Address with Pin Code : .....

Telephone Number : .....

Fax Number : .....

Contact Person : .....

E-mail Address : .....

Mobile No. : .....

Date : .....

Seal/Stamp : .....

- We are unable to bid for the reason given below:

Reasons for non-submission of bid:

---

Agency's Name : .....



Signature : .....

Name : .....

Designation : .....

Date : .....

Seal/Stamp : .....

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**F-7**  
**BIDDER'S EXPERIENCE**

To,  
**M/s TALCHER FERTILZERS LIMITED, NOIDA**



SUB:  
TENDER NO:

Sl. No	Description of the Services	LOA No. and date	W/O and date	Full Postal Address & phone nos. of Client. <i>Name, designation and address of Engineer/ Officer-in-Charge (for cases other than purchase)</i>	Value of Contract/Order (Specify Currency Amount)	Date of Commencement of Services	Scheduled Completion Time (Months)	Date of Actual Completion	Reasons for delay in execution, if any
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

Place: [Signature of Authorized Signatory of Bidder]  
 Date: Name:  
 Designation:  
 Seal:

**Note:**

- The documents (Work Order/DLOA/FOA, Completion certificate, Execution Certificate etc.) which have been referred/ specified/indicated/submitted in above tabulation format and/or along with bid shall be taken into consideration in reply to queries (if any) during evaluation of Bids. Hence, bidder in his own interest should invariably fill-up this format.

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**F-8**  
**CHECK LIST**

Bidders are requested to duly fill in the checklist. This checklist gives only certain important items to facilitate the bidder to make sure that the necessary data/information as called for in the bid document has been submitted by them along with their offer. This, however, does not relieve the bidder of his responsibilities to make sure that his offer is otherwise complete in all respects.

Please ensure compliance and tick (√) against following points:

S. No.	DESCRIPTION	CHECK BOX	REFERENCE PAGE NO. OF THE BID SUBMITTED
1.0	Digitally Signing (in case of e-bidding)/ Signing and Stamping (in case of manual bidding) on each sheet of offer, original bidding <input type="checkbox"/> document including SCC, ITB, GCC, SOR drawings, addendum (if any)		
2.0	Confirm that the following details have been submitted in the Un-priced <input type="checkbox"/> part of the bid		<del>XXXXXXXXXX</del>
i	Covering Letter, Letter of Submission		
ii	Bid Security		
iii	Digitally Signing / Signing and Stamping of bidding document along with drawings and corrigendum (if any)		
iv	Power of Attorney in the name of person signing the bid (Format F-15).		
v	Copies of documents defining constitution or legal status, place of <input type="checkbox"/> registration and principal place of business of the company		
vi	Details and documentary proof required against Bid Evaluation Criteria (BEC) <input type="checkbox"/> along with complete documents establishing ownership of <input type="checkbox"/> equipment as per SCC are enclosed		
vii	Confirm submission of document along with un-priced bid as per bid requirement.		<del>XXXXXXXXXX</del>
3.0	Confirm that all format duly filled in are enclosed with the bid duly Digitally Signed / Signed and Stamped by authorised person(s)		





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4.0	Confirm that the price part as per Price Schedule format submitted with Bidding Document/ uploaded in case of e-bid.		
5.0	Confirm that annual reports for last three financial years & duly filled in <b>Format F-10</b> are enclosed in the offer for financial assessment (where financial criteria of BEC is applicable).		

Place:  
Date:

[Signature of Authorized Signatory of Bidder]  
Name:  
Designation:  
Seal:

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**F-9**  
**FORMAT FOR CERTIFICATE FROM BANK**  
**IF BIDDER'S WORKING CAPITAL IS INADEQUATE/NEGATIVE**  
 (To be provided on Bank's letter head)

Date:

To,

**M/s TALCHER FERTILZERS LIMITED  
 NOIDA**

Dear Sir,

This is to certify that M/s ..... (name of the bidder with address) (hereinafter referred to as Customer) is an existing customer of our Bank.

The Customer has informed that they wish to bid for OWNER's RFQ/Tender no. .... dated ..... for .....(Name of the supply/work/services/consultancy) and as per the terms of the said RFQ/Tender they have to furnish a certificate from their Bank confirming the availability of line of credit.

Accordingly M/s ..... (name of the Bank with address) confirms availability of line of credit to M/s ..... (name of the bidder) for at least an amount of Rs.

It is also confirmed that the net worth of the Bank is more than Rs. 100 Crores (or Equivalent USD) and the undersigned is authorized to issue this certificate.

Yours truly



for ..... (Name & address of Bank)

(Authorized signatory)

Name of the signatory:

Designation :

Stamp

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**F-10**

**FORMAT FOR CHARTERED ACCOUNTANT CERTIFICATE/ CERTIFIED PUBLIC  
ACCOUNTANT (CPA) FOR FINANCIAL CAPABILITY OF THE BIDDER**

We have verified the Audited Financial Statements and other relevant records of M/s..... (Name of the bidder) and certify the following:

**A. AUDITED ANNUAL TURNOVER\* OF PRECEDING THREE FINANCIAL YEARS:**

Year	Amount (Currency)
Year 1:	
Year 2:	
Year 3:	

**B. NETWORTH\* AS PER AUDITED FINANCIAL STATEMENT OF PRECEDING THREE FINANCIAL YEARS:**

Description	Year _____
	Amount (Currency)
1. Net Worth	



**C. WORKING CAPITAL\* AS PER AUDITED FINANCIAL STATEMENT OF PRECEDING FINANCIAL YEAR:**

Description	Year _____
	Amount (Currency)
1. Current Assets	
2. Current Liabilities	
3. Working Capital (Current Assets-Current liabilities)	

***\*Refer Instructions***

**Notes:**

- (i) It is further certified that the above mentioned applicable figures are matching with the returns filed with Registrar of Companies (ROC) [Applicable only in case of Indian Companies]
- (ii) We confirm that above figures after referring instructions at page 2 of 2 of Format F-10.
- (iii) Practicing Chartered Accountants shall generate Unique Document Identification Number (UDIN) for all certificates issued by them.



	<p style="text-align: center;">RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</p>	PC-183/E/ 203 /S III	0	
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Name of Audit Firm:  
Chartered Accountant/CPA  
Date: Designation:  
Membership No.:

[Signature of Authorized Signatory]  
Name:  
Seal:  
UDIN

**Instructions for Format F-10:**

1. The financial year would be the same as one normally followed by the bidder for its Annual Report.
2. The bidder shall provide the audited annual financial statements as required for this Tender document. Failure to do so would result in the Proposal being considered as non-responsive.
3. For the purpose of this Tender document:
  - (i) **Annual Turnover** shall be “Sale Value/ Operating Income”
  - (ii) **Working Capital** shall be “Current Assets less Current liabilities” and
  - (iii) **Net Worth** shall be Paid up share capital plus Free Reserves & Surplus less accumulated losses, deferred expenditure and miscellaneous expenditure not written off, if any.
4. **Above figures shall be calculated after considering the qualification, if any, made by the statutory auditor on the audited financial statements of the bidder including quantified financial implication.**
5. This certificate is to be submitted on the letter head of Chartered Accountant/CPA.

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**F-11**  
**BIDDER'S QUERIES FOR PRE BID MEETING**

To,  
 M/s TALCHER FERTILZERS LIMITED  
 Sub :  
 Tender No :

SL. NO.	REFERENCE OF BIDDING DOCUMENT				BIDDER'S QUERY	OWNER'S REPLY
	SEC. NO.	Page No.	Clause No.	Subject		

**NOTE: The Pre-Bid Queries may be sent by fax and also by e-mail before due date for receipt of Bidder's queries.**

**SIGNATURE OF BIDDER:** \_\_\_\_\_

**NAME OF BIDDER :** \_\_\_\_\_



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**F-12**

**E-Banking Mandate Form**

(To be issued on bidder's letter head)

1. Vendor/customer Name :
2. Vendor/customer Code:
3. Vendor/customer Address:
4. Vendor/customer e-mail id:
5. Particulars of bank account
  - a) Name of Bank
  - b) Name of branch
  - c) Branch code:
  - d) Address:
  - e) Telephone number:
  - f) Type of account (current/saving etc.)
  - g) Account Number:
  - h) RTGS IFSC code of the bank branch
  - i) NEFT IFSC code of the bank branch
  - j) 9 digit MICR code

I/We hereby authorize TALCHER FERTILZERS LIMITED to release any amount due to me/us in the bank account as mentioned above. I/We hereby declare that the particulars given above are correct and complete. If the transaction is delayed or lost because of incomplete or incorrect information, we would not hold the TALCHER FERTILZERS LIMITED responsible.

(Signature of vendor/customer)

**BANK CERTIFICATE**

We certify that ----- has an Account no. ----- with us and we confirm that the details given above are correct as per our records.

Bank stamp

Date

(Signature of authorized officer of bank)



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**F-13**

**INTEGRITY PACT**

**Pre-signed Integrity Pact**



# **INTEGRITY PACT**

## INTEGRITY PACT

### INTRODUCTION:

TFL as one of its endeavour to maintain and foster most ethical and corruption free business environment, have decided to adopt the Integrity Pact, a tool developed by the Transparency International, to ensure that all activities and transactions between the Company (TFL) and its Counterparties (Bidders, Contractors, Vendors, Suppliers, Service Providers/Consultants etc.) are handled in a fair and transparent manner, completely free of corruption.

Considering the above, the details mentioned at attached Annexure-1 are applicable as stated in Instruction to Bidders of Bid Document in addition to the existing stipulation regarding Corrupt and Fraudulent Practices.

The attached copy of the Integrity Pact at Annexure - 2 shall be included in the Bid submitted by the bidder (to be executed by the bidder for all tenders of value Rs. 1 (One) crore and above). In case a bidder does not sign the Integrity Pact, his bid shall be liable for rejection.



## ANNEXURE-1

Bidder is required to sign the Integrity Pact with TFL as per format & terms and conditions enclosed with tender. In case a bidder does not sign the Integrity Pact, his bid shall be liable for rejection.

### I COMMITMENTS AND OBLIGATIONS OF THE "COUNTERPARTY"

- a) The Counterparty, directly or indirectly (through agent, consultant, advisor, etc.), shall not pay any bribe/ influence or give undue/ unlawful benefit to anyone to gain undue advantage in dealing with TFL.
- b) The Counterparty will not engage in collusion of any kind including price fixation etc. with other Counterparts.
- c) The counterparty will not pass TFL's confidential information to any third party unless specifically authorized by TFL in writing.
- d) The Counterparties shall promote and observe best ethical practices within their respective organizations.
- e) The Counterparty shall inform the Independent External Monitor.
  - i) If it received any demand, directly or indirectly, for a bribe/ favour or any illegal gratification/ payment / benefit;
  - ii) If it comes to know of any unethical or illegal payment / benefit;
  - iii) If it makes any payment to any TFL associate.
- f) The Counterparty shall not make any false or misleading allegations against TFL or its associates.

### II VIOLATIONS & CONSEQUENCES:

- a) If a Counterparty commits a violation of its Commitments and Obligations under the Integrity Pact Programme during bidding process, their entire Earnest Money Deposit/ Bid Security, would be forfeited and in addition, action shall be taken as per "Procedure for action in case Corrupt /Fraudulent/ Collusive/Coercive Practices"
- b) In case of violation of the Integrity pact by Counterparty after award of the Contract, TFL shall be entitled to terminate the Contract. Further, TFL would forfeit the security deposits/ Contract Performance Bank Guarantee and in addition, action shall be taken as per "Procedure for action in case Corrupt /Fraudulent/ Collusive/Coercive Practices"

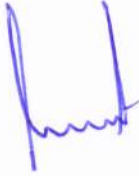


### INDEPENDENT EXTERNAL MONITORS (IEMS)

Presently the panel consisting of the following Independent External Monitors (IEMs) have been appointed by TFL, in terms of Integrity Pact (IP) which forms part of TFL Tenders / Contracts.

- i) Shri Anjan Kumar Banerjee (Email ID: [banerjeeanjan@gmail.com](mailto:banerjeeanjan@gmail.com))
- ii) Shri Atul Sobti (Email ID: [sobtiatul@gmail.com](mailto:sobtiatul@gmail.com))

This panel is authorised to examine / consider all references made to it under this tender. The bidder(s), in case of any dispute(s) / complaint(s) pertaining to this tender may raise the issue either with the designated tender issuing officer or Nodal Officer (presently Sh. S. Dasgupta, DGM (C&P) – Email: [sdasgupta@gail.co.in](mailto:sdasgupta@gail.co.in)) in TFL or directly with the IEMs on the panel or IEM c/o Chief Vigilance Officer, Rashtriya Chemicals and Fertilizers Ltd., Priyadarshini Building, Eastern Express Highway, Sion, Mumbai Maharashtra, 400022.





**INTEGRITY PACT**

(To be executed on plain paper)

Between TFL (India) Limited, a Government of India Public Sector, (here-in-after referred to as "Principal").

**AND**

\_\_\_\_\_ (here-in-after referred to as "The Bidder/ Contractor").

(Principal and the Bidder / Contractor are here-in-after are referred to individually as "Party" or collectively as "Parties").

**PREAMBLE**

The Principal intends to award under laid down organizational procedures, contract/s for \_\_\_\_\_. The Principal values full compliance with all relevant laws of land rules, regulations, and economic use of resources and of fairness /transparency in its relations with its Bidder (s) and/or Contractor (s).

In order to achieve these goals, the Principal will appoint Independent External Monitors (IEMs) who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

**Section 1 – Commitments of the Principal**

1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following Principles:-
  - i) No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or for a third person, any material or immaterial benefit which the person is not legally entitled to.
  - ii) The Principal will, during the tender process treat all Bidder(s) with equity and reasons. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.



- iii) The Principal will exclude from the process all known prejudiced persons.
2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal Code (IPC) / Prevention of Corruption Act (PC Act), or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officers and in addition can initiate disciplinary actions.

**Section 2 – Commitments of the Bidder (s)/Contractor (s)**

1. The Bidder(s) / Contractor(s) commits themselves to take all measures necessary to prevent corruption. The Bidder(s) / Contractor(s) commits themselves to observe the following principles during participation in the tender process and during the contract execution:
- i) The Bidder (s) / Contractor (s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
  - ii) The Bidder (s) / Contractor (s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other action to restrict competitiveness or to introduce cartelisation in the bidding process.
  - iii) The Bidder (s) / Contractor (s) will not commit any offence under the relevant IPC/PC Act; further, the Bidder (s) / Contractor (s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
  - iv) The Bidder (s)/ Contractor (s) of foreign origin shall disclose the name and address of the Agents/ representatives in India, if any. Similarly, the Bidder (s)/ Contractor (s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further, all the payments made to the Indian agent/ representative have to be in India Rupees only.
  - v) The Bidder (s) / Contractor (s) will, when presenting their bid, disclose any and all payments made, is committed to or intends to make to agents,





brokers or any other intermediaries in connection with the award of the contract.

- vi) Bidder(s) / Contractor(s) who have signed the Integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.
2. The Bidder(s)/ Contractor(s) shall not instigate third person to commit offences outlined above or be an accessory to such offences.

**Section 3 – Disqualification from tender process and exclusion from future contracts**

If the Bidder (s) / Contractor (s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put their reliability or credibility in question, the Principal is entitled to disqualify the Bidder (s) / Contractor (s) from the tender process or take action as per provisions of "Procedure for action in case Corrupt /Fraudulent/ Collusive/Coercive Practices".

**Section 4 – Compensation for Damages**

1. If the Principal has disqualified the Bidder (s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit / Bid Security.
2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equal to the Contract Value or the amount equivalent to Performance Bank Guarantee.

**Section 5 – Previous transgression**

1. The Bidder declares that no previous transgression occurred in the last three years, with any other Company in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India that could justify his exclusion from the tender process.
2. If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or actions can be taken as per provisions of "Procedure for action in case Corrupt /Fraudulent/ Collusive/Coercive Practices"





### **Section 6 – Equal treatment to all Bidders / Contractors / Subcontractors**

1. In case of Sub-Contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor.
2. The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
3. The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

### **Section 7 – Criminal charges against violating Bidder (s) / Contractor (s) / Sub-contractor (s)**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

### **Section 8 –Independent External Monitor / Monitors**

1. The Principal appoints competent and credible Independent External Monitor for this Pact after approval by Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
2. The Monitor is not subject to instructions by the representatives of the parties and performs his/her functions neutrally and independently. The Monitor would have access to all Contract documents, whenever required. It will be obligatory for him/ her to treat the information and documents of the Bidders/ Contractors as confidential. He/she reports to the MD, TFL.
3. The Bidder (s)/ Contractor (s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his/her request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is applicable to Sub-contractors.
4. The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he/she will so inform the Management of the Principal and request



the Management to discontinue or to take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

6. The Monitor will submit a written report to the MD, TFL within 10 days as far as possible from the date of reference or intimation to him by the 'Principal' and, should the occasion arise, submit proposals for correcting problematic situations.
7. If the Monitor has reported to the MD, TFL, a substantiated suspicion of an offence under relevant IPC/PC Act, and the MD, TFL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.
8. The word 'Monitor' would include both singular and plural.
9. In case of any complaints referred under IP Program, the role of IEMs is advisory and would not be legally binding and it is restricted to resolving the issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidder.

#### **Section 9 – Pact Duration**

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract, and for all other Bidders 6 months after the contract has been awarded. Any violation to the same would entail disqualification of the bidders and exclusion from future business dealing.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by the MD, TFL.

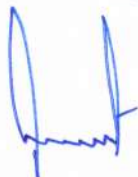
#### **Section 10 – Miscellaneous provisions**

1. This agreement is subject to Indian Law. Place of performance and exclusive jurisdiction is the Registered Office of the Principal, i.e. New Delhi.
2. Changes and supplements as well as termination notices, if any, need to be made in writing. Side agreements have not been made.
3. If the Contractor / Bidder is a partnership concern or a consortium, this agreement must be signed by all partners or consortium members.





4. Should one or several of the provisions of this agreement turn out to be invalid, the remainder of this agreement shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions in such a case.
5. Issues like warranty / guarantee, etc. shall be outside the purview of IEMs.
6. In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in Integrity Pact will prevail.



-----  
 (For & on Behalf of Principal)

ए. एस. दासगुप्ता / S. DASGUPTA

उप महाप्रबन्धक (संविदा एवं क्रय) / Dy. General Manager (C&P)

तालचर फर्टिलाइजर्स लिमिटेड / Talcher Fertilizers Ltd.

जीटीपार्क पीएआरसी बिल्डिंग / GTI PARC Building

(Office Seal) प्लॉट नं० 24, सेक्टर-16ए, नोएडा-201301 (उ.प्र.)

Plot No. 24, Sec.-16A, Noida-201 301(U.P.)

-----  
 (For & on Behalf of Bidder/Contractor)

(Office Seal)

Place -----



Date -----

Witness 1:  
 (Sign, Name & Address)  
 [FOR PRINCIPAL]

Seogam (Sura Deogam)  
 Talcher Fertilizers Limited (T.F.L.), Plot No. 24,  
 Sector-16A, Film City, Noida (U.P.) - 201301

Witness 2:  
 (Sign, Name & Address)  
 [FOR BIDDER / CONTRACTOR]

.....  
 .....  
 .....

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**INDEMNITY BOND**

WHEREAS TALCHER FERTILIZERS LIMITED (hereinafter referred to as “TFL”) which expression shall, unless repugnant to the context include its successors and assigns, having its registered office at Plot 2/H, Kalpana Area, BJB Nagar, Khorda, Bhubaneswar – 751014 has entered into a contract with M/s\*..... (hereinafter referred to as the “Contractor”) which expression shall unless repugnant to the context include its representatives, successors and assigns, having its registered office at \* ..... and on the terms and conditions as set out, inter-alia in the ..... [*mention the work order/LOA/Tender No.*]and various documents forming part thereof, hereinafter collectively referred to as the ‘CONTRACT’ which expression shall include all amendments, modifications and / or variations thereto.

TFL has also advised the Contractor to execute an Indemnity Bond in general in favour of TFL indemnifying TFL and its employees and Directors including Independent Directors from all consequences which may arise out of any prospective litigation or proceedings filed or may be initiated by any third party, including any Banker / financial institution / worker(s) / vendor(s)/ subcontractor(s) etc. who may have been associated or engaged by the Contractor directly or indirectly with or without consent of TFL for above works.

NOW, THEREFORE, in consideration of the promises aforesaid, the Contractor hereby irrevocably and unconditionally undertakes to indemnify and keep indemnified TFL and all its employees, Directors, including Independent Directors, from and against all/any claim(s), damages, loss, which may arise out of any litigations/ liabilities that may be raised by the Contractor or any third party against TFL under or in relation to this contract. The Contractor undertakes to compensate and pay to TFL and/or any of its employees, Directors including Independent Directors, forth with on demand without any protest the amount claimed by TFL for itself and for and on behalf of its employees, Directors including Independent Directors together with direct/indirect expenses including all legal expenses incurred by them or any of them on account of such litigation or proceedings.

AND THE CONTRACTOR hereby further agrees with TFL that:

- (i) This Indemnity shall remain valid and irrevocable for all claims of TFL and/or any of its employees and Directors including Independent Directors arising out of said contract with respect to any such litigation / court case for which TFL and/or its employees and Directors including Independent Directors has been made party until now or here-in-after.
- (ii) This Indemnity shall not be discharged/ revoked by any change/ modification/ amendment/ assignment of the contract or any merger of the Contractor with other entity or any change in the constitution/structure of the Contractor’s firm/Company or any



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conditions thereof including insolvency etc. of the Contractor, but shall be in all respects and for all purposes binding and operative until any/all claims for payment of TFL are settled by the Contractor and/or TFL discharges the Contractor in writing from this Indemnity.

The undersigned has full power to execute this Indemnity Bond for and on behalf of the Contractor and the same stands valid.

SIGNED BY :

For [ Contractor ]

*Authorised Representative*



Place:

Dated:

Witnesses:

1.

2

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**POWER OF ATTORNEY (POA)**

**(to be submitted on the Non-Judicial stamp paper / Company's Letter Head)**

TENDER NO: \_\_\_\_\_ dated \_\_\_\_\_

Description of work:

Name of Bidder: \_\_\_\_\_

"The undersigned \_\_\_\_\_ (Name of LEGAL PERSON, i.e. CEO/C&MD/Company Secretary/Partners) is lawfully authorized to issue this POA\* on behalf of the company M/s \_\_\_\_\_ (Name of bidder) whose \_\_\_\_\_ registered \_\_\_\_\_ address \_\_\_\_\_ is \_\_\_\_\_ and does hereby appoint Mr./Ms \_\_\_\_\_ (name of authorized person signing the bid document) \_\_\_\_\_ (Designation) of M/s \_\_\_\_\_ (Name of bidder) whose signature appears below to be the true and lawful attorney/(s) and authorize him/her to sign the bid (both physically & digitally on CPP Portal), conduct negotiation, sign contracts and execute all the necessary matter related thereto, in the name and on behalf of the company in connection with the tender no. \_\_\_\_\_.

The signature of the authorized person/(s) herein constitutes unconditional obligations of M/s \_\_\_\_\_ (Name of bidder).

This Power of Attorney (POA) shall remain valid and in full force and effect before we withdraw it in writing (by fax, or mail or post). All the documents signed (within the period of validity of the Power of Attorney) by the authorized person herein shall not be invalid because of such withdrawal.

(\*)

- (I) In case of a single Bidder, the power of Attorney shall be issued as per the constitution of the bidder as below.
- e) **In case of Proprietorship:** By Proprietor
  - f) **In case of Partnership:** by all Partners or Managing Partner.
  - g) **In case of Limited Liability Partnership:** by any bidder's employee authorized in terms of Deed of LLP.
  - h) **In case of Public /Limited Company:** POA in favour of authorized employee(s) by Board of Directors through Board Resolution or by the designated officer authorized by Board to do so. Such Board Resolution should be duly countersigned by Company Secretary / MD / CMD / CEO.



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(II) ~~In case of a Consortium, Power of Attorney shall be issued both by leader as well as Consortium Member(s) of the Consortium as per procedure defined herein above in favour of employee of Leader Consortium.~~

SIGNATURE OF THE LEGAL PERSON

\_\_\_\_\_  
(Name of person with Company seal)

SIGNATURE OF THE AUTHORIZED PERSON  
(FOR SIGNING THE BID)



\_\_\_\_\_  
(Signature)

Name of person: \_\_\_\_\_

E-mail id: \_\_\_\_\_

DSC (Digital Signature Certificate) No.: \_\_\_\_\_



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**PROFORMA FOR CONTRACT AGREEMENT**

DLOA No. .... dated -----



-

**TFL's PAN No.** .....

Contract Agreement for the work of ----- of TALCHER FERTILIZERS LIMITED made on ----- between (Name and Address)----- , hereinafter called the "CONTRACTOR" (which term shall unless excluded by or repugnant to the subject or context include its successors and permitted assignees) of the one part and TALCHER FERTILIZERS LIMITED hereinafter called the "EMPLOYER" (which term shall, unless excluded by or repugnant to the subject or context include its successors and assignees) of the other part.

**WHEREAS**

- A. The EMPLOYER being desirous of having provided and executed certain work mentioned, enumerated or referred to in the Tender Documents including Letter Inviting Tender, General Tender Notice, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings, Plans, Time Schedule of completion of jobs, Schedule of Rates, Agreed Variations, other documents has called for Tender.
- B. The CONTRACTOR has inspected the SITE and surroundings of WORK specified in the Tender Documents and has satisfied himself by careful examination before submitting his tender as to the nature of the surface, strata, soil, sub-soil and ground, the form and nature of site and local conditions, the quantities, nature and magnitude of the work, the availability of labour and materials necessary for the execution of work, the means of access to SITE, the supply of power and water thereto and the accommodation he may require and has made local and independent enquiries and obtained complete information as to the matters and thing referred to, or implied in the tender documents or having any connection therewith and has considered the nature and extent of all probable and possible situations, delays, hindrances or interferences to or with the execution and completion of the work to be carried out under the CONTRACT, and has examined and considered all other matters, conditions and things and probable and possible contingencies, and generally all matters incidental thereto and ancillary thereof affecting the execution and completion of the WORK and which might have influenced him in making his tender.
- C. The Tender Documents including the Notice Letter Inviting Tender, General Conditions of Contract, Special Conditions of Contract, Schedule of Rates, General Obligations, SPECIFICATIONS, DRAWINGS, PLANS, Time Schedule for completion of Jobs, Letter of Acceptance of Tender and any statement of agreed variations with its enclosures copies of which are hereto annexed form part of this CONTRACT though separately set out herein and are included in the expression "CONTRACT" wherever herein used.

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**AND WHEREAS**

The EMPLOYER accepted the Tender of the CONTRACTOR for the provision and the execution of the said WORK at the rates stated in the schedule of quantities of the work and finally approved by EMPLOYER (hereinafter called the "Schedule of Rates") upon the terms and subject to the conditions of CONTRACT.

**NOW THIS AGREEMENT WITNESSETH AND IT IS HEREBY AGREED AND DECLARED AS FOLLOWS:-**

1. In consideration of the payment to be made to the CONTRACTOR for the WORK to be executed by him, the CONTRACTOR hereby covenants with EMPLOYER that the CONTRACTOR shall and will duly provide, execute and complete the said work and shall do and perform all other acts and things in the CONTRACT mentioned or described or which are to be implied there from or may be reasonably necessary for the completion of the said WORK and at the said times and in the manner and subject to the terms and conditions or stipulations mentioned in the contract.

2. In consideration of the due provision execution and completion of the said WORK, EMPLOYER does hereby agree with the CONTRACTOR that the EMPLOYER will pay to the CONTRACTOR the respective amounts for the WORK actually done by him and approved by the EMPLOYER at the Schedule of Rates and such other sum payable to the CONTRACTOR under provision of CONTRACT, such payment to be made at such time in such manner as provided for in the CONTRACT.

**A N D**

3. In consideration of the due provision, execution and completion of the said WORK the CONTRACTOR does hereby agree to pay such sums as may be due to the EMPLOYER for the services rendered by the EMPLOYER to the CONTRACTOR, such as power supply, water supply and others as set for in the said CONTRACT and such other sums as may become payable to the EMPLOYER towards the controlled items of consumable materials or towards loss, damage to the EMPLOYER'S equipment, materials construction plant and machinery, such payments to be made at such time and in such manner as is provided in the CONTRACT.

It is specifically and distinctly understood and agreed between the EMPLOYER and the CONTRACTOR that the CONTRACTOR shall have no right, title or interest in the SITE made available by the EMPLOYER for execution of the works or in the building, structures or work executed on the said SITE by the CONTRACTOR or in the goods, articles, materials etc., brought on the said SITE (unless the same specifically belongs to the CONTRACTOR) and the CONTRACTOR shall not have or deemed to have any lien whatsoever charge for unpaid bills will not be entitled to assume or retain possession or control of the SITE or structures and the EMPLOYER shall have an absolute and unfettered right to take full possession of SITE and to remove the CONTRACTOR, their servants, agents and materials belonging to the CONTRACTOR and lying on the SITE.



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The CONTRACTOR shall be allowed to enter upon the SITE for execution of the WORK only as a licensee simpliciter and shall not have any claim, right, title or interest in the SITE or the structures erected thereon and the EMPLOYER shall be entitled to terminate such license at any time without assigning any reason.

The materials including sand, gravel, stone, loose, earth, rock etc., dug up or excavated from the said SITE shall, unless otherwise expressly agreed under this CONTRACT, exclusively belong to the EMPLOYER and the CONTRACTOR shall have no right to claim over the same and such excavation and materials should be disposed off on account of the EMPLOYER according to the instruction in writing issued from time to time by the ENGINEER-IN-CHARGE.

In Witness whereof the parties have executed these presents in the day and the year first above written.

Signed and Delivered for and on behalf of EMPLOYER

Signed and Delivered for and on behalf of the CONTRACTOR.

TALCHER FERTILIZERS LIMITED

NAME OF CONTRACTOR

\_\_\_\_\_

\_\_\_\_\_

Date : \_\_\_\_\_

Date : \_\_\_\_\_

Place: \_\_\_\_\_

Place: \_\_\_\_\_

**IN PRESENCE OF TWO WITNESSES**

1. \_\_\_\_\_

1. \_\_\_\_\_

2. \_\_\_\_\_

2. \_\_\_\_\_



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### FREQUENTLY ASKED QUESTIONS (FAQs)

SL.NO.	QUESTION	ANSWER
1.0	Can any vendor quote for subject Tender?	Yes. A Vendor has to meet Bid Evaluation Criteria given under Section II of Tender document in addition to other requirements.
2.0	Should the Bid Evaluation Criteria documents be attested?	Yes. Please refer Section II of Tender document
3.0	Is attending Pre-Bid Meeting mandatory.	No. Refer Clause No. 17 of Instruction to Bidders of Tender Document. However attending Pre Bid Meeting is recommended to sort out any issue before submission of bid by a Bidder.
4.0	Can a vendor submit more than 1 offer?	No. Please refer Clause No. 4 of "Instruction to Bidders" of Tender Document.
5.0	Is there any Help document available for e-Tender.	Yes. Refer Annexure III to "Instruction to Bidders" of Tender Document and FAQs as available on OWNER E-Tender portal.
6.0	Are there are any benefits available to Start-ups?	Refer Clause No. 50 of Instructions to Bidders of Tender Document
7.0	Are there are any MSE (Micro & Small Enterprises) benefits available?	Refer Clause No. 40 of Instructions to Bidders of Tender Document.

All the terms and conditions of Tender remain unaltered.



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NOT APPLICABLE FOR THIS TENDER

**~~POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED  
IRON & STEEL PRODUCTS IN GOVERNMENT PROCUREMENT  
(TO BE SUBMITTED ON BIDDER'S LETTERHEAD)~~**

**SELF-CERTIFICATE**

~~This has reference to "Policy for providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement" issued by Ministry of Steel, Govt. of India, vide their revised notification "The Gazette of India, Notification No. 385 (E) dated 29.05.2019".~~

~~We confirm that we will obtain Affidavit of Self Certification of Domestic value addition in Iron & Steel Products from manufacturer before supply of iron and steel products required under the tender/bidding document.~~

Sign & Stamp of bidder





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**NOT APPLICABLE FOR THIS TENDER**

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**Format for Undertaking from TPIA**  
(on TPIA letter head duly stamped & signed)

Ref.: \_\_\_\_\_ Date: \_\_\_\_\_

To,

Talcher Fertilizers Limited

Dear Sir,

**Subject: ~~Verification and certification of documents pertaining to Technical Bid  
Evaluation Criteria (BEC)~~**

Ref : \_\_\_\_\_ Tender no. .... for .....

M/s. .... having Registered office at ..... intend  
to participate in above referred tender of Talcher Fertilizers Limited having  
registered office at Plot 2/H, Kalpana Area, BJB Nagar, Khordha, Bhubaneswar-751014,  
Odisha

The tender conditions stipulates that the BIDDER shall submit Documents pertaining to  
Technical Bid Evaluation Criteria (BEC) duly verified and certified by designated independent  
Third Party Inspection Agency.

In this regard, this is to certify that copies of documents pertaining to Technical Bid  
Evaluation Criteria (BEC) submitted to us by the bidder have been verified and certified by  
us with the originals and found to be genuine. We have signed and stamped on the copies  
of all the verified and certified documents.

(Signature of a person duly authorized  
to Sign on behalf of the TPIA)

(Seal of the Company)

Name: .....

Contact No.....



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**UNDERTAKING ON LETTERHEAD**

To,

M/s Talcher Fertilizers Limited

\_\_\_\_\_

SUB:

TENDER NO:

Dear Sir

We have read the clause regarding Provisions for Procurement from a Bidder which shares a land border with India, we certify that, bidder M/s\_\_\_\_\_ (**Name of Bidder**) is :

- (i) Not from such a country [ ]
- (ii) If from such a country, has been registered with the Competent Authority. [ ]

(Evidence of valid registration by the Competent Authority shall be attached)

**(Bidder is to tick appropriate option (✓ or X) above).**

We hereby certify that bidder M/s\_\_\_\_\_ (**Name of Bidder**) fulfills all requirements in this regard and is eligible to be considered against the tender.

Place: [Signature of Authorized Signatory of Bidder]

Date: Name:

Designation:

Seal:



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F-21

**CERTIFICATE FOR TENDERS FOR WORKS INVOLVING POSSIBILITY OF SUB-  
CONTRACTING**

To,

M/s Talcher Fertilizers Limited

\_\_\_\_\_

SUB:

TENDER NO:

Dear Sir



We have read the Provisions for Procurement from a Bidder which shares a land border with India as per Clause No. 54 of Section-III, we certify that bidder M/s .....(Name of Bidder) will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority.

Place: [Signature of Authorized Signatory of Bidder]

Date: Name:

Designation:

Seal:

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**NOT APPLICABLE FOR THIS TENDER**

**F-22**

**DECLARATION BY BIDDER TOWARDS MINIMUM LOCAL CONTENT  
(FOR SUPPLY OF GOODS / SERVICES / WORKS / EPC / LSTK)**

To,  
~~M/s Talcher Fertilizers Limited~~

**SUB:**

**TENDER NO:**

Dear Sir,

A. We M/s ..... (**Name of Bidder**) hereby confirm/certify that the goods / services offered vide our offer no..... dated ..... meets the following-

Sl. No.	Description	Confirmation
A	<del>Bidder meets the mandatory minimum Local content requirement of 20% for participating in the Bidding process under Public Procurement (Preference to Make in India) Policy. (In case bidder does not meet the minimum Local content requirement of 20%, such bidders are not allowed to participate in the Bidding process)</del>	<del>Confirmed.</del>
B	<del>The bidder meets mandatory minimum Local content requirement of 50% for claiming purchase preference under Public Procurement (Preference to Make in India) Policy</del>	<del>Confirmed / Not Confirmed</del>

B. The details of the location at which the local value addition is made as follows:

Sl. No.	Item Description	Details of the Location(s) where the local value addition is made
1.		
2.		



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Place: \_\_\_\_\_ [Signature of Authorized Signatory of Bidder]

Date: \_\_\_\_\_ Name: \_\_\_\_\_



\_\_\_\_\_ Designation: \_\_\_\_\_

\_\_\_\_\_ Seal: \_\_\_\_\_

**Note:**

- i. ~~The Authorized Signatory of Bidder shall be the person in whose name Power of Attorney has been issued.~~



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**F-23**

**CERTIFICATE FROM STATUTORY AUDITOR OR COST AUDITOR OF THE COMPANY (IN THE CASE OF COMPANIES) OR FROM A PRACTICING COST ACCOUNTANT OR PRACTICING CHARTERED ACCOUNTANT (IN RESPECT OF SUPPLIERS OTHER THAN COMPANIES) TOWARDS MINIMUM LOCAL CONTENT**

**(FOR SUPPLY OF GOODS/ SERVICES / WORKS / EPC / LSTK)**

To,  
M/s Talcher Fertilizers Limited

**SUB:**

**TENDER NO:**

Dear Sir

A. We..... the Statutory Auditor / Cost Auditor / Practicing Cost Accountant / Practicing Chartered Accountant) have verified relevant records of M/s ..... **(Name of the bidder)** and certify that M/s ..... **(Name of the bidder)** meet the mandatory minimum Local content requirement of .....% specified in tender document no.....for claiming purchase preference under Public Procurement (Preference to Make in India) Policy.

B. The **details of the location** at which the local value addition is made as follows:

Sl. No.	Item Description	Details of the Location(s) where the local value addition is made
1.		
2.		
3.		
4.		

Name of Audit Firm / Chartered Accountant:



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[Signature of Authorized Signatory]

Date:

Name:

Designation:

Seal:

Membership No.:



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**F-24.**

**UNDERTAKING REGARDING SUBMISSION CONTRACT PERFORMANCE  
SECURITY(CPS) / SECURITY DEPOSIT (SD) WITHIN STIPULATED TIME LINE  
(to be submitted on letter head of bidder)**

To,

M/s Talcher Fertilizers Limited

SUB:  
TENDER NO:



**Dear Sir,**

We hereby confirm that we have clearly understood the requirement of Contract Performance Security (CPS) / Security Deposit (SD) specified in the tender document.

We also hereby confirm that in case of award of contract / order, we will submit Contract Performance Security (CPS) / Security Deposit (SD) within 30 days from the date of issuance of Fax of Acceptance.

Place:  
Date:

[Signature of Authorized Signatory of Bidder]  
Name:  
Designation:  
Bidder Name:  
Seal:

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**F-25**

**UNDERTAKING REGARDING SUBMISSION OF ELECTRONIC INVOICE (E-INVOICE AS PER GST LAWS)**  
**(to be submitted on letter head along with documents for release of payment)**

To,  
M/s Talcher Fertilizers Limited

SUB:  
DLOA NO:

**Dear Sir,**

We \_\_\_\_\_ (Name of the Supplier/Contractor/Service Provider/ Consultant) hereby confirm that E-Invoice provision as per the GST Law is

- (i) Applicable to us [       ]
- (ii) Not Applicable to us [       ]

**(Supplier/Contractor/Service Provider/ Consultant is to tick appropriate option (✓ or X) above).**

In case, same is applicable to us, we confirm that we will submit E-Invoice after complying with all the requirements of GST Laws. If the invoice issued without following this process, such invoice can-not be processed for payment by TFL as no ITC is allowed on such invoices. We also confirm that If input tax credit is not available to TFL for any reason attributable to Supplier/Contractor/Service Provider/ Consultant (both for E-invoicing cases and non-E-invoicing cases), then TFL shall not be obligated or liable to pay or reimburse GST (CGST & SGST/UTGST or IGST) claimed in the invoice(s) and shall be entitled to deduct / setoff / recover such GST amount (CGST & SGST/UTGST or IGST) or Input Tax Credit amount together with penalties and interest, if any, by adjusting against any amounts paid or becomes payable in future to the Supplier/Contractor/Service Provider/ Consultant under this contract or under any other contract.

Place: [Signature of Authorized Signatory of Bidder]  
 Date: Name:  
 Designation:  
 Bidder Name:  
 Seal:



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## General Conditions of Contract

### Section- I. Definitions

#### 1. Definition of Terms:

- 1.1 In this CONTRACT (as here-in-after defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise required.
- 1.1.1 The OWNER/EMPLOYER/COMPANY/TFL means Talcher Fertilizers Ltd. (a joint venture of four major Public Sector Units – M/s GAIL (India) Limited, M/s Rastriya Chemicals & Fertilizers Ltd., M/s Coal India Ltd. and M/s Fertilizers Corporation of India Ltd.) and having its Registered office at Plot 2/H, Kalpana Area, BJB Nagar, Khurda, Bhubaneswar-751 014 and includes its successors and assigns.
- 1.1.2 The "CONTRACTOR" means the person or the persons, firm or Company or corporation whose tender has been accepted by the EMPLOYER and includes the CONTRACTOR's legal Representatives his successors and permitted assigns.
- 1.1.3 The "ENGINEER/ENGINEER-IN-CHARGE" shall mean the person designated from time to time by the TFL and shall include those who are expressly authorized by him to act for and on his behalf for operation of this CONTRACT.
- 1.1.4 The "WORK" shall mean and include all items and things to be supplied/ done and services and activities to be performed by the CONTRACTOR in pursuant to and in accordance with CONTRACT or part thereof as the case may be and shall include all extra, additional, altered or substituted works as required for purpose of the CONTRACT.
- 1.1.5 The "PERMANENT WORK" means and includes works which will be incorporated in and form a part of the work to be handed over to the EMPLOYER by the CONTRACTOR on completion of the CONTRACT.
- 1.1.6 "CONSTRUCTION EQUIPMENT" means all appliances/equipment and things whatsoever nature for the use in or for the execution, completion, operation, or maintenance of the work or temporary works (as hereinafter defined) but does not include materials or other things intended to form or to be incorporated into the WORK, or camping facilities.
- 1.1.7 "CONTRACT DOCUMENTS" means collectively the Tender Documents, Designs, Drawings, Specification, Schedule of Quantities and Rates, Letter of Acceptance and agreed variations if any, and such other documents constituting the tender and acceptance thereof.
- 1.1.8 CONSULTANT: means Projects & Development India Ltd. (PDIL) who are the consulting engineer to the Employer for this project and having registered office at PDIL Bhawan, A-14, Sector 1, Noida - 201301 (U.P.)
- 1.1.9 The "SUB-CONTRACTOR" means any person or firm or Company (other than the CONTRACTOR) to whom any part of the work has been entrusted by the CONTRACTOR, with the written consent of the ENGINEER-IN-CHARGE, and the legal representatives, successors and permitted assigns of such person, firm or company.





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- 1.1.10 The "CONTRACT" shall mean the Agreement between the EMPLOYER and the CONTRACTOR for the execution of the works including therein all contract documents.
- 1.1.11 The "SPECIFICATION" shall mean all directions the various technical specifications, provisions attached and referred to the Tender Documents which pertain to the method and manner of performing the work or works to the quantities and qualities of the work or works and the materials to be furnished under the CONTRACT for the work or works, as may be amplified or modified by the TFL or ENGINEER-IN-CHARGE during the performance of CONTRACT in order to provide the unforeseen conditions or in the best interests of the work or works. It shall also include the latest edition of relevant Standard Specifications including all addenda/corrigenda published before entering into CONTRACT.
- 1.1.12 The "DRAWINGS" shall include maps, plans and tracings or prints or sketches thereof with any modifications approved in writing by the ENGINEER-IN-CHARGE and such other drawing as may, from time to time, be furnished or approved in writing by the ENGINEER-IN-CHARGE.
- 1.1.13 The "TENDER" means the proposal along with supporting documents submitted by the CONTRACTOR for consideration by the EMPLOYER.
- 1.1.14 The "CHANGE ORDER" means an order given in writing by the ENGINEER-IN-CHARGE to effect additions to or deletion from and alteration in the works.
- 1.1.15 The "COMPLETION CERTIFICATE" shall mean the certificate to be issued by the ENGINEER-IN-CHARGE when the works have been completed entirely in accordance with CONTRACT DOCUMENT to his satisfaction.
- 1.1.16 The "FINAL CERTIFICATE" in relation to a work means the certificate regarding the satisfactory compliance of various provision of the CONTRACT by the CONTRACTOR issued by the ENGINEER-IN- CHARGE/EMPLOYER after the period of liability is over.
- 1.1.17 "DEFECT LIABILITY PERIOD" in relation to a work means the specified period from the date of COMPLETION CERTIFICATE upto the date of issue of FINAL CERTIFICATE during which the CONTRACTOR stands responsible for rectifying all defects that may appear in the works executed by the CONTRACTOR in pursuance of the CONTRACT and includes warranties against Manufacturing/Fabrication/ Erection/Construction defects covering all materials plants, equipment, components, and the like supplied by the CONTRACTOR, works executed against workmanship defects.
- 1.1.18 The "APPOINTING AUTHORITY" for the purpose of arbitration shall be the CHAIRMAN and MANAGING DIRECTOR or any other person so designated by the EMPLOYER.
- 1.1.19 "TEMPORARY WORKS" shall mean all temporary works of every kind required in or about the execution, completion or maintenance of works.
- 1.1.20 "PLANS" shall mean all maps, sketches and layouts as are incorporated in the CONTRACT in order to define broadly the scope and specifications of the work or works, and all reproductions thereof.
- 1.1.21 "SITE" shall mean the lands and other places on, under, in or through which the permanent works are to be carried out and any other lands or places provided by the EMPLOYER for the purpose of the CONTRACT.



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- 1.1.22 "NOTICE IN WRITING OR WRITTEN NOTICE" shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received by the addressee) by registered post to the latest known private or business address or registered office of the addressee and shall be deemed to have been received in the ordinary course of post it would have been delivered.
- 1.1.23 "APPROVED" shall mean approved in writing including subsequent written confirmation of previous verbal approval and "APPROVAL" means approval in writing including as aforesaid.
- 1.1.24 "LETTER OF INTENT/FAX OF INTENT" shall mean intimation by a Fax/Letter to Tenderer(s) that the tender has been accepted in accordance with the provisions contained in the letter.
- 1.1.25 "DAY" means a day of 24 hours from midnight to midnight irrespective of the number of hours worked in that day.
- 1.1.26 "WORKING DAY" means any day which is not declared to be holiday or rest day by the EMPLOYER.
- 1.1.27 "WEEK" means a period of any consecutive seven days.
- 1.1.28 "METRIC SYSTEM" - All technical documents regarding the construction of works are given in the metric system and all work in the project should be carried out according to the metric system. All documents concerning the work shall also be maintained in the metric system.
- 1.1.29 "VALUE OF CONTRACT" or "TOTAL CONTRACT PRICE" shall mean the sum accepted or the sum calculated in accordance with the prices accepted in tender and/or the CONTRACT rates as payable to the CONTRACTOR for the entire execution and full completion of the work, including change order.
- 1.1.30 "LANGUAGE FOR DRAWINGS AND INSTRUCTION" All the drawings, titles, notes, instruction, dimensions, etc. shall be in English Language.
- 1.1.31 "MOBILIZATION" shall mean establishment of sufficiently adequate infrastructure by the CONTRACTOR at "SITE" comprising of construction equipments, aids, tools tackles including setting of site offices with facilities such as power, water, communication etc. establishing manpower organization comprising of Resident Engineers, Supervising personnel and an adequate strength of skilled, semi-skilled and un-skilled workers, who with the so established infrastructure shall be in a position to commence execution of work at site(s), in accordance with the agreed Time Schedule of Completion of Work. "MOBILISATION" shall be considered to have been achieved, if the CONTRACTOR is able to establish infrastructure as per Time Schedule, where so warranted in accordance with agreed schedule of work implementation to the satisfaction of ENGINEER-IN-CHARGE/ EMPLOYER.
- 1.1.32 "COMMISSIONING" shall mean pressing into service of the system including the plant(s), equipment(s), vessel(s), pipeline, machinery(ies), or any other section or sub-section of installation(s) pertaining to the work of the CONTRACTOR after successful testing and trial runs of the same.
- "COMMISSIONING" can be either for a completed system or a part of system of a combination of systems or sub-systems and can be performed in any sequence as desired by EMPLOYER and in a manner established to be made suited according to availability of pre-requisites. Any such readjustments made



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by EMPLOYER in performance of "COMMISSIONING" activity will not be construed to be violating CONTRACT provisions and CONTRACTOR shall be deemed to have provided for the same.

## Section-II General Information

### 2. General Information

2.1 a) Location of Site: The proposed location of Project site is defined in the Special Conditions of Contract.

b) Access by Road: CONTRACTOR, if necessary, shall build other temporary access roads to the actual site of construction for his own work at his own cost. The CONTRACTOR shall be required to permit the use of the roads so constructed by him for vehicles of any other parties who may be engaged on the project site. The CONTRACTOR shall also facilitate the construction of the permanent roads should the construction there of start while he is engaged on this work. He shall make allowance in his tender for any inconvenience he anticipates on such account.

Non-availability of access roads, railway siding and railway wagons for the use of the CONTRACTOR shall in no case condone any delay in the execution of WORK nor be the cause for any claim for compensation against the EMPLOYER.

2.2 Scope of Work: The scope of WORK is defined in the Technical Part of the tender document. The CONTRACTOR shall provide all necessary materials, equipment, labour etc. for the execution and maintenance of the WORK till completion unless otherwise mentioned in the Tender Document.

2.3 Water Supply: Contractor will have to make his own arrangements for supply of water to his labour camps and for works. All pumping installations, pipe net work and distribution system will have to be carried out by the Contractor at his own risk and cost.

Alternatively the Employer at his discretion may endeavour to provide water to the Contractor at the Employer's source of supply provided the Contractor makes his own arrangement for the water meter which shall be in custody of the Employer and other pipe net works from source of supply and such distribution pipe network shall have prior approval of the Engineer-in-Charge so as not to interfere with the layout and progress of the other construction works. In such case, the rate for water shall be deducted from the running account bills.

However, the Employer does not guarantee the supply of water and this does not relieve the Contractor of his responsibility in making his own arrangement and for the timely completion of the various works as stipulated.

2.4 Power Supply:

2.4.1 Subject to availability, EMPLOYER will supply power at 400/440 V at only one point at the nearest sub-station, from where the CONTRACTOR will make his own arrangement for temporary distribution. The point of supply will not be more than 500 m away from the CONTRACTOR'S premises. All the works will be done as per the applicable regulations and passed by the ENGINEER-IN-CHARGE. The temporary line will be removed forthwith after the completion of work or if there is any hindrance caused to the other works due to the alignment of these lines, the CONTRACTOR will re-route or remove the



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temporary lines at his own cost. The CONTRACTOR at his cost will also provide suitable electric meters, fuses, switches, etc. for purposes of payment to the EMPLOYER which should be in the custody and control of the EMPLOYER. The cost of power supply shall be payable to the EMPLOYER every month for Construction Works power which would be deducted from the running account bills. The EMPLOYER shall not, however, guarantee the supply of electricity nor have any liability in respect thereof. No claim for compensation for any failure or short supply of electricity will be admissible.

- 2.4.2 It shall be the responsibility of the CONTRACTOR to provide and maintain the complete installation on the load side of the supply with due regard to safety requirement at site. All cabling, equipment, installations etc. shall comply in all respects with the latest statutory requirements and safety provisions i.e., as per the Central/State Electricity Acts and Rules etc. The CONTRACTOR will ensure that his equipment and Electrical Wiring etc., are installed, modified, maintained by a licensed Electrician/Supervisor. A test certificate is to be produced to the ENGINEER-IN-CHARGE for his approval, before power is made available.
- 2.4.3 At all times, IEA regulations shall be followed failing which the EMPLOYER has a right to disconnect the power supply without any reference to the CONTRACTOR. No claim shall be entertained for such disconnection by the ENGINEER-IN-CHARGE. Power supply will be reconnected only after production of fresh certificate from authorized electrical supervisors.
- 2.4.4 The EMPLOYER is not liable for any loss or damage to the CONTRACTOR's equipment as a result of variation in voltage or frequency or interruption in power supply or other loss to the CONTRACTOR arising therefrom.
- 2.4.5 The CONTRACTOR shall ensure that the Electrical equipment installed by him are such that average power factors does not fall below 0.90 at his premises. In case power factor falls below 0.90 in any month, he will reimburse to the EMPLOYER at the penal rate determined by the EMPLOYER for all units consumed during the month.
- 2.4.6 The power supply required for CONTRACTOR's colony near the plant site will be determined by the EMPLOYER and shall be as per State Electricity Board's Rules and other statutory provisions applicable for such installations from time to time. In case of power supply to CONTRACTOR's colony, the power will be made available at a single point and the CONTRACTOR shall make his own arrangement at his own cost for distribution to the occupants of the colony as per Electricity Rules and Acts. The site and colony shall be sufficiently illuminated to avoid accidents.
- 2.4.7 The CONTRACTOR will have to provide and install his own lights and power meters which will be governed as per Central/State Government Electricity Rules. The meters shall be sealed by the EMPLOYER.
- 2.4.8 In case of damage of any of the EMPLOYER's equipment on account of fault, intentional or unintentional on the part of the CONTRACTOR, the EMPLOYER reserves the right to recover the cost of such damage from the CONTRACTOR's bill. Cost of HRC Fuses replaced at the EMPLOYER's terminals due to any fault in the CONTRACTOR's installation shall be to CONTRACTOR's account at the rates decided by the ENGINEER-IN-CHARGE.
- 2.4.9 Only motors upto 3 HP will be allowed to be started direct on line. For motors above 3 HP and upto 100 HP a suitable Starting device approved by the ENGINEER- IN-CHARGE shall be provided by the CONTRACTOR. For motors above 100 HP slipping induction motors with suitable starting devices as approved



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by the ENGINEER- IN-CHARGE shall be provided by the CONTRACTOR.

2.4.10 The CONTRACTOR shall ensure at his cost that all electrical lines and equipment and all installations are approved by the State Electricity Inspector before power can be supplied to the EMPLOYER.

2.4.11 The total requirement of power shall be indicated by the tenderer alongwith his tender.

2.5 Land for Contractor's Field Office, Godown and Workshop: The EMPLOYER will, at his own discretion and convenience and for the duration of the execution of the work make available near the site, land for construction of CONTRACTOR's Temporary Field Office, godowns workshops and assembly yard required for the execution of the CONTRACT. The CONTRACTOR shall at his own cost construct all these temporary buildings and provide suitable water supply and sanitary arrangement and get the same approved by the ENGINEER-IN-CHARGE.

On completion of the works undertaken by the CONTRACTOR, he shall remove all temporary works erected by him and have the SITE cleaned as directed by ENGINEER-IN-CHARGE. If the CONTRACTOR shall fail to comply with these requirements, the ENGINEER-IN-CHARGE may at he expenses of the CONTRACTOR remove such surplus, and rubbish materials and dispose off the same as he deems fit and get the site cleared as aforesaid; and CONTRACTOR shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such surplus materials disposed off as aforesaid. But the EMPLOYER reserves the right to ask the CONTRACTOR any time during the pendency of the CONTRACT to vacate the land by giving 7 days notice on security reasons or on national interest or otherwise. Rent may be charged for the land so occupied from contractor by the Employer.

The CONTRACTOR shall put up temporary structures as required by them for their office, fabrication shop and construction stores only in the area allocated to them on the project site by the EMPLOYER or his authorized representative. No tea stalls/canteens should be put up or allowed to be put up by any CONTRACTOR in the allotted land or complex area without written permission of the EMPLOYER.

No unauthorized buildings, constructions or structures should be put up by the CONTRACTOR anywhere on the project site.

For uninterrupted fabrication work, the CONTRACTOR shall put up temporary covered structures at his cost within Area in the location allocated to them in the project site by the EMPLOYER or his authorized representative.

No person except for authorized watchman shall be allowed to stay in the plant area/CONTRACTOR's area after completion of the day's job without prior written permission from ENGINEER-IN-CHARGE.

2.6 Land for Residential Accommodation:-No Land shall be made available for residential accommodation for staff and labour of CONTRACTOR.

**Section-III. General Instructions to Tenderers**

**3. Submission of Tender:**

3.1 TENDER must be submitted without making any additions, alterations, and as per details given in other clauses hereunder. The requisite details shall be filled in by the TENDERER at space provided under "Submission of Tender" at the beginning of GCC of Tender Document. The rate shall be filled only in the schedule given in this Tender Document.

3.2 Addenda/ Corrigenda to this Tender Document, if issued, must be signed, submitted



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along with the Tender Document. the tenderer should write clearly the revised quantities in Schedule of Rates of Tender Document and should price the WORK based on revised quantities when amendments of quantities are issued in addenda.

3.3 Covering letter along with its enclosures accompanying the Tender Document and all further correspondence shall be submitted in duplicate.

3.4 Tenderers are advised to submit quotations based strictly on the terms and conditions and specifications contained in the Tender Documents and not to stipulate any deviations.

~~3.5 Tenders should always be placed in double sealed covers, super scribing ["QUOTATION DO NOT OPEN" Tender for \_\_\_\_\_ Project of Talcher Fertilizers Ltd. due for opening on \_\_\_\_\_]. The Full Name, Address and Telegraphic Address, Fax No. of the Tenderers shall be written on the bottom left hand corner of the sealed cover.~~

**4. Documents:**

4.1 General:

The tenders as submitted, will consist of the following:

- i) Complete set of Tender Documents (Original) as sold duly filled in and signed by the tenderer as prescribed in different clauses of the Tender Documents.
- ii) Earnest money in the manner specified in Clause 6 hereof.
- iii) Power of Attorney or a true copy thereof duly attested by a Gazetted Officer in case an authorized representative has signed the tender, as required by Clause 14 hereof.
- iv) Information regarding tenderers in the proforma enclosed.
- v) Details of work of similar type and magnitude carried out by the Tenderer in the proforma provided in the tender document.
- vi) Organization chart giving details of field management at site, the tenderer proposes to have for this job.
- vii) Details of construction plant and equipments available with the tenderer for using in this work.
- viii) Solvency Certificate from Scheduled Bank to prove the financial ability to carry out the work tendered for.
- ix) Latest Balance Sheet and Profit & Loss Account duly audited.
- x) Details of present commitment as per proforma enclosed to tender.
- xi) Data required regarding SUB-CONTRACTOR(s)/ Supplier/ Manufacturers and other technical information the tenderer wish to furnish.
- xii) Provident fund registration certificate
- xiii) List showing all enclosures to tender.

4.2 All pages are to be Initiated: All signatures in Tender Documents shall be dated, as well as, all the pages of all sections of Tender Documents shall be initialed at the lower right





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hand corner and signed wherever required in the tender papers by the TENDERER or by a person holding power of attorney authorizing him to sign on behalf of the tenderer before submission of tender.

- 4.3 Rates to be in Figures and Words: The tender should quote in English both in figures as well as in words the rates and amounts tendered by him in the Schedule of Rates of Tender submitted by the CONTRACTOR for each item and in such a way that interpolation is not possible. The amount for each item should be worked out and entered and requisite total given of all items, both in figures and in words. The tendered amount for the work shall be entered in the tender and duly signed by the Tenderer.

If some discrepancies are found between the RATES in FIGURES and WORDS or the AMOUNT shown in the tender, the following procedure shall be followed:

- When there is difference between the rates in figures and words, the rate which corresponds to the amount worked out by the tenderer shall be taken as correct.
- When the rate quoted by the tenderer in figures and words tally but the amount is incorrect the rate quoted by the tenderer shall be taken as correct.
- When it is not possible to ascertain the correct rate by either of above methods, the rate quoted in words shall be taken as correct.

- 4.4 Corrections and Erasures: All correction(s) and alteration(s) in the entries of tender paper shall be signed in full by the TENDERER with date. No erasure or over writing is permissible.

4.5 Signature of Tenderer:

- 4.5.1 The TENDERER shall contain the name, residence and place of business of person or persons making the tender and shall be signed by the TENDERER with his usual signature. Partnership firms shall furnish the full names of all partners in the tender. It should be signed in the partnership's name by all the partners or by duly authorized representatives followed by the name and designation of the person signing. Tender by a corporation shall be signed by an authorized representative, and a Power of Attorney in that behalf shall accompany the tender. A copy of the constitution of the firm with names of all partners shall be furnished.

- 4.5.2 When a tenderer signs a tender in a language other than English, the total amount tendered should, in addition, be written in the same language. The signature should be attested by at least one witness.

- 4.6 Witness: Witness and sureties shall be persons of status and property and their names, occupation and address shall be stated below their signature.

- 4.7 Details of Experience: The tenderer should furnish, along with his tender, details of previous experience in having successfully completed in the recent past works of this nature, together with the names of Employers, location of sites and value of contract, date of commencement and completion of work, delays if any, reasons of delay and other details along with documentary evidence(s).

- 4.8 Liability of Government of India: It is expressly understood and agreed by and between Bidder or/Contractor and M/s Talcher Fertilizers Ltd., and that M/s Talcher Fertilizers Ltd., is entering into this agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that the Government of India is not a party to this agreement and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that M/s Talcher Fertilizers Ltd. is an independent legal entity with power and authority to enter into contracts solely on its own behalf under the applicable Laws of India



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and general principles of Contract Law. The Bidder/Contractor expressly agrees, acknowledges and understands that M/s Talcher Fertilizers Ltd. is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the contract. Accordingly, Bidder/Contractor hereby expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this contract and covenants not to sue to Government of India as to any manner, claim, cause of action or thing whatsoever arising of or under this agreement.

**5. Transfer of Tender Documents:**

5.1 Transfer of Tender Documents purchased by one intending tenderer to another is not permissible.

**6. Earnest Money:**  
(Clause not applicable for this Tender)

6.1 The bidder must pay Earnest Money as given in the letter /notice inviting tenders and attach the official receipt with the tender failing which the tender is liable to be rejected and representatives of such tenderers will not be allowed to attend the tender opening. Earnest Money can be paid in Demand Drafts or Bank Guarantee or Banker's Cheque or Letter of Credit from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank. However, other than the Nationalized Indian Banks, the banks whose BGs are furnished, must be commercial banks having net worth in excess of Rs. 100 crores and a declaration to this effect should be made by such commercial bank either in the bank guarantee itself or separately on a letter head.

The bid guarantee shall be submitted in the prescribed format.

Note: The Bank Guarantee so furnished by the tenderer shall be in the proforma prescribed by the EMPLOYER. No interest shall be paid by the EMPLOYER on the Earnest Money deposited by the tenderer. The Bank Guarantee furnished in lieu of Earnest Money shall be kept valid for a period of "SIX MONTHS" from the date of opening of tender.(TWO MONTHS beyond the bid due date).

The Earnest Money deposited by successful tenderer shall be forfeited if the Contractor fails to furnish the requisite Contract Performance Security as per clause 24 hereof and /or fails to start work within a period of 15 days or fails to execute the AGREEMENT within 15 days of the receipt by him of the Notification of Acceptance of Tender.

Note: The Earnest Money of the unsuccessful bidder will be returned by EMPLOYER/CONSULTANT, directly to the tenderer(s), within a reasonable period of time but not later than 30 days after the expiration of the period of bid validity prescribed by EMPLOYER.

**7 Validity:**

7.1 Tender submitted by tenderers shall remain valid for acceptance for a period of "4 MONTHS" from the date of opening of the tender. The tenderers shall not be entitled during the said period of 4 months, without the consent in writing of the EMPLOYER, to revoke or cancel his tender or to vary the tender given or any term thereof. In case of tender revoking or canceling his tender or varying any term in regard thereof without the consent of EMPLOYER in writing, the EMPLOYER shall forfeit Earnest Money paid by him alongwith tender.

**8 Addenda/Corrigenda**

8.1 Addenda/ Corrigenda to the Tender Documents will be issued in duplicate prior to the date of opening of the tenders to clarify documents or to reflect modification in design or CONTRACT terms.



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- 8.2 Each addenda/ corrigendum issued will be issued in duplicate to each person or organization to whom set of Tender Documents has been issued. Recipient will retain tenderer's copy of each Addendum/ Corrigendum and attach original copy duly signed along with his offer. All Addenda/ Corrigenda issued shall become part of Tender Documents.
- 9 Right of Employer to Accept or Reject Tender:**
- 9.1 The right to accept the tender will rest with the EMPLOYER. The EMPLOYER, however, does not bind himself to accept the lowest tender, and reserves to itself the authority to reject any or all the tenders received without assigning any reason whatsoever. At the option of the Employer, the work for which the tender had been invited, may be awarded to one Contractor or split between more than one bidders, in which case the award will be made for only that part of the work, in respect of which the bid has been accepted. The quoted rates should hold good for such eventualities.
- Tenders in which any of the particulars and prescribed information are missing or are incomplete in any respect and/or the prescribed conditions are not fulfilled are liable to be rejected. The Tender containing uncalled for remarks or any additional conditions are liable to be rejected.
- Canvassing in connection with tenders is strictly prohibited and tenders submitted by the Tenderers who resort to canvassing will be liable to rejection.
- 10 Time Schedule**
- 10.1 The WORK shall be executed strictly as per the TIME SCHEDULE specified in TENDER/ CONTRACT Document. The period of construction given in Time Schedule includes the time required for mobilization as well as testing, rectifications if any, retesting and completion in all respects to the entire satisfaction of the ENGINEER-IN- CHARGE.
- 10.2 A joint program of execution of the WORK will be prepared by the ENGINEER-IN-CHARGE and CONTRACTOR based on priority requirement of this project. This program will take into account the time of completion mentioned in 10.1 above and the time allowed for the priority works by the ENGINEER-IN-CHARGE.
- 10.3 Monthly/ Weekly construction program will; be drawn up by the ENGINEER-IN-CHARGE jointly with the CONTRACTOR, based on availability of work fronts and the joint construction program as per 10.2 above. The CONTRACTOR shall scrupulously adhere to these targets/ programs by deploying adequate personnel, construction tools and tackles and he shall also supply himself all materials of his scope of supply in good time to achieve the targets/program. In all matters concerning the extent of targets set out in the weekly and monthly programs and the degree of achievements the decision of the ENGINEER-IN-CHARGE will be final and binding on the CONTRACTOR.
- 11 Tenderer's Responsibility**
- 11.1 The intending tenderers shall be deemed to have visited the SITE and familiarized submitting the tender. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the works in strict conformity with the DRAWINGS and SPECIFICATIONS or for any delay in performance.
- 12 Retired Government or Company Officers**
- 12.1 No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the States/ Central Government or of the EMPLOYER is allowed to work as a CONTRACTOR for a period of two years after his retirement from Government Service, or from the employment of the EMPLOYER without the previous permission of the



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EMPLOYER. The CONTRACT, if awarded, is liable to be cancelled if either the CONTRACTOR or any of his employees is found at any time to be such a person, who has not obtained the permission of the State/ Central Government or of the EMPLOYER as aforesaid before submission of tender, or engagement in the CONTRACTOR'S service as the case may be.

- 13 Signing of the Contract:**
- 13.1 The successful tenderer shall be required to execute an AGREEMENT in the proforma attached with TENDER DOCUMENT within 15 days of the receipt by him of the Notification of Acceptance of Tender. In the event of failure on the part of the successful tenderer to sign the AGREEMENT within the above stipulated period, the Earnest Money or his initial deposit will be forfeited and the acceptance of the tender shall be considered as cancelled.
- 14 Field Management & Controlling/Coordinating Authority:**
- 14.1 The field management will be the responsibility of the ENGINEER-IN-CHARGE, who will be nominated by the EMPLOYER. The ENGINEER-IN-CHARGE may also authorize his representatives to assist in performing his duties and functions.
- 14.2 The ENGINEER-IN-CHARGE shall coordinate the works of various agencies engaged at site to ensure minimum disruption of work carried out by different agencies. It shall be the responsibility of the CONTRACTOR to plan and execute the work strictly in accordance with site instructions to avoid hindrance to the work being executed by other agencies.
- 15 Note to Schedule of Rates:**
- 15.1 The Schedule of Rates should be read in conjunction with all the other sections of the tender.
- 15.2 The tenderer shall be deemed to have studied the DRAWINGS, SPECIFICATIONS and details of work to be done within TIME SCHEDULE and to have acquainted himself of the condition prevailing at site.
- 15.3 Rates must be filled in the Schedule of Rates of original Tender Documents. If quoted in separate typed sheets no variation in item description or specification shall be accepted. Any exceptions taken by the tenderer to the Schedule of Rates shall be brought out in the terms and conditions of the offer.
- 15.4 The quantities shown against the various items are only approximate. Any increase or decrease in the quantities shall not form the basis of alteration of the rates quoted and accepted.
- 15.5 The EMPLOYER reserves the right to interpolate the rates for such items of work falling between similar items of lower and higher magnitude.
- 16 Policy for Tenders Under Consideration:**
- 16.1 Only Those Tenders which are complete in all respects and are strictly in accordance with the Terms and Conditions and Technical Specifications of Tender Document, shall be considered for evaluation. Such Tenders shall be deemed to be under consideration immediately after opening of Tender and until such time an official intimation of acceptance/ rejection of Tender is made by TFL to the Bidder.
- 16.2 Zero Deviation: Bidders to note that this is a ZERO DEVIATION TENDER. TFL will appreciate submission of offer based on the terms and conditions in the enclosed General Conditions of Contract (GCC), Special Conditions of Contract (SCC), Instructions to Bidders (ITB), Scope of Work, technical specifications etc. to avoid wastage of time and money in seeking clarifications on technical/commercial aspects of the offer. Bidder may note that no technical and commercial clarifications will be sought for after the receipt of the bids. In case of any deviation/ nonconformity observed in the bid, it will be liable for rejection.



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- 17 Award of Contract:**
- 17.1 The Acceptance of Tender will be intimated to the successful Tenderer by TFL either by Telex/ Telegram/ Fax or by Letter or like means-defined as LETTER OF ACCEPTANCE OF TENDER.
- 17.2 TFL will be the sole judge in the matter of award of CONTRACT and the decision of TFL shall be final and binding.
- 18 Clarification of Tender Document:**
- 18.1 The Tender is required to carefully examine the Technical Specifications, Conditions of Contract, Drawings and other details relating to WORK and given in Tender Document and fully inform himself as to all conditions and matters which may in any way affect the WORK or the cost thereof. In case the Tenderer is in doubt about the completeness or correctness of any of the contents of the Tender Documents he should request in writing for an interpretation/ clarification to TFL in triplicate. TFL will then issue interpretation/ clarification to Tenderer in writing. Such clarifications and or interpretations shall form part of the Specifications and Documents and shall accompany the tender which shall be submitted by tenderer within time and date as specified in invitations to tender.
- 18.2 Verbal clarification and information given by TFL or its employee(s) or its representatives shall not in any way be binding on TFL.
- 19 Local Conditions:**
- 19.1 It will be imperative on each tenderer to inform himself of all local conditions and factors which may have any effect on the execution of WORK covered under the Tender Document. In their own interest, the tenderer are requested to familiarize themselves with the Indian Income Tax Act 1961, Indian Companies Act 1956, Indian Customs Act 1962 and other related Acts and Laws and Regulations of India with their latest amendments, as applicable TFL shall not entertain any requests for clarifications from the tenderer regarding such local conditions.
- 19.2 It must be understood and agreed that such factors have properly been investigated and considered while submitting the tender. No claim for financial or any other adjustments to VALUE OF CONTRACT, on lack of clarity of such factors shall be entertained.
- 20 Abnormal Rates:**
- 20.1 The tenderer is expected to quote rate for each item after careful analysis of cost involved for the performance of the completed item considering all specifications and Conditions of Contract. This will avoid loss of profit or gain in case of curtailment or change of specification for any item. In case it is noticed that the rates quoted by the tenderer for any item are unusually high or unusually low, it will be sufficient cause for the rejection of the tender unless the EMPLOYER is convinced about the reasonableness after scrutiny of the analysis for such rate(s) to be furnished by the tenderer (on demand).

### Section-IV. General Obligations

- 21 Priority of Contract Documents**
- 21.1 Except if and the extent otherwise provided by the Contract, the provisions of the General Conditions of Contract and Special Conditions shall prevail over those of any other documents forming part of the CONTRACT. Several documents forming the CONTRACT are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies the same shall be explained and adjusted by the ENGINEER-IN-CHARGE who shall thereupon issue to the Contractor instructions thereon and in such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows :
- 1) The Contract Agreement ;
  - 2) The Letter of Acceptance;
  - 3) The Instructions to Bidders (ITB);





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- 4) Special Conditions of Contract (SCC);
- 5) General Conditions of Contract (GCC)
- 6) Any other document forming part of the Contract.

Works shown in the DRAWING but not mentioned in the SPECIFICATIONS OR described in the SPECIFICATIONS without being shown in the DRAWINGS shall nevertheless be deemed to be included in the same manner as if they had been specifically shown upon the DRAWINGS and described in the SPECIFICATIONS.

- 21.2 Headings and Marginal Notes: All headings and marginal notes to the clauses of these General Conditions of Contract or to the SPECIFICATIONS or to any other Tender Document are solely for the purpose of giving a concise indication and not a summary of the contents thereof, and they shall never be deemed to be part thereof or be used in the interpretation or construction thereof the CONTRACT.
- 21.3 Singular and Plural: In CONTRACT DOCUMENTS unless otherwise stated specifically, the singular shall include the plural and vice versa wherever the context so requires.
- 21.4 Interpretation: Words implying 'Persons' shall include relevant 'Corporate Companies / Registered Associations/ Body of Individuals/ Firm of Partnership' as the case may be.

**22 Special Conditions of Contract:**

- 22.1 Special Conditions of Contract shall be read in conjunction with the General Conditions of Contract, specification of Work, Drawings and any other documents forming part of this CONTRACT wherever the context so requires.
- 22.2 Notwithstanding the sub-division of the documents into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the CONTRACT so far as it may be practicable to do so.
- 22.3 Where any portion of the General Condition of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, unless a different intention appears the provisions of the Special Conditions of Contract shall be deemed to over-ride the provisions of the General Conditions of Contract and shall to the extent of such repugnancy, or variations, prevail.
- 22.4 Wherever it is mentioned in the specifications that the CONTRACTOR shall perform certain WORK or provide certain facilities, it is understood that the CONTRACTOR shall do so at his cost and the VALUE OF CONTRACT shall be deemed to have included cost of such performance and provisions, so mentioned.
- 22.5 The materials, design and workmanship shall satisfy the relevant INDIAN STANDARDS, the JOB SPECIFICATIONS contained herein and CODES referred to. Where the job specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.

**23 Contractor to obtain his own Information:**

- 23.1 The CONTRACTOR in fixing his rate shall for all purpose whatsoever reason may be, deemed to have himself independently obtained all necessary information for the purpose of preparing his tender and his tender as accepted shall be deemed to have taken into account all contingencies as may arise due to such information or lack of same. The correctness of the details, given in the Tender Document to help the CONTRACTOR to make up the tender is not guaranteed.

The CONTRACTOR shall be deemed to have examined the CONTRACT





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DOCUMENTS, to have generally obtained his own information in all matters whatsoever that might affect the carrying out of the works at the scheduled rates and to have satisfied himself to the sufficiency of his tender. Any error in description of quantity or omission there from shall not vitiate the CONTRACT or release the CONTRACTOR from executing the work comprised in the CONTRACT according to DRAWINGS and SPECIFICATIONS at the scheduled rates. He is deemed to have known the scope, nature and magnitude of the WORKS and the requirements of materials and labour involved etc., and as to what all works he has to complete in accordance with the CONTRACT documents whatever be the defects, omissions or errors that may be found in the DOCUMENTS. The CONTRACTOR shall be deemed to have visited surroundings, to have satisfied himself to the nature of all existing structures, if any, and also as to the nature and the conditions of the Railways, Roads, Bridges and Culverts, means of transport and communication, whether by land, water or air, and as to possible interruptions thereto and the access and egress from the site, to have made enquiries, examined and satisfied himself as to the sites for obtaining sand, stones, bricks and other materials, the sites for disposal of surplus materials, the available accommodation as to whatever required, depots and such other buildings as may be necessary for executing and completing the works, to have made local independent enquiries as to the sub-soil, subsoil water and variations thereof, storms, prevailing winds, climatic conditions and all other similar matters effecting these works. He is deemed to have acquainted himself as to his liability of payment of Government Taxes, Customs duty and other charges, levies etc.

Any neglect or omission or failure on the part of the CONTRACTOR in obtaining necessary and reliable information upon the foregoing or any other matters affecting the CONTRACT shall not relieve him from any risks or liabilities or the entire responsibility from completion of the works at the scheduled rates and times in strict accordance with the CONTRACT.

It is, therefore, expected that should the CONTRACTOR have any doubt as to the meaning of any portion of the CONTRACT DOCUMENT he shall set forth the particulars thereof in writing to EMPLOYER in duplicate, before submission of tender. The EMPLOYER may provide such clarification as may be necessary in writing to CONTRACT, such clarifications as provided by EMPLOYER shall form part of CONTRACT DOCUMENTS.

No verbal agreement or inference from conversation with any effect or employee of the EMPLOYER either before, during or after the execution of the CONTRACT agreement shall in any way affect or modify and of the terms or obligations herein contained.

Any change in layout due to site conditions or technological requirement shall be binding on the CONTRACTOR and no extra claim on this account shall be entertained.

**24 Contract Performance Security:**

- 24.1 The CONTRACTOR shall furnish to the EMPLOYER, within 30 days from the date of notification of award, a security in the sum of 3% of the accepted value of the tender or the actual value of work to be done whichever is applicable due to any additional work or any other reasons, in the form of a Bank draft/Banker's cheque or Bank Guarantee or irrevocable Letter of credit (as per proforma enclosed) as Contract Performance Security with the EMPLOYER which will be refunded after the expiry of DEFECTS LIABILITY PERIOD.
- 24.2 CONTRACTOR can furnish the Contract Performance Security in the form of Demand Draft or through a Bank Guarantee or through an irrevocable Letter of Credit from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign



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bank. However, other than the Nationalized Indian Banks, the banks whose BGs are furnished, must be commercial banks having net worth in excess of Rs. 100 crores and a declaration to this effect should be made by such commercial bank either in the bank guarantee itself or separately on a letter head.

The bank guarantee or the Letter of Credit shall be submitted in the prescribed format.

- 24.3 If the CONTRACTOR/SUB-CONTRACTOR or their employees or the CONTRACTOR's agents and representatives shall damage, break, deface or destroy any property belonging to the EMPLOYER or others during the execution of the CONTRACT, the same shall be made good by the CONTRACTOR at his own expenses and in default thereof, the ENGINEER-IN-CHARGE may cause the same to be made good by other agencies and recover expenses from the CONTRACTOR (for which the certificate of the ENGINEER- IN-CHARGE shall be final).
- 24.4 All compensation or other sums of money payable by the CONTRACTOR to the EMPLOYER under terms of this CONTRACT may be deducted from or paid by the encashment or sale of a sufficient part of his Contract Performance Security or from any sums which may be due or may become due to the CONTRACTOR by the EMPLOYER of any account whatsoever and in the event of his Contract Performance Security being reduced by reasons of any such deductions or sale of aforesaid, the CONTRACTOR shall within ten days thereafter make good in cash, bank drafts as aforesaid any sum or sums which may have been deducted from or realized by sale of his Contract Performance Security, or any part thereof. No interest shall be payable by the EMPLOYER for sum deposited as Contract Performance Security.
- 24.5 Failure of the successful bidder to comply with the requirements of this Clause shall constitute sufficient grounds for the annulment of the award and the forfeiture of bid security.

**25 Time of Performance:**

**25.1 Time for Mobilization**

The work covered by this CONTRACT shall be commenced within fifteen (15) days, the date of letter/Fax of Intent and be completed in stages on or before the dates as mentioned in the TIME SCHEDULE OF COMPLETION OF WORK. The CONTRACTOR should bear in mind that time is the essence of this agreement. Request for revision of construction time after tenders are opened will not receive consideration. The above period of fifteen (15) days is included within the overall COMPLETION SCHEDULE, not over and above the completion time to any additional work or any other reasons.

**25.2 Time Schedule of Construction:**

25.2.1 The general Time Schedule of construction is given in the TENDER DOCUMENT. CONTRACTOR should prepare a detailed monthly or weekly construction program jointly with the ENGINEER-IN-CHARGE within 15 days of receipt of LETTER/FAX OF INTENT or ACCEPTANCE OF TENDER. The WORK shall be executed strictly as per the Time Schedule given in the CONTRACT DOCUMENT. The period of construction given includes the time required for mobilization testing, rectifications, if any, retesting and completion in all respects in accordance with CONTRACT DOCUMENT to the entire satisfaction of the ENGINEER-IN-CHARGE.

25.2.2 The CONTRACTOR shall submit a detailed PERT network within the time frame agreed above consisting of adequate number of activities covering various key phases of the WORK such as design, procurement, manufacturing, shipment and



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field erection activities within fifteen (15) days from the date of LETTER/FAX OF INTENT. This network shall also indicate the interface facilities to be provided by the EMPLOYER and the dates by which such facilities are needed.

25.2.3 CONTRACTOR shall discuss the network so submitted with the EMPLOYER and the agreed network which may be in the form as submitted with the EMPLOYER or in revised form in line with the outcome of discussions shall form part of the CONTRACT, to be signed within fifteen (15) days from the date of LETTER OF ACCEPTANCE OF TENDER. During the performance of the CONTRACT, if in the opinion of the EMPLOYER proper progress is not maintained suitable changes shall be made in the CONTRACTOR's operation to ensure proper progress.

The above PERT network shall be reviewed periodically and reports shall be submitted by the CONTRACTOR as directed by EMPLOYER.

**26 Force Majeure:**

**26.1 CONDITIONS FOR FORCE MAJEURES**

In the event of either party being rendered unable by Force Majeure to perform any obligations required to be performed by them under the CONTRACT the relative obligation of the party affected by such Force Majeures shall upon notification to the other party be suspended for the period during which Force Majeures event lasts. The cost and loss sustained by the either party shall be borne by the respective parties.

The term "Force Majeures" as employed herein shall mean acts of God, earthquake, war (declared or undeclared), revolts, riots, fires, floods, rebellions, explosions, hurricane, sabotage, civil commotions and acts and regulations of respective Government of the two parties, namely the EMPLOYER and the CONTRACTOR.

Upon the occurrence of such cause(s) and upon its termination, the party alleging that it has been rendered unable as aforesaid thereby, shall notify the other party in writing immediately but not later than 72 (Seventy-two) hours of the alleged beginning and ending thereof giving full particulars and satisfactory evidence in support of its claim.

Time for performance of the relative obligation suspended by the Force Majeures shall then stand extended by the period for which such cause lasts.

If deliveries of bought out items and/or works to be executed by the CONTRACTOR are suspended by Force Majeure conditions lasting for more than 2 (two) months the EMPLOYER shall have the option to terminate the CONTRACT or re-negotiate the contract provisions.

**26.2 OUTBREAK OF WAR**

26.2.1 If during the currency of the CONTRACT there shall be an out-break of war whether declared or not, in that part of the World which whether financially or otherwise materially affect the execution of the WORK the CONTRACTOR shall unless and until the CONTRACT is terminated under the provisions in this clause continue to use his best Endeavour to complete the execution of the WORK, provided always that the EMPLOYER shall be entitled, at any time after such out-break of war to terminate or re-negotiate the CONTRACT by giving notice in writing to the CONTRACTOR and upon such notice being given the CONTRACT shall, save as to the rights of the parties under this clause and to the operation of the clauses entitled settlement of Disputes and Arbitration hereof, be terminated but without prejudice to the right of either party in respect of any



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antecedent breach thereof.

26.2.2 If the CONTRACT shall be terminated under the provisions of the above clause, the CONTRACTOR shall with all reasonable diligence remove from the SITE all the CONTRACTOR's equipment and shall give similar facilities to his SUB-CONTRACTORS to do so.

**27 Price reduction schedule:**

27.1 Time is the essence of the CONTRACT. In case the CONTRACTOR fails to complete the WORK within the stipulated period, then, unless such failure is due to Force Majeure as defined in Clause 26 here above or due to EMPLOYER's defaults, the Total Contract price shall be reduced by ½ % of the total Contract Price per complete week of delay or part thereof subject to a maximum of 5 % of the Total Contract Price, by way of reduction in price for delay and not as penalty. The said amount will be recovered from amount due to the Contractor/ Contractor's Contract Performance Security payable on demand.

The decision of the OWNER in regard to applicability of Price Reduction Schedule shall be final and binding on the CONTRACTOR.

27.2 All sums payable under this clause is the reduction in price due to delay in completion period at the above agreed rate.

27.3 BONUS FOR EARLY COMPLETION

**Bonus For Early Completion  
27.3 (\*)**

If the Contractor achieves completion of Works in all respect prior to the time schedule stipulated in the SCC, the Employer shall pay to the Contractor the relevant sum, if mentioned specifically in SCC, as bonus for early completion. The bonus for early completion, if provided specifically in SCC, shall be payable to the maximum ceiling of 2 ½ % of the total contract price.

(Clause not applicable for this  
Tender)

(\*) Partial earlier completion may not always produce net benefits to the Employer, for example where utilization of the completed Works requires (a) the fulfillment of all parts of the Contract (e.g. the training of personnel); or (b) the completion of all Sections (e.g. in pipeline laying, where early completion of the laying of pipeline would not be useful if the compressor is still under installation); or (c) certain seasonal effects to take place (e.g. onset of the rainy season, for impounding a reservoir); or (d) other circumstances. Also a more rapid drawdown of budgeted funds may be required. All such factors should be considered prior to the inclusion of a bonus clause in the Contract.

**28 Rights of the employer to  
forfeit contract performance  
security:**

28.1 Whenever any claim against the CONTRACTOR for the payment of a sum of money arises out or under the CONTRACT, the EMPLOYER shall be entitled to recover such sum by appropriating in part or whole the Contract Performance Security of the CONTRACTOR. In the event of the security being insufficient or if no security has been taken from the CONTRACTOR, then the balance or the total sum recoverable, as the case may be shall be deducted from any sum then due or which at any time thereafter may become due to the CONTRACTOR. The CONTRACTOR shall pay to the EMPLOYER on demand any balance remaining due.

28.2 In .case of forfeiture of Contract Performance Security/ Security Deposit, the forfeited amount will be considered inclusive of tax and tax invoice will be issued by TFL. The forfeiture amount will be subject to final decision of TFL based on other terms and conditions of order/ contract.

**29 Failure by the contractor to  
comply with the provisions  
of the contract:**

29.1 If the CONTRACTOR refuses or fails to execute the WORK or any separate part thereof with such diligence as will ensure its completion within the time specified in the CONTRACT or extension thereof or fails to perform any of his obligation



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under the CONTRACT or in any manner commits a breach of any of the provisions of the CONTRACT it shall be open to the EMPLOYER at its option by written notice to the CONTRACTOR:

a) TO DETERMINE THE CONTRACT in which event the CONTRACT shall stand terminated and shall cease to be in force and effect on and from the date appointed by the EMPLOYER on that behalf, whereupon the CONTRACTOR shall stop forthwith any of the CONTRACTOR's work then in progress, except such WORK as the EMPLOYER may, in writing, require to be done to safeguard any property or WORK, or installations from damage, and the EMPLOYER, for its part, may take over the work remaining unfinished by the CONTRACTOR and complete the same through a fresh contractor or by other means, at the risk and cost of the CONTRACTOR, and any of his sureties if any, shall be liable to the EMPLOYER for any excess cost occasioned by such work having to be so taken over and completed by the EMPLOYER over and above the cost at the rates specified in the schedule of quantities and rate/prices.

b) WITHOUT DETERMINING THE CONTRACT to take over the work of the CONTRACTOR or any part thereof and complete the same through a fresh contractor or by other means at the risk and cost of the CONTRACTOR. The CONTRACTOR and any of his sureties are liable to the EMPLOYER for any excess cost over and above the cost at the rates specified in the Schedule of Quantities/ rates, occasioned by such works having been taken over and completed by the EMPLOYER.

29.2 In such events of Clause 29.1(a) or (b) above.

a) The whole or part of the Contract Performance Security furnished by the CONTRACTOR is liable to be forfeited without prejudice to the right of the EMPLOYER to recover from the CONTRACTOR the excess cost referred to in the sub-clause aforesaid, the EMPLOYER shall also have the right of taking possession and utilizing in completing the works or any part thereof, such as materials equipment and plants available at work site belonging to the CONTRACTOR as may be necessary and the CONTRACTOR shall not be entitled for any compensation for use or damage to such materials, equipment and plant.

b) The amount that may have become due to the CONTRACTOR on account of work already executed by him shall not be payable to him until after the expiry of Six (6) calendar months reckoned from the date of termination of CONTRACT or from the taking over of the WORK or part thereof by the EMPLOYER as the case may be, during which period the responsibility for faulty materials or workmanship in respect of such work shall, under the CONTRACT, rest exclusively with the CONTRACTOR. This amount shall be subject to deduction of any amounts due from the CONTRACT to the EMPLOYER under the terms of the CONTRACT authorized or required to be reserved or retained by the EMPLOYER.

29.3 Before determining the CONTRACT as per Clause 29.1(a) or (b) provided in the judgment of the EMPLOYER, the default or defaults committed by the CONTRACTOR is/are curable and can be cured by the CONTRACTOR if an opportunity given to him, then the EMPLOYER may issue Notice in writing calling the CONTRACTOR to cure the default within such time specified in the Notice.





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- 29.4 The EMPLOYER shall also have the right to proceed or take action as per 29.1(a) or (b) above, in the event that the CONTRACTOR becomes bankrupt, insolvent, compounds with his creditors, assigns the CONTRACT in favour of his creditors or any other person or persons, or being a company or a corporation goes into voluntary liquidation, provided that in the said events it shall not be necessary for the EMPLOYER to give any prior notice to the CONTRACTOR.
- 29.5 Termination of the CONTRACT as provided for in sub- clause 29.1(a) above shall not prejudice or affect their rights of the EMPLOYER which may have accrued upto the date of such termination.
- 30 Contractor remains liable to pay compensation if action not taken under clause 29:**
- 30.1 In any case in which any of the powers conferred upon the EMPLOYER BY CLAUSE 29.0 thereof shall have become exercisable and the same had not been exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in .the event of any further case of default by the CONTRACTOR for which by any clause or clauses hereof he is declared liable to pay compensation amounting to the whole of his Contract Performance Security, and the liability of the CONTRACTOR for past and future compensation shall remain unaffected. In the event of the EMPLOYER putting in force the power under above sub-clause (a), (b) or (c) vested in him under the preceding clause he may, if he so desired, take possession of all or any tools, and plants, materials and stores in or upon the works or the site thereof belonging to the CONTRACTOR or procured by him and intended to be used for the execution of the WORK or any part thereof paying or allowing for the same in account at the CONTRACT rates or in case of these not being applicable at current market rates to be certified by the ENGINEER-IN-CHARGE whose certificate thereof shall be final, otherwise the ENGINEER-IN- CHARGE may give notice in writing to the CONTRACTOR or his clerk of the works, foreman or other authorized agent, requiring him to remove such tools, plant, materials or stores from the premises (within a time to be specified in such notice), and in the event of the CONTRACTOR failing to comply with any such requisition, the ENGINEER-IN-CHARGE may remove them at the CONTRACTOR's expense or sell them by auction or private sale on account of the CONTRACTOR and at his risk in all respects without any further notice as to the date, time or place of sale and the certificate of the ENGINEER-IN-CHARGE as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the CONTRACTOR.
- 31 Change in constitution:**
- 31.1 Where the CONTRACTOR is a partnership firm, the prior approval of the EMPLOYER shall be obtained in writing, before any change is made in the constitution of the firm. Where the CONTRACTOR is an individual or a Hindu undivided family business concern, such approval as aforesaid shall, likewise be obtained before such CONTRACTOR enters into any agreement with other parties, where under, the reconstituted firm would have the right to carry out the work hereby undertaken by the CONTRACTOR. In either case if prior approval as aforesaid is not obtained, the CONTRACT shall be deemed to have been allotted in contravention of clause 37 hereof and the same action may be taken and the same consequence shall ensue as provided in the said clause.
- 32 Termination of contract**
- 32(A) **TERMINATION OF CONTRACT FOR DEATH:**  
If the CONTRACTOR is an individual or a proprietary concern and the individual or the proprietor dies or if the CONTRACTOR is a partnership concern and one of the partner dies then unless, the EMPLOYER is satisfied that the legal representative of the individual or the proprietary concern or the surviving partners are capable of carrying out and completing CONTRACT, he (the EMPLOYER) is entitled to cancel the CONTRACT for the uncompleted





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part without being in any way liable for any compensation payment to the estate of the deceased CONTRACTOR and/or to the surviving partners of the CONTRACTOR'S firm on account of the cancellation of CONTRACT. The decision of the EMPLOYER in such assessment shall be final and binding on the parties. In the event of such cancellation, the EMPLOYER shall not hold the estate of the deceased CONTRACTOR and/or the surviving partners of the CONTRACTOR'S firm liable for any damages for non-completion of CONTRACT.

32(B) TERMINATION OF CONTRACT IN CASE OF LIQUIDATION / BANKRUPTCY ETC.

If the Contractor shall dissolve or become bankrupt or insolvent or cause or suffer any receiver to be appointed of his business or any assets thereof compound with his Creditors, or being a corporation commence to be wound up, not being a member's voluntary winding up for the purpose of amalgamation or reconstruction, or carry on its business under a Receiver for the benefits of its Creditors any of them, EMPLOYER shall be at liberty :-

To terminate the contract forthwith upon coming to know of the happening of any such event as aforesaid by notice in writing to the Contractor or to give the Receiver or liquidator or other person, the option of carrying out the contract subject to his providing a guarantee up to an amount to be agreed upon by EMPLOYER for due and faithful performance of the contract.

32 (C) In case of termination of CONTRACT herein set forth (under clause 29.0) except under conditions of Force Majeure and termination after expiry of contract, the CONTRACTOR shall be put under holiday [i.e. neither any enquiry will be issued to the party by Talcher Fertilizers Ltd. against any type of tender nor their offer will be considered by TFL against any ongoing tender (s) where contract between TFL and that particular CONTRACTOR (as a bidder) has not been finalized] for three years from the date of termination by Talcher Fertilizers Ltd. to such CONTRACTOR.

- 33 **Members of the employer not individually liable :** 33.1 No Director, or official or employee of the EMPLOYER/ CONSULTANT shall in any way be personally bound or liable for the acts or obligations of the EMPLOYER under the CONTRACT or answerable for any default or omission in the observance or performance of any of the acts, matters or things which are herein contained.
- 34 **Employer not bound by personal representations:** 34.1 The CONTRACTOR shall not be entitled to any increase on the scheduled rates or any other right or claim whatsoever by reason of any representation, explanation statement or alleged representation, promise or guarantees given or alleged to have been given to him by any person.
- 35 **Contractor's office at site:** 35.1 The CONTRACTOR shall provide and maintain an office at the site for the accommodation of his agent and staff and such office shall be open at all reasonable hours to receive instructions, notice or other communications. The CONTRACTOR at all time shall maintain a site instruction book and compliance of these shall be communicated to the ENGINEER-IN CHARGE from time to time and the whole document to be preserved and handed over after completion of works.
- 36 **Contractor's subordinate staff and their conduct** 36.1 The CONTRACTOR, on or after award of the WORK shall name and depute a qualified engineer having sufficient experience in carrying out work of similar nature, to whom the equipments, materials, if any, shall be issued and instructions



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for works given. The CONTRACTOR shall also provide to the satisfaction of the ENGINEER-IN-CHARGE sufficient and qualified staff to superintend the execution of the WORK, competent sub-agents, foremen and leading hands including those specially qualified by previous experience to supervise the types of works comprised in the CONTRACT in such manner as will ensure work of the best quality, expeditious working. Whenever in the opinion of the ENGINEER-IN-CHARGE additional properly qualified supervisory staff is considered necessary, they shall be employed by the CONTRACTOR without additional charge on accounts thereof. The CONTRACTOR shall ensure to the satisfaction of the ENGINEER-IN-CHARGE that SUB-CONTRACTORS, if any, shall provide competent and efficient supervision, over the work entrusted to them.

36.2 If and whenever any of the CONTRACTOR's or SUB- CONTRACTOR'S agents, sub-agents, assistants, foremen, or other employees shall in the opinion of ENGINEER-IN- CHARGE be guilty of any misconduct or be incompetent or insufficiently qualified or negligent in the performance of their duties of that in the opinion of the EMPLOYER or the ENGINEER-IN-CHARGE, it is undesirable for administrative or any other reason for such person or persons to be employed in the works, the CONTRACTOR, is so directed by the ENGINEER-IN-CHARGE, shall at once remove such person or persons from employment thereon. Any person or persons so removed from the works shall not again be employed in connection with the WORKS without the written permission of the ENGINEER-IN- CHARGE. Any person so removed from the WORK shall be immediately re-placed at the expense of the CONTRACTOR by a qualified and competent substitute. Should the CONTRACTOR be requested to repatriate any person removed from the works he shall do so and shall bear all costs in connection herewith.

36.3 The CONTRACTOR shall be responsible for the proper behavior of all the staff, foremen, workmen, and others, and shall exercise a proper degree of control over them and in particular and without prejudice to the said generality, the CONTRACTOR shall be bound to prohibit and prevent any employees from trespassing or acting in any way detrimental or prejudicial to the interest of the community or of the properties or occupiers of land and properties in the neighborhood and in the event of such employee so trespassing, the CONTRACTOR shall be responsible therefore and relieve the EMPLOYER of all consequent claims or actions for damages or injury or any other grounds whatsoever. The decision of the ENGINEER-IN-CHARGE upon any matter arising under this clause shall be final. The CONTRACTOR shall be liable for any liability to EMPLOYER on account of deployment of CONTRACTOR's staff etc. or incidental or arising out of the execution of CONTRACT.

The CONTRACTOR shall be liable for all acts or omissions on the part of his staff, Foremen and Workmen and others in his employment, including misfeasance or negligence of whatever kind in the course of their work or during their employment, which are connected directly or indirectly with the CONTRACT.

36.4 If and when required by the EMPLOYER and CONTRACTOR's personnel entering upon the EMPLOYER's premises shall be properly identified by badges of a type acceptable to the EMPLOYER which must be worn at all times on EMPLOYER's premises. CONTRACTOR may be required to obtain daily entry passes for his staff/employees from EMPLOYER to work within operating areas. These being safety requirements, no relaxations on this account shall be given to CONTRACTOR.



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**37 Sub-letting of works:**

37.1 No part of the CONTRACT nor any share or interest therein shall in any manner or degree be transferred, assigned or sublet by the CONTRACTOR directly or indirectly to any person, firm or corporation whatsoever without the consent in writing, of the ENGINEER/ EMPLOYER except as provided for in the succeeding sub-clause.

i) **SUB-CONTRACTS FOR TEMPORARY WORKS ETC.:**

The EMPLOYER may give written consent to Sub- contract for the execution of any part of the WORK at the site, being entered in to by CONTRACTOR provided each individual Sub- contract is submitted to the ENGINEER-IN-CHARGE before being entered into and is approved by him.

ii) **LIST OF SUB-CONTRACTORS TO BE SUPPLIED:**

At the commencement of every month the CONTRACTOR shall furnish to the ENGINEER-IN- CHARGE list of all SUB-CONTRACTORS or other persons or firms engaged by the CONTRACTOR and working at the SITE during the previous month with particulars of the general nature of the Subcontract or works done by them.

iii) **CONTRACTOR'S LIABILITY NOT LIMITED BY SUB-CONTRACTORS:**

Notwithstanding any sub-letting with such approval as aforesaid and notwithstanding that the ENGINEER-IN-CHARGE shall have received copies of any Subcontracts, the contractor shall be and shall remain solely responsible for the quality, proper and expeditious execution of the Contract in all respects as if such sub-letting or Subcontracting had not taken place, and as if such work had been done directly by the CONTRACTOR. The CONTRACTOR shall bear all responsibility for any act or omission on the part of sub-contractors in regard to work to be performed under the CONTRACT.

iv) **EMPLOYER MAY TERMINATE SUB-CONTRACTS:**

If any SUB-CONTRACTOR engaged upon the works at the site executes any works which in the opinion of the ENGINEER-IN-CHARGE is not in accordance with the CONTRACT documents, the EMPLOYER may by written notice to the CONTRACTOR request him to terminate such subcontract and the CONTRACTOR upon the receipt of such notice shall terminate such Subcontract and dismiss the SUB-CONTRACTOR(S) and the later shall forthwith leave the works, failing which the EMPLOYER shall have the right to remove such SUB- CONTRACTOR(S) from the site.

v) **NO REMEDY FOR ACTION TAKEN UNDER THIS CLAUSE:**

No action taken by the EMPLOYER under the clause shall relieve the CONTRACTOR of any of his liabilities under the CONTRACT or give rise to any right or compensation, extension of time or otherwise failing which the EMPLOYER shall have the right to remove such SUB-CONTRACTOR(S) from the site.



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**38 Power of entry:**

38.1

If the CONTRACTOR shall not commence the WORK in the manner previously described in the CONTRACT documents or if he shall at any time in the opinion of the ENGINEER-IN-CHARGE,

- i) fail to carry out the WORK in conformity with the CONTRACT documents, or
- ii) fail to carry out the WORK in accordance with the Time Schedule, or
- iii) substantially suspend work or the WORK for a period of fourteen days without authority from the ENGINEER-IN-CHARGE, or
- iv) fail to carry out and execute the WORK to the satisfaction of the ENGINEER-IN-CHARGE, or
- v) fail to supply sufficient or suitable construction plant, temporary works, labour, materials or things, or
- vi) Commit, suffer, or permit any other breach of any of the provisions of the CONTRACT on his part to be performed or observed or persist in any of the above mentioned breaches of the CONTRACT for fourteen days, after notice in writing shall have been given to the CONTRACTOR by the ENGINEER-IN-CHARGE requiring such breach to be remedied, or
- vii) if the CONTRACTOR shall abandon the WORK or
- viii) If the CONTRACTOR during the continuance of the CONTRACT shall become bankrupt, make any arrangement or composition with his creditors, or permit any execution to be levied or go into liquidation whether compulsory or voluntary not being merely a voluntary liquidation for the purpose of amalgamation or reconstruction

then in any such case, the EMPLOYER shall have the power to enter upon the WORK and take possession thereof and of the materials, temporary WORK, construction plant, and stock thereon, and to revoke the CONTRACTOR's license to use the same, and to complete the WORK by his agents, other CONTRACTORS or workmen or to relate the same upon any terms and to such other person, firm or corporation as the EMPLOYER in his absolute discretion may think proper to employ and for the purpose aforesaid to use or authorize the use of any materials, temporary work, CONSTRUCTION PLANT, and stock as aforesaid, without making payment or allowance to the CONTRACTOR for the said materials other than such as may be certified in writing by the ENGINEER-IN-CHARGE to be reasonable, and without making any payment or allowance to the CONTRACTOR for the use of the temporary said works, construction plant and stock or being liable for any loss or damage thereto, and if the EMPLOYER shall by reason of his taking possession of the WORK or of the WORK being completed by other CONTRACTOR (due account being taken of any such extra work or works which may or be omitted) then the amount of such excess as certified by the ENGINEER-IN-CHARGE shall be deducted from any money which may be due for work done by the CONTRACTOR under the CONTRACT and not paid for. Any deficiency shall forthwith be made good and paid to the EMPLOYER by the CONTRACTOR and the EMPLOYER shall have power to sell in such manner and for such price as he may think fit all or any of the



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construction plant, materials etc. constructed by or belonging to and to recoup and retain the said deficiency or any part thereof out of proceeds of the sale.

**39 Contractor's responsibility with the mechanical, electrical, intercommunication system, air-conditioning contractors and other agencies:**

39.1 Without repugnance of any other condition, it shall be the responsibility of the CONTRACTOR executing the work of civil construction, to work in close cooperation and coordinate the WORK with the Mechanical, Electrical, Air-conditioning and Intercommunication Contractor's and other agencies or their authorized representatives, in providing the necessary grooves, recesses, cuts and opening etc., in wall, slabs beams and columns etc. and making good the same to the desired finish as per specification, for the placement of electrical, intercommunication cables, conduits, air-conditioning inlets and outlets grills and other equipments etc. where required. For the above said requirements in the false ceiling and other partitions, the CONTRACTOR before starting-up the work shall in consultation with the Electrical, Mechanical, Intercommunication, Air-conditioning contractor and other agencies prepare and put-up a joint scheme, showing the necessary openings, grooves, recesses, cuts, the methods of fixing required for the WORK of the aforesaid, and the finishes therein, to the ENGINEER-IN-CHARGE and get the approval. The CONTRACTOR before finally submitting the scheme to the ENGINEER-IN-CHARGE, shall have the written agreement of the other agencies. The ENGINEER- IN-CHARGE, before communicating his approval to the scheme, with any required modification, shall get the final agreement of all the agencies, which shall be binding. No claim shall be entertained on account of the above.

The CONTRACTOR shall confirm in all respects with provision of any statutory regulations, ordinances or byelaws of any local or duly constituted authorities or public bodies which may be applicable from time to time to the WORK or any temporary works. The CONTRACTOR shall keep the EMPLOYER indemnified against all penalties and liabilities of every kind, arising out of non- adherence to such stains, ordinances, laws, rules, regulations, etc.

**40 Other agencies at site:**

40.1 The CONTRACTOR shall have to execute the WORK in such place and conditions where other agencies will also be engaged for other works such as site grading, filling, and leveling, electrical and mechanical engineering works, etc. No claim shall be entertained due to WORK being executed in the above circumstances.

**41 Notice:**

41.1 TO THE CONTRACTOR:

Any notice hereunder may be served on the CONTRACTOR or his duly authorized representative at the job site or may be served by registered mail direct to the address furnished by the CONTRACTOR. Proof of issue of any such notice could be conclusive of the CONTRACTOR having been duly informed of all contents therein.

41.2 TO THE EMPLOYER:

Any notice to be given to the EMPLOYER under the terms of the CONTRACTOR shall be served by sending the same by Registered mail to or delivering the same at the respective site offices of M/s Talcher Fertilizers Ltd. addressed to the HEAD/SITE-IN-CHARGE.

**42 Right of various interests:**

i) The EMPLOYER reserves the right to distribute the work between more than one agency(ies). The CONTRACTOR shall cooperate and afford other agency(ies) reasonable opportunity for access to the WORK for the carriage and storage of materials and execution of their works.





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- ii) Wherever the work being done by any department of the EMPLOYER or by other agency(ies) employed by the EMPLOYER is contingent upon WORK covered by this CONTRACT, the respective rights of the various interests involved shall be determined by the ENGINEER-IN-CHARGE to secure the completion of the various portions of the work in general harmony.

**43 Patents and royalties:**

- 43.1 The CONTRACTOR, if licensed under any patent covering equipment, machinery, materials or compositions of matter to be used or supplied or methods and process to be practiced or employed in the performance of this CONTRACT, agrees to pay all royalties and license fees which may be due with respect thereto. If any equipment, machinery, materials, composition of matters, be used or supplied or methods and processes to be practiced or employed in the performance of this CONTRACT, is covered by a patent under which the CONTRACTOR is not licensed then the CONTRACTOR before supplying or using the equipment, machinery materials, composition method or processes shall obtain such licenses and pay such royalties and license fees as may be necessary for performance of this CONTRACT. In the event the CONTRACTOR fails to pay any such royalty or obtain any such license, any suit for infringement of such patents which is brought against the CONTRACTOR or the EMPLOYER as a result such failure will be defended by the CONTRACTOR at his own expense and the CONTRACTOR will pay any damages and costs awarded in such suit. The CONTRACTOR shall promptly notify the EMPLOYER if the CONTRACTOR has acquired the knowledge of any plant under which a suit for infringement could be reasonably brought because of the use by the EMPLOYER of any equipment, machinery, materials, process, methods to be supplied hereunder. The CONTRACTOR agrees to and does hereby grant to EMPLOYER, together with the right to extend the same to any of the subsidiaries of the EMPLOYER as irrevocable, royalty free license to use in any country, any invention made by the CONTRACTOR or his employee in or as result of the performance of the WORK under the CONTRACT.
- 43.2 All charges on account of royalty, toilage, rent, octroi terminal or sales tax and/ or other duties or any other levy on materials obtained for the work or temporary work or part thereof (excluding materials provided by the EMPLOYER) shall be borne by the CONTRACTOR.
- 43.3 The CONTRACTOR shall not sell or otherwise dispose of or remove except for the purpose of this CONTRACT, the sand, stone, clay, ballast, earth, rock or other substances, or materials obtained from any excavation made for the purpose of the WORK or any building or produce upon the site at the time of delivery of the possession thereof, but all such substances, materials, buildings and produce shall be the property of the EMPLOYER provided that the CONTRACTOR may with the permission of the ENGINEER-IN-CHARGE, use the same for the purpose of the work by payment of cost of the same at such a rate as may be determined by the ENGINEER-IN- CHARGE.
- 43.4 The EMPLOYER shall indemnify and save harmless the CONTRACTOR from any loss on account of claims against CONTRACTOR for the contributory infringement of patent rights arising out and based upon the claim that the use of the EMPLOYER of the process included in the design prepared by the EMPLOYER and used in the operation of the plant infringes on any patent right. With respect to any subcontract entered into by CONTRACTOR pursuant to the provisions of the relevant clause hereof, the CONTRACTOR shall obtain from the SUB-CONTRACTOR an undertaking to provide the EMPLOYER with the same patent protection that CONTRACTOR is required to provide under the provisions of this clause.





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- 44 Liens:**
- 44.1 If, at any time there should be evidence or any lien or claim for which the EMPLOYER might have become liable and which is chargeable to the CONTRACTOR, the EMPLOYER shall have the right to retain out of any payment then due or thereafter to become due an amount sufficient to completely indemnify the EMPLOYER against such lien or claim and if such lien or claim be valid, the EMPLOYER may pay and discharge the same and deduct the amount so paid from any money which may be or may become due and payable to the CONTRACTOR. If any lien or claim remain unsettled after all payments are made, the CONTRACTOR shall refund or pay to the EMPLOYER all money that the latter may be compelled to pay in discharging such lien or claim including all costs and reasonable expenses. EMPLOYER reserves the right to do the same.
- 44.2 The EMPLOYER shall have lien on all materials, equipments including those brought by the CONTRACTOR for the purpose of erection, testing and commissioning of the WORK.
- 44.3 The final payment shall not become due until the CONTRACTOR delivers to the ENGINEER-IN-CHARGE a complete release or waiver of all liens arising or which may arise out of his agreement or receipt in full or certification by the CONTRACTOR in a form approved by ENGINEER-IN-CHARGE that all invoices for labour, materials, services have been paid in lien thereof and if required by the ENGINEER-IN-CHARGE in any case an affidavit that so far as the CONTRACTOR has knowledge or information the releases and receipts include all the labour and material for which a lien could be filled.
- 44.4 CONTRACTOR will indemnify and hold the EMPLOYER harmless, for a period of two years after the issue of FINAL CERTIFICATE, from all liens and other encumbrances against the EMPLOYER on account of debts or claims alleged to be due from the CONTRACTOR or his SUB-CONTRACTOR to any person including SUB- CONTRACTOR and on behalf of EMPLOYER will defend at his own expense, any claim or litigation brought against the EMPLOYER or the CONTRACTOR in connection therewith. CONTRACTOR shall defend or contest at his own expense any fresh claim or litigation by any person including his SUB-CONTRACTOR, till its satisfactory settlement even after the expiry of two years from the date of issue of FINAL CERTIFICATE.
- 45 Delays by employer or his authorized agents:**
- 45.1 In case the CONTRACTOR's performance is delayed due to any act or omission on the part of the EMPLOYER or his authorized agents, then the CONTRACTOR shall be given due extension of time for the completion of the WORK, to the extent such omission on the part of the EMPLOYER has caused delay in the CONTRACTOR's performance of his WORK.
- 45.2 No adjustment in CONTRACT PRICE shall be allowed for reasons of such delays and extensions granted except as provided in TENDER DOCUMENT, where the EMPLOYER reserves the right to seek indulgence of CONTRACTOR to maintain the agreed Time Schedule of Completion.
- In such an event the CONTRACTOR shall be obliged for working by CONTRACTOR's personnel for additional time beyond stipulated working hours as also Sundays and Holidays and achieve the completion date/interim targets.
- 46 Payment if the contract is terminated:**
- 46.1 If the CONTRACT shall be terminated as per Tender pursuant to Clause no. 29 of GCC, the CONTRACTOR shall be paid by the EMPLOYER in so far as such amounts or items shall not have already been covered by payments of amounts made to the CONTRACTOR for the WORK executed and accepted by ENGINEER-IN-CHARGE prior to the date of termination at the rates and prices provided for in the CONTRACT and in addition to the following:



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- a) The amount payable in respect of any preliminary items, so far as the Work or service comprised therein has been carried out or performed and an appropriate portion as certified by ENGINEER-IN-CHARGE of any such items or service comprised in which has been partially carried out or performed.
- b) Any other expenses which the CONTRACTOR has expended for performing the WORK under the CONTRACT subject to being duly recommended by ENGINEER-IN-CHARGE and approved by EMPLOYER for payment, based on documentary evidence of his having incurred such expenses.
- 46.2 The CONTRACTOR will be further required to transfer the title and provide the following in the manner and as directed by the EMPLOYER.
- a) Any and all completed works.
- b) Such partially completed WORK including drawings, information's and CONTRACT rights as the CONTRACTOR has specially performed, produced or acquired for the performance of the CONTRACTOR.
- 47 No waiver of rights:** 47.1 Neither the inspection by the EMPLOYER or any of their officials, employees, or agents nor any order by the EMPLOYER for payment of money or any payment for or acceptance of the whole or any part of the Work by the EMPLOYER nor any extension of time, nor any possession taken by EMPLOYER shall operate as a waiver of any provision of the CONTRACT, or of any power herein reserved to the EMPLOYER, or any right to damages herein provided, nor shall any waiver of any breach in the CONTRACT be held to be a waiver of any other subsequent breach.
- 48 Certificate not to affect right of employer and liability of contractor:** 48.1 No interim payment certificate(s) issued by the Engineer-in-Charge of the EMPLOYER, nor any sum paid on account by the EMPLOYER, nor any extension of time for execution of the work granted by EMPLOYER shall affect or prejudice the rights of the Employer against the CONTRACTOR or relieve the CONTRACTOR of his obligations for the due performance of the CONTRACT, or be interpreted as approval of the WORK done or of the equipment supplied and no certificate shall create liability for the EMPLOYER to pay for alterations, amendments, variations or additional works not ordered, in writing, by EMPLOYER or discharge the liability of the CONTRACTOR for the payment of damages whether due, ascertained, or certified or not or any sum against the payment of which he is bound to indemnify the EMPLOYER.
- 49 Language and measures:** 49.1 All documents pertaining to the CONTRACT including Specifications, Schedules, Notices, Correspondence, operating and maintenance Instructions, DRAWINGS, or any other writing shall be written in English language. The Metric System of measurement shall be used in the CONTRACT unless otherwise specified.
- 50 Transfer of title:** 50.1 The title of Ownership of supplies furnished by the CONTRACTOR shall not pass on to the EMPLOYER for all Supplies till the same are finally accepted by the EMPLOYER after the successful completion of PERFORMANCE TEST and GUARANTEE TEST and issue of FINAL CERTIFICATE.
- 50.2 However, the EMPLOYER shall have the lien on all such works performed as soon as any advance or progressive payment is made by the EMPLOYER to the



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CONTRACTOR and the CONTRACTOR shall not subject these works for use other than those intended under this CONTRACT.

- 51 Release of information:** 51.1 The CONTRACTOR shall not communicate or use in advertising, publicity, sales releases or in any other medium, photographs, or other reproduction of the Work under this CONTRACT or description of the site dimensions, quantity, quality or other information, concerning the Work unless prior written permission has been obtained from the EMPLOYER.
- 52 Brand names:** 52.1 The specific reference in the SPECIFICATIONS and documents to any material by trade name, make or catalogue number shall be construed as establishing standard or quality and performance and not as limited competition. However, TENDERER may offer other similar equipments provided it meets the specified standard design and performance requirements.
- 53 Completion of contract:** 53.1 Unless otherwise terminated under the provisions of any other relevant clause, this CONTRACT shall be deemed to have been completed at the expiration of the PERIOD OF LIABILITY as provided for under the CONTRACT.
- 54 Spares:** 54.1 The CONTRACTOR shall furnish to the EMPLOYER all spares required for COMMISSIONING of the plants, recommendatory and/or mandatory spares, which are required essential by the manufacturer/supplier. The same shall be delivered at SITE, 3(Three) months before COMMISSIONING.

Also the CONTRACTOR should furnish the manufacturing drawings for fast wearing spares.

- 54.2 The CONTRACTOR guarantees the EMPLOYER that before the manufacturers of the equipments, plants and machineries go out of production of spare parts for the equipment furnished and erected by him, he shall give at least twelve (12) months' advance notice to the EMPLOYER, so that the latter may order his requirement of spares in one lot, if he so desires.

**SECTION-V Performance of Work**

- 55 Execution of work:** 55.1 All the Works shall be executed in strict conformity with the provisions of the CONTRACT Documents and with such explanatory detailed drawings, specification and instructions as may be furnished from time to time to the CONTRACTOR by the ENGINEER-IN-CHARGE whether mentioned in the CONTRACT or not. The CONTRACTOR shall be responsible for ensuring that works throughout are executed in the most substantial, proper and workmanlike manner with the quality of material and workmanship in strict accordance with the SPECIFICATIONS and to the entire satisfaction of the ENGINEER-IN-CHARGE. The CONTRACTOR shall provide all necessary materials equipment labour etc. for execution and maintenance of WORK till completion unless otherwise mentioned in the CONTRACT.
- 56 Co-ordination and inspection of work:** 56.1 The coordination and inspection of the day-to-day work under the CONTRACT shall be the responsibility of the ENGINEER-IN-CHARGE. The written instruction regarding any particular job will normally be passed by the ENGINEER-IN-CHARGE or his authorized representative. A work order book will be maintained by the CONTRACTOR for each sector in which the aforesaid written instructions will be entered. These will be signed by the CONTRACTOR or his authorized representative by way of acknowledgement within 12 hours.
- 57 Work in monsoon and dewatering:** 57.1 Unless otherwise specified elsewhere in the tender, the execution of the WORK may entail working in the monsoon also. The CONTRACTOR must maintain a



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minimum labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No extra rate will be considered for such work in monsoon.

57.2 During monsoon and other period, it shall be the responsibility of the CONTRACTOR to keep the construction work site free from water at his own cost.

**58 Work on sundays and holidays:**

58.1 For carrying out Work on Sundays, and Holidays, the CONTRACTOR will approach the ENGINEER-IN-CHARGE or his representative at least two days in advance and obtain permission in writing. The CONTRACTOR shall observe all labour laws and other statutory rules and regulations in force. In case of any violations of such laws, rules and regulations, consequence if any, including the cost thereto shall be exclusively borne by the CONTRACTOR and the EMPLOYER shall have no liability whatsoever on this account.

**59 General conditions for construction and erection work:**

59.1 The working time at the site of work is 48 hours per week. Overtime work is permitted in cases of need and the EMPLOYER will not compensate the same. Shift working at 2 or 3 shifts per day will become necessary and the CONTRACTOR should take this aspect into consideration for formulating his rates for quotation. No extra claims will be entertained by the EMPLOYER no this account. For carrying out work beyond working hours the CONTRACTOR will approach the ENGINEER-IN-CHARGE or his authorized representative and obtain his prior written permission.

59.2 The CONTRACTOR must arrange for the placement of workers in such a way that the delayed completion of the WORK or any part thereof for any reason whatsoever will not affect their proper employment. The EMPLOYER will not entertain any claim for idle time payment whatsoever.

59.3 The CONTRACTOR shall submit to the EMPLOYER/ ENGINEER-IN-CHARGE reports at regular intervals regarding the state and progress of WORK. The details and proforma of the report will mutually be agreed after the award of CONTRACT. The CONTRACTOR shall provide display boards showing progress and labour strengths at worksite, as directed by the ENGINEER-IN-CHARGE.

**60 Alterations in specifications, design and extra works:**

60.1 The WORK covered under this CONTRACT having to be executed by the CONTRACTOR on a lumpsum firm price/item rate quoted by him, the EMPLOYER will not accept any proposals for changes in VALUE OF CONTRACT or extension in time on account of any such changes which may arise to the CONTRACTOR's scope of WORK as a result of detailed Engineering and thereafter during the execution of WORK. The only exception to this will be a case where the EMPLOYER requests in writing to the CONTRACTOR to upgrade the SPECIFICATIONS or the size of any major pieces of equipments, plant or machinery beyond what is normally required to meet the scope of WORK as defined in the CONTRACT DOCUMENT.

In such cases, a change order will be initialled by the CONTRACTOR at the appropriate time for the EMPLOYER's prior approval giving the full back-up data for their review and for final settlement of any impact on price within 30 (thirty) days thereafter.

60.2 The ENGINEER-IN-CHARGE shall have to make any alterations in, omission from, additions to or substitutions for, the Schedule of Rates, the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the WORK and the CONTRACTOR shall be bound to carry out the such altered/ extra/ new items of WORK in



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accordance with any instructions which may be given to him in writing signed by the ENGINEER-IN- CHARGE, and such alterations, omissions, additions or substitutions shall not invalidate the CONTRACT and any altered, additional or substituted work which the CONTRACTOR may be directed to do in the manner above specified as part of the WORK shall be carried out by the CONTRACTOR on the same conditions in all respects on which he agreed to do the main WORK. The time of completion of WORK may be extended for the part of the particular job at the discretion of the ENGINEER-IN- CHARGE, for only such alterations, additions or substitutions of the WORK, as he may consider as just and reasonable. The rates for such additional, altered or substituted WORK under this clause shall be worked out in accordance with the following provisions:-

I. For Item Rate Contract

- a) If the rates for the additional, altered or substituted WORK are specified in the CONTRACT for the WORK, the CONTRACTOR is bound to carry on the additional, altered or substituted WORK at the same rates as are specified in the CONTRACT.
- b) If the rates for the additional, altered or substituted WORK are not specifically provided in the CONTRACT for the WORK, the rates will be derived from the rates for similar class of WORK as are specified in the CONTRACT for the WORK. The opinion of the ENGINEER-IN- CHARGE, as to whether or not the rates can be reasonably so derived from the items in this CONTRACT will be final and binding on the CONTRACTOR.
- c) If the rates for the altered, additional or substituted WORK cannot be determined in the manner specified in sub-clause(s) (a) and (b) above, then the CONTRACTOR shall, within 7 days of the date of receipt of order to carry out the WORK, inform the ENGINEER-IN-CHARGE of the rates which it is his intention to charge for such class of WORK, supported by analysis of the rate or rates claimed, and the ENGINEER-IN-CHARGE shall determine the rate or rates on the basis of the prevailing market rates, labour cost at schedule of labour rates plus 10% to cover contractor's supervision, overheads and profit and pay the CONTRACTOR accordingly. The opinion of the ENGINEER- IN-CHARGE as to current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on the CONTRACTOR.
- d) Where the item of work will be executed through nominated specialist agency as approved by the ENGINEER-IN-CHARGE, then the actual amount paid to such nominated agency supported by documentary evidence and as certified by ENGINEER-IN-CHARGE shall be considered plus 10% (ten percent) to cover all contingencies, overhead, profits to arrive at the rates.
- e) Provisions contained in the Sub-clause (a) & (d) above shall, however, not apply for the following:-

Where the value of additions of new items together with the value of alterations, additions/ deletions or substitutions does





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not exceed by or is not less than plus/minus (±)25% of the VALUE OF CONTRACT. The item rates in the Schedule of Rates shall hold good for all such variations between the above mentioned limits, irrespective of any increase/decrease of quantities in the individual items of Schedule of Rates.

Where the value of addition of new items together with the value of alterations, additions/ deletions or substitutions reduces more than 25% of the contract value but is within the following limits the tenderer shall be paid compensation for decrease in the value of work, as follows:

S.No.	Range of Variation	Percentage compensation for decrease in the value of work in the respective range.
a)	Beyond (+) 25% upto & inclusive of (+) 50%	No increase and/ or decrease shall be applicable for the Schedule of Rates (The rates quoted for this increase shall be valid).
b)	Beyond (-) 25% upto & inclusive of (-) 50%	For reduction beyond 25% contractor shall be compensated by an amount equivalent to 10% of the reduction in value of the contract as awarded. For example if the actual contract value is 70% of awarded value then compensation shall be 10% of (75-70) i.e. 0.5% of awarded contract value.

II. For Lumpsum Contracts

CONTRACTOR shall, within 7 days of the date of receipt of order to carry out the WORK, inform the ENGINEER-IN- CHARGE of the rates which it is his intention to charge for such class of WORK, supported by analysis of the rate or rates claimed, and the ENGINEER-IN-CHARGE shall determine the rate or rates on the basis of the prevailing market rates, labour cost at schedule of labour rates plus 10% to cover contractor's supervision, overheads and profit and pay the CONTRACTOR accordingly. The opinion of the ENGINEER-IN-CHARGE as to current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on the CONTRACTOR.

**61 Drawings to be supplied by the employer**

- 61.1 The drawings attached with tender are only for the general guidance to the CONTRACTOR to enable him to visualize the type of work contemplated and scope of work involved. The CONTRACTOR will be deemed to have studied the DRAWINGS and formed an idea about the WORK involved.
- 61.2 Detailed working drawings on the basis of which actual execution of the WORK is to proceed, will be furnished from time to time during the progress of the work. The CONTRACTOR shall be deemed to have gone through the DRAWINGS supplied to him thoroughly and carefully and in conjunction with all other connected drawings and bring to the notice of the ENGINEER-IN-CHARGE discrepancies, if any, therein before actually carrying out the Work.
- 61.3 Copies of all detailed working drawings relating to the WORK shall be kept at the CONTRACTOR's office on the site and shall be made available to the





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ENGINEER-IN- CHARGE at any time during the CONTRACT. The drawings and other documents issued by the EMPLOYER shall be returned to the EMPLOYER on completion of the WORK.

**62 Drawings to be supplied by the contractor:**

62.1 The drawings/date which are to be furnished by the CONTRACTOR are enumerated in the special conditions of contract, and shall be furnished within the specified time.

62.2 Where approval/review of drawings before manufacture/ construction/fabrication has been specified, it shall be CONTRACTOR's responsibility to have these drawings prepared as per the directions of ENGINEER-IN-CHARGE and got approved before proceeding with manufacture/construction/fabrication as the case may be. Any change that may have become necessary in these drawings during the execution of the work shall have to be carried out by the CONTRACTOR to the satisfaction of ENGINEER-IN-CHARGE at no extra cost. All final drawings shall bear the certification stamp as indicated below duly signed by both the CONTRACTOR and ENGINEER-IN-CHARGE.

"Certified true for \_\_\_\_\_ (Name of Work)

Agreement No. \_\_\_\_\_

Signed: \_\_\_\_\_  
(CONTRACTOR) (ENGINEER-IN-CHARGE)

62.3 The DRAWINGS submitted by the CONTRACTOR shall be reviewed by the ENGINEER-IN-CHARGE as far as practicable within 3 (Three) weeks and shall be modified by the CONTRACTOR, if any modifications and/or corrections are required by the ENGINEER-IN-CHARGE. The CONTRACTOR shall incorporate such modifications and/or corrections and submit the final drawings for approval. Any delays arising out of failure by the CONTRACTOR to rectify the drawing in good time shall not alter the Contract Completion Time.

62.4 As built drawings showing all corrections, adjustments etc. shall be furnished by the CONTRACTOR in six copies and one transparent for record purposed to the EMPLOYER.

**63 Setting out works:**

63.1 The ENGINEER-IN-CHARGE shall furnish the CONTRACTOR with only the four corners of the Works site and a level bench mark and the CONTRACTOR shall set out the Works and shall provide an efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.

63.2 The CONTRACTOR shall provide, fix and be responsible for the maintenance of all stakes, templates, level marks, profiles and other similar things and shall take all necessary precautions to prevent their removal or disturbance and shall be responsible for the consequence of such removal or disturbance should the same take place and for their efficient and timely reinstatement. The CONTRACTOR shall also be responsible for the maintenance of all existing survey marks, boundary marks, distance marks and center line marks, either existing or supplied and fixed by the CONTRACTOR. The work shall be set out to the satisfaction of the ENGINEER-IN-CHARGE. The approval there of joining with the CONTRACTOR by the ENGINEER- IN-CHARGE in setting out the work, shall not relieve the CONTRACTOR of any of his responsibility.

63.3 Before beginning the Works, the CONTRACTOR shall at his own cost, provide all necessary reference and level posts, pegs, bamboos, flags, ranging rods, strings and other materials for proper layout of the works in accordance with the schemes for bearing marks acceptable to the ENGINEER-IN-CHARGE. The center,



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longitudinal or face lines and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct mark at the centre to enable theodolite to be set over it. No work shall be started until all these points are checked and approved by the ENGINEER-IN-CHARGE in writing but such approval shall not relieve the CONTRACTOR of any of his responsibilities. The CONTRACTOR shall also provide all labour, material and other facilities, as necessary, for the proper checking of layout and inspection of the points during construction.

- 63.4 Pillars bearing geodetic marks located at the sites of units of WORKS under construction should be protected and fenced by the CONTRACTOR.
- 63.5 On completion of WORK, the CONTRACTOR must submit the geodetic documents according to which the WORK was carried out.
- 64 Responsibility for level and alignment:**
- 64.1 The CONTRACTOR shall be entirely and exclusively responsible for the horizontal and vertical alignment, the levels and correctness of every part of the WORK and shall rectify effectively any errors or imperfections therein, such rectifications shall be carried out by the CONTRACTOR, at his own cost, when instructions are issued to that effect by the ENGINEER- IN-CHARGE.
- 65 Materials to be supplied by contractor:**
- 65.1 The CONTRACTOR shall procure and provide within the VALUE OF CONTRACT the whole of the materials required for the construction including steels, cement and other building materials, tools, tackles, construction plant and equipment for the completion and maintenance of the WORK except the materials which will be issued by the EMPLOYER and shall make his own arrangement for procuring such materials and for the transport thereof. The EMPLOYER may give necessary recommendation to the respective authority if so desired by the CONTRACTOR but assumes no further responsibility of any nature. The EMPLOYER will insist on the procurement of materials which bear ISI stamp and/or which are supplied by reputed suppliers.
- 65.2 The CONTRACTOR shall properly store all materials either issued to him or brought by him to the SITE to prevent damages due to rain, wind, direct exposure to sun, etc. as also from theft, pilferage, etc. for proper and speedy execution of his works. The CONTRACTOR shall maintain sufficient stocks of all materials required by him.
- 65.3 No material shall be dispatched from the CONTRACTOR's stores before obtaining the approval in writing of the ENGINEER-IN-CHARGE.
- 66 Stores supplied by the employer:**
- (Clause not applicable for this Tender)
- 66.1 If the SPECIFICATION of the WORK provides for the use of any material of special description to be supplied from the EMPLOYER's stores or it is required that the CONTRACTOR shall use certain stores to be provided by the ENGINEER-IN-CHARGE, such materials and stores, and price to be charged there for as hereinafter mentioned being so far as practicable for the convenience of the CONTRACTOR, but not so as in any way to control the meaning or effect of the CONTRACT, the CONTRACTOR shall be bound to purchase and shall be supplied such materials and stores as are from time to time required to be used by him for the purpose of the CONTRACT only. The sums due from the CONTRACTOR for the value of materials supplied by the EMPLOYER will be recovered from the running account bill on the basis of the actual consumption of materials in the works covered and for which the running account bill has been prepared. After the completion of the WORK, however, the CONTRACTOR has to account for the full quantity of materials supplied to him as per relevant clauses in this document.
- 66.2 The value of the stores/materials as may be supplied to the CONTRACTOR by



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the EMPLOYER will be debited to the CONTRACTOR's account at the rates shown in the schedule of materials and if they are not entered in the schedule, they will be debited at cost price, which for the purpose of the CONTRACT shall include the cost of carriage and all other expenses whatsoever such as normal storage supervision charges which shall have been incurred in obtaining the same at the EMPLOYER's stores. All materials so supplied to the CONTRACTOR shall remain the absolute property of the EMPLOYER and shall not be removed on any account from the SITE of the WORK, and shall be at all times open for inspection to the ENGINEER-IN-CHARGE. Any such materials remaining unused at the time of the completion or termination of the CONTRACT shall be returned to the EMPLOYER's stores or at a place as directed by the ENGINEER-IN-CHARGE in perfectly good condition at CONTRACTOR's cost.

**67 Conditions for issue of materials:**

*(Clause not applicable for this Tender)*

- 67.1 i) Materials specified as to be issued by the EMPLOYER will be supplied to the CONTRACTOR by the EMPLOYER from his stores. It shall be responsibility of the CONTRACTOR to take delivery of the materials and arrange for its loading, transport and unloading at the SITE of WORK at his own cost. The materials shall be issued between the working hours and as per the rules of the EMPLOYER as framed from time to time.
- ii) The CONTRACTOR shall bear all incidental charges for the storage and safe custody of materials at site after these have been issued to him.
- iii) Materials specified as to be issued by the EMPLOYER shall be issued in standard sizes as obtained from the manufacturers.
- iv) The CONTRACTOR shall construct suitable Godowns at the SITE of WORK for storing the materials safe against damage by rain, dampness, fire, theft etc. He shall also employ necessary watch and ward establishment for the purpose.
- v) It shall be duty of the CONTRACTOR to inspect the materials supplied to him at the time of taking delivery and satisfy himself that they are in good condition. After the materials have been delivered by the EMPLOYER, it shall be the responsibility of the CONTRACTOR to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and/or replaced by him at his own cost according to the instructions of the ENGINEER-IN-CHARGE.
- vi) The EMPLOYER shall not be liable for delay in supply or non-supply of any materials which the EMPLOYER has undertaken to supply where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstances beyond the control of the EMPLOYER. In no case, the CONTRACTOR shall be entitled to claim any compensation or loss suffered by him on this account.
- vii) It shall be responsibility of the CONTRACTOR to arrange in time all materials required for the WORK other than those to be supplied by the EMPLOYER. If, however, in the opinion of the ENGINEER-IN-CHARGE the execution of the WORK is likely to be delayed due to the CONTRACTOR's inability to make arrangements for supply of materials which normally he has to arrange for, the ENGINEER-IN-CHARGE shall have the right at his own discretion to issue such materials, if available with the EMPLOYER or procure the materials from the market or as elsewhere and the CONTRACTOR will be bound to take such materials at the rates decided by the



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ENGINEER-IN-CHARGE. This, however, does not in any way absolve the CONTRACTOR from responsibility of making arrangements for the supply of such materials in part or in full, should such a situation occur nor shall this constitute a reason for the delay in the execution of the WORK.

- viii) None of the materials supplied to the CONTRACTOR will be utilized by the CONTRACTOR for manufacturing item which can be obtained as supplied from standard manufacturer in finished form.
- ix) The CONTRACTOR shall, if desired by the ENGINEER-IN-CHARGE, be required to execute an Indemnity Bond in the prescribed form for safe custody and accounting of all materials issued by the EMPLOYER.
- x) The CONTRACTOR shall furnish to the ENGINEER-IN-CHARGE sufficiently in advance a statement showing his requirement of the quantities of the materials to be supplied by the EMPLOYER and the time when the same will be required by him for the works, so as to enable the ENGINEER-IN-CHARGE to make necessary arrangements for procurement and supply of the material.
- xi) Account of the materials issued by the EMPLOYER shall be maintained by CONTRACTOR indicating the daily receipt, consumption and balance in hand. This account shall be maintained in a manner prescribed by the ENGINEER-IN-CHARGE along with all connected papers viz. requisitions, issues, etc., and shall be always available for inspection in the CONTRACTOR's office at SITE.
- xii) The CONTRACTOR should see that only the required quantities of materials are got issued. The CONTRACTOR shall not be entitled to cartage and incidental charges for returning the surplus materials, if any, to the stores wherefrom they were issued or to the place as directed by the ENGINEER-IN-CHARGE.
- xiii) Materials/ Equipment(s) supplied by EMPLOYER shall not be utilized for any purpose(s) than issued for.

**68 Material procured with assistance of employer/ return of surplus:**  
  
*(Clause not applicable for this Tender)*

68.1 Notwithstanding anything contained to the contrary in any or all the clauses of this CONTRACT where any materials for the execution of the CONTRACT are procured with the assistance of the EMPLOYER either by issue from EMPLOYER's stock or purchases made under order or permits or licenses issued by Government, the CONTRACTOR shall hold the said materials as trustee for the EMPLOYER and use such materials economically and solely for the purpose of the CONTRACT and not dispose them off without the permission of the EMPLOYER and return, if required by the ENGINEER-IN-CHARGE, shall determine having due regard to the condition of the materials. The price allowed to the CONTRACTOR, however, shall not exceed the amount charged to him excluding the storage charges, if any. The decision of the ENGINEER-IN-CHARGE shall be final and conclusive in such matters. In the event of breach of the aforesaid condition, the CONTRACTOR shall, in terms of the licenses or permits and/or criminal breach of trust, be liable to compensate the EMPLOYER at double rate or any higher rate, in the event of those materials at that time having higher rate or not being available in the market, then any other rate to be determined by the ENGINEER-IN-CHARGE and his decision shall be final and conclusive.

**69 Materials obtained from**

69.1 If the CONTRACTOR in the course of execution of the WORK is called upon to



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**dismantling:**

dismantle any part for reasons other than those stipulated in Clauses 74 and 77 hereunder, the materials obtained in the WORK of dismantling etc., will be considered as the EMPLOYER's property and will be disposed off to the best advantage of the EMPLOYER.

**70 Articles of value found:**

70.1

All gold, silver and other minerals of any description and all precious stones, coins, treasure relics, antiquities and other similar things which shall be found in, under or upon the SITE, shall be the property of the EMPLOYER and the CONTRACTOR shall duly preserve the same to the satisfaction of the ENGINEER-IN-CHARGE and shall from time to time deliver the same to such person or persons indicated by the EMPLOYER.

**71 Discrepancies between instructions:**

71.1

Should any discrepancy occur between the various instructions furnished to the CONTRACTOR, his agent or staff or any doubt arises as to the meaning of any such instructions or should there be any misunderstanding between the CONTRACTOR's staff and the ENGINEER-IN-CHARGE's staff, the CONTRACTOR shall refer the matter immediately in writing to the ENGINEER-IN-CHARGE whose decision thereon shall be final and conclusive and no claim for losses alleged to have been caused by such discrepancies between instructions, doubts, or misunderstanding shall in any event be admissible.

**72 Action where no specification is issued:**

72.1

In case of any class of WORK for which there is no SPECIFICATION supplied by the EMPLOYER as mentioned in the Tender Documents such WORK shall be carried out in accordance with Indian Standard Specifications and if the Indian Standard Specifications do not cover the same, the WORK should be carried out as per standard Engineering Practice subject to the approval of the ENGINEER-IN-CHARGE.

**73 Inspection of works:**

73.1

The ENGINEER-IN-CHARGE will have full power and authority to inspect the WORK at any time wherever in progress either on the SITE or at the CONTRACTOR's premises/workshops wherever situated, premises/ workshops of any person, firm or corporation where WORK in connection with the CONTRACT may be in hand or where materials are being or are to be supplied, and the CONTRACTOR shall afford or procure for the ENGINEER-IN-CHARGE every facility and assistance to carry out such inspection. The CONTRACTOR shall, at all time during the usual working hours and at all other time at which reasonable notice of the intention of the ENGINEER-IN-CHARGE or his representative to visit the WORK shall have been given to the CONTRACTOR, either himself be present or receive orders and instructions, or have a responsible agent duly accredited in writing, present for the purpose. Orders given to the CONTRACTOR's agent shall be considered to have the same force as if they had been given to the CONTRACTOR himself. The CONTRACTOR shall give not less than seven days notice in writing to the ENGINEER-IN-CHARGE before covering up or otherwise placing beyond reach of inspection and measurement of any work in order that the same may be inspected and measured. In the event of breach of above the same shall be uncovered at CONTRACTOR's expense for carrying out such measurement or inspection.

73.2

No material shall be dispatched from the CONTRACTOR's stores before obtaining the approval in writing of the Engineer-in-Charge.

The CONTRACTOR is to provide at all time during the progress of the WORK and the maintenance period, proper means of access with ladders, gangways etc. and the necessary attendance to move and adopt as directed for inspection or measurements of the WORK by the ENGINEER- IN-CHARGE.

73.3

The CONTRACTOR shall make available to the ENGINEER-IN- CHARGE free





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of cost all necessary instruments and assistance in checking or setting out of WORK and in the checking of any WORK made by the CONTRACTOR for the purpose of setting out and taking measurements of WORK.

- 74 Tests for quality of work:**
- 74.1 All workmanship shall be of the respective kinds described in the CONTRACT DOCUMENTS and in accordance with the instructions of the ENGINEER-IN-CHARGE and shall be subjected from time to time to such test at CONTRACTOR's cost as the ENGINEER-IN-CHARGE may direct at the place of manufacture or fabrication or on the site or at all or any such places. The CONTRACTOR shall provide assistance, instruments, labour and materials as are normally required for examining, measuring and testing any workmanship as may be selected and required by the ENGINEER-IN-CHARGE.
- 74.2 All the tests that will be necessary in connection with the execution of the WORK as decided by the ENGINEER- IN-CHARGE shall be carried out at the field testing laboratory of the EMPLOYER by paying the charges as decided by the EMPLOYER from time to time. In case of non- availability of testing facility with the EMPLOYER, the required test shall be carried out at the cost of CONTRACTOR at Government or any other testing laboratory as directed by ENGINEER-IN-CHARGE.
- 74.3 If any tests are required to be carried out in conjunction with the WORK or materials or workmanship not supplied by the CONTRACTOR, such tests shall be carried out by the CONTRACTOR as per instructions of ENGINEER-IN-CHARGE and cost of such tests shall be reimbursed by the EMPLOYER.
- 75 Samples for approval:**
- 75.1 The CONTRACTOR shall furnish to the ENGINEER-IN-CHARGE for approval, when requested or if required by the specifications, adequate samples of all materials and finished to be used in the WORK. Such samples shall be submitted before the WORK is commenced and in ample time to permit tests and examinations thereof. All materials furnished and finishes applied in actual WORK shall be fully equal to the approved samples.
- 76 Action and compensation in case of bad work:**
- 76.1 If it shall appear to the ENGINEER-IN-CHARGE that any work has been executed with unsound, imperfect or unskilled workmanship, or with materials of any inferior description, or that any materials or articles provided by the CONTRACTOR for the execution of the WORK are unsound, or of a quality inferior to that contracted for, or otherwise not in accordance with the CONTRACT, the CONTRACTOR shall on demand in writing from the ENGINEER-IN-CHARGE or his authorized representative specifying the WORK, materials or articles complained of notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify or remove and reconstruct the WORK so specified and provide other proper and suitable materials or articles at his own cost and in the event of failure to do so within the period specified by the ENGINEER-IN-CHARGE in his demand aforesaid, the CONTRACTOR shall be liable to pay compensation at the rate of 1% (One percent) of the estimated cost of the whole WORK, for every week limited to a maximum of 10% (ten percent) of the value of the whole WORK, while his failure to do so shall continue and in the case of any such failure the ENGINEER-IN-CHARGE may on expiry of notice period rectify or remove and re-execute the WORK or remove and replaced with others, the materials or articles complained of to as the case may be at the risk and expense in all respects of the CONTRACTOR. The decision of the Engineering-in-charge as to any question arising under this clause shall be final and conclusive.
- 77 Suspension of works:**
- 77.1 i) Subject to the provisions of sub-para (ii) of this clause, the CONTRACTOR shall, if ordered in writing by the





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ENGINEER-IN-CHARGE, or his representative, temporarily suspend the WORKS or any part thereof for such written order, proceed with the WORK therein ordered to be suspended until, he shall have received a written order to proceed therewith. The CONTRACTOR shall not be entitled to claim compensation for any loss or damage sustained by him by reason of temporary suspension of the WORKS aforesaid. An extension of time for completion, corresponding with the delay caused by any such suspension of the WORKS as aforesaid will be granted to the CONTRACTOR should he apply for the same provided that the suspension was not consequent to any default or failure on the part of the CONTRACTOR.

ii) In case of suspensions of entire WORK, ordered in writing by ENGINEER-IN-CHARGE, for a period of more than two months, the CONTRACTOR shall have the option to terminate the CONTRACT.

**78 Employer may do part of work:**

78.1

Upon failure of the CONTRACTOR to comply with any instructions given in accordance with the provisions of this CONTRACT the EMPLOYER has the alternative right, instead of assuming charge of entire WORK, to place additional labour force, tools, equipments and materials on such parts of the WORK, as the EMPLOYER may designate or also engage another CONTRACTOR to carry out the WORK. In such cases, the EMPLOYER shall deduct from the amount which otherwise might become due to the CONTRACTOR, the cost of such work and material with ten percent (10%) added to cover all departmental charges and should the total amount thereof exceed the amount due to the CONTRACTOR, the CONTRACTOR shall pay the difference to the EMPLOYER.

**79 Possession prior to completion:**

79.1

The ENGINEER-IN-CHARGE shall have the right to take possession of or use any completed or partially completed WORK or part of the WORK. Such possession or use shall not be deemed to be an acceptance of any work completed in accordance with the CONTRACT agreement. If such prior possession or use by the ENGINEER-IN-CHARGE delays the progress of WORK, equitable adjustment in the time of completion will be made and the CONTRACT agreement shall be deemed to be modified accordingly.

**80 (Defects liability period) twelve months period of liability from the date of issue of completion certificate:**

80.1

The CONTRACTOR shall guarantee the installation/WORK for a period of 12 months from the date of completion of WORK as certified by the ENGINEER-IN-CHARGE which is indicated in the Completion Certificate. Any damage or defect that may arise or lie undiscovered at the time of issue of Completion Certificate, connected in any way with the equipment or materials supplied by him or in the workmanship, shall be rectified or replaced by the CONTRACTOR at his own expense as deemed necessary by the ENGINEER-IN-CHARGE or in default, the ENGINEER-IN-CHARGE may carry out such works by other work and deduct actual cost incurred towards labour, supervision and materials consumables or otherwise plus 100% towards overheads (of which the certificate of ENGINEER-IN-CHARGE shall be final) from any sums that may then be or at any time thereafter, become due to the CONTRACTOR or from his Contract Performance Security, or the proceeds of sale thereof or a sufficient part on thereof.

80.2

If the CONTRACTOR feels that any variation in WORK or in quality of materials or proportions would be beneficial or necessary to fulfil the guarantees called for, he shall bring this to the notice of the ENGINEER-IN-CHARGE in writing.

If during the period of liability any portion of the WORK/equipment, is found defective and is rectified/ replaced, the period of liability for such equipment/ portion of WORK shall be operative from the date such rectification/ replacement



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are carried out and Contract Performance Guarantee shall be furnished separately for the extended period of liability for that portion of WORK/ equipment only. Notwithstanding the above provisions the supplier's, guarantees/warrantees for the replaced equipment shall also be passed on to the EMPLOYER.

80.3 LIMITATION OF LIABILITY

Notwithstanding anything contrary contained herein, the aggregate total liability of CONTRACTOR under the Agreement or otherwise shall be limited to 100% of Agreement / Contract Value. However, neither party shall be liable to the other party for any indirect and consequential damages, loss of profits or loss of production.

**81 Care of works:**

81.0 From the commencement to completion of the WORK, the CONTRACTOR shall take full responsibility for the care for all works including all temporary works and in case any damages, loss or injury shall happen to the WORK or to any part thereof or to any temporary works from any cause whatsoever, shall at his own cost repair and make good the same so that at completion the WORK shall be in good order and in conformity in every respects with the requirement of the CONTRACT and the ENGINEER-IN-CHARGE's instructions.

81.1 DEFECTS PRIOR TO TAKING OVER:

If at any time, before the WORK is taken over, the ENGINEER-IN-CHARGE shall:

- a) Decide that any works done or materials used by the CONTRACTOR or by any SUB-CONTRACTOR is defective or not in accordance with the CONTRACT, or that the works or any portion thereof are defective, or do not fulfill the requirements of CONTRACT (all such matters being hereinafter, called 'Defects' in this clause), and
- b) As soon as reasonably practicable, gives to the CONTRACTOR notice in writing of the said decision, specifying particulars of the defects alleged to exist or to have occurred, then the CONTRACTOR shall at his own expenses and with all speed make good the defects so specified.

In case CONTRACTOR shall fail to do so, the EMPLOYER may take, at the cost of the CONTRACTOR, such steps as may in all circumstances, be reasonable to make good such defects. The expenditure so incurred by the EMPLOYER will be recovered from the amount due to the CONTRACTOR. The decision of the ENGINEER-IN-CHARGE with regard to the amount to be recovered from the CONTRACTOR will be final and binding on the CONTRACTOR. As soon as the WORK has been completed in accordance with the CONTRACT (except in minor respects that do not affect their use for the purpose for which they are intended and except for maintenance there of provided in clause 80.1 of General Conditions of Contract) and have passed the tests on completion, the ENGINEER-IN-CHARGE shall issue a certificate (hereinafter called Completion Certificate) in which he shall certify the date on which the WORK have been so completed and have passed the said tests and the EMPLOYER shall be deemed to have taken over the WORK on the date so certified. If the WORK has been divided into various groups in the CONTRACT, the EMPLOYER shall be entitled to take over any group or groups before the other or others and there upon the ENGINEER-IN-CHARGE shall issue a Completion Certificate which will, however, be for such group or groups so taken over only. In such an event if the group /section/ part so taken over is related, to the integrated system of the work, not withstanding date of grant of Completion Certificate for group/ section/ part. The period of liability in respect of such group/ section/ part shall extend 12



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(twelve) months from the date of completion of WORK.

81.2 DEFECTS AFTER TAKING OVER:

In order that the CONTRACTOR could obtain a COMPLETION CERTIFICATE he shall make good, with all possible speed, any defect arising from the defective materials supplied by the CONTRACTOR or workmanship or any act or omission of the CONTRACT or that may have been noticed or developed, after the works or groups of the works has been taken over, the period allowed for carrying out such WORK will be normally one month. If any defect be not remedied within a reasonable time, the EMPLOYER may proceed to do the WORK at CONTRACTOR's risk and expense and deduct from the final bill such amount as may be decided by the EMPLOYER.

If by reason of any default on the part of the CONTRACTOR a COMPLETION CERTIFICATE has not been issued in respect of any portion of the WORK within one month after the date fixed by the CONTRACT for the completion of the WORK, the EMPLOYER shall be at liberty to use the WORK or any portion thereof in respect of which a completion certificate has not been issued, provided that the WORK or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completing these works for the issue of Completion Certificate.

82 **Guarantee/transfer of guarantee:**

82.1 For works like water-proofing, acid and alkali resisting materials, pre-construction soil treatment against termite or any other specialized works etc. the CONTRACTOR shall invariably engage SUB-CONTRACTORS who are specialists in the field and firms of repute and such a SUB-CONTRACTOR shall furnish guarantees for their workmanship to the EMPLOYER, through the CONTRACTOR. In case such a SUB-CONTRACTOR/ firm is not prepared to furnish a guarantee to the EMPLOYER, the CONTRACTOR shall give that guarantee to the EMPLOYER directly.

83 **Training of employer's personnel:**  
**(Clause not applicable)**

83.1 The CONTRACTOR undertakes to provide training to Engineering personnel selected and sent by the EMPLOYER at the works of the CONTRACTOR without any cost to the EMPLOYER. The period and the nature of training for the individual personnel shall be agreed upon mutually between the CONTRACTOR and the EMPLOYER. These engineering personnel shall be given special training at the shops, where the equipment will be manufactured and/ or in their collaborator's works and where possible, in any other plant where equipment manufactured by the CONTRACTOR or his collaborators is under installation or test to enable those personnel to become familiar with the equipment being furnished by the CONTRACTOR. EMPLOYER shall bear only the to and fro fare of the said engineering personnel.

84 **Replacement of defective parts and materials:**

84.1 If during the progress of the WORK, EMPLOYER shall decide and inform in writing to the CONTRACTOR, that the CONTRACTOR has manufactured any plant or part of the plant unsound or imperfect or has furnished plant inferior to the quality specified, the CONTRACTOR on receiving details of such defects or deficiencies shall at his own expenses within 7 (seven) days of his receiving the notice, or otherwise within such time as may be reasonably necessary for making it good, proceed to alter, re-construct or remove such work and furnish fresh equipments up to the standards of the specifications. In case the CONTRACTOR fails to do so, EMPLOYER may on giving the CONTRACTOR 7 (seven) day's notice in writing of his intentions to do so, proceed to remove the portion of the WORK so complained of and at the cost of CONTRACTOR's, perform all such works or furnish all such equipments provided that nothing in the clause shall be deemed to deprive the EMPLOYER of or affect any rights under the



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CONTRACT, the EMPLOYER may otherwise have in respect of such defects and deficiencies.

84.2 The CONTRACTOR's full and extreme liability under this clause shall be satisfied by the payments to the EMPLOYER of the extra cost, of such replacements procured including erection/installation as provided for in the CONTRACT; such extra cost being the ascertained difference between the price paid by the EMPLOYER for such replacements and the CONTRACT price portion for such defective plants and repayments of any sum paid by the EMPLOYER to the CONTRACTOR in respect of such defective plant. Should the EMPLOYER not so replace the defective plant the CONTRACTOR's extreme liability under this clause shall be limited to the repayment of all such sums paid by the EMPLOYER under the CONTRACT for such defective plant.

**85 Indemnity**

85.1 If any action is brought before a Court, Tribunal or any other Authority against the Employer or an officer or agent of the EMPLOYER, for the failure, omission or neglect on the part of the CONTRACTOR to perform any acts, matters, covenants or things under the CONTRACT, or damage or injury caused by the alleged omission or negligence on the part of the CONTRACTOR, his agents, representatives or his SUB- CONTRACTOR's, or in connection with any claim based on lawful demands of SUB-CONTRACTOR's workmen suppliers or employees, the CONTRACTOR, shall in such cases indemnify and keep the EMPLOYER and/or their representatives harmless from all losses, damages, expenses or decrees arising out of such action.

**86 Construction aids, equipments, tools & tackles:**

86.1 CONTRACTOR shall be solely responsible for making available for executing the WORK, all requisite CONSTRUCTION EQUIPMENTS, Special Aids, Barges, Cranes and the like, all Tools, Tackles and Testing Equipment and Appliances, including imports of such equipment etc. as required. In case of import of the same the rates applicable for levying of Custom Duty on such Equipment, Tools, & Tackles and the duty drawback applicable thereon shall be ascertained by the CONTRACTOR from the concerned authorities of Government of India. It shall be clearly understood that EMPLOYER shall not in any way be responsible for arranging to obtain Custom Clearance and/or payment of any duties and/or duty draw backs etc. for such equipments so imported by the CONTRACTOR and the CONTRACTOR shall be fully responsible for all taxes, duties and documentation with regard to the same. Tenderer in his own interest may contact, for any clarifications in the matter, concerned agencies/Dept./Ministries of Govt. of India. All clarifications so obtained and interpretations thereof shall be solely the responsibility of the CONTRACTOR.

**SECTION-VI Certificates and Payments**

**87 Schedule of rates and payments:**

87.1 i) CONTRACTOR'S REMUNERATION:

The price to be paid by the EMPLOYER to CONTRACTOR for the whole of the WORK to be done and for the performance of all the obligations undertaken by the CONTRACTOR under the CONTRACT DOCUMENTS shall be ascertained by the application of the respective Schedule of Rates (the inclusive nature of which is more particularly defined by way of application but not of limitation, with the succeeding sub-clause of this clause) and payment to be made accordingly for the WORK actually executed and approved by the ENGINEER-IN-CHARGE. The sum so ascertained shall (excepting only as and to the extent expressly provided herein) constitute the sole and inclusive remuneration of the CONTRACTOR under the CONTRACT and no further or other payment whatsoever shall be or become due or payable



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to the CONTRACTOR under the CONTRACT.

ii) SCHEDULE OF RATES TO BE INCLUSIVE:

The prices/rates quoted by the CONTRACTOR shall remain firm till the issue of FINAL CERTIFICATE and shall not be subject to escalation. Schedule of Rates shall be deemed to include and cover all costs, expenses and liabilities of every description and all risks of every kind to be taken in executing, completing and handing over the WORK to the EMPLOYER by the CONTRACTOR. The CONTRACTOR shall be deemed to have known the nature, scope, magnitude and the extent of the WORK and materials required though the CONTRACT DOCUMENT may not fully and precisely furnish them. Tenderer's shall make such provision in the Schedule of Rates as he may consider necessary to cover the cost of such items of WORK and materials as may be reasonable and necessary to complete the WORK. The opinion of the ENGINEER-IN-CHARGE as to the items of WORK which are necessary and reasonable for COMPLETION OF WORK shall be final and binding on the CONTRACTOR, although the same may not be shown on or described specifically in CONTRACT DOCUMENTS.

Generality of this present provision shall not be deemed to cut down or limit in any way because in certain cases it may and in other cases it may not be expressly stated that the CONTRACTOR shall do or perform a work or supply articles or perform services at his own cost or without addition of payment or without extra charge or words to the same effect or that it may be stated or not stated that the same are included in and covered by the Schedule of Rates.

iii) SCHEDULE OF RATES TO COVER CONSTRUCTION EQUIPMENTS, MATERIALS, LABOUR ETC.:

Without in any way limiting the provisions of the preceding sub-clause the Schedule of Rates shall be deemed to include and cover the cost of all construction equipment, temporary WORK (except as provided for herein), pumps, materials, labour, insurance, fuel, consumables, stores and appliances to be supplied by the CONTRACTOR and all other matters in connection with each item in the Schedule of Rates and the execution of the WORK or any portion thereof finished, complete in every respect and maintained as shown or described in the CONTRACT DOCUMENTS or as may be ordered in writing during the continuance of the CONTRACT.

iv) SCHEDULE OF RATES TO COVER ROYALTIES, RENTS AND CLAIMS:

The Schedule of Rates (i.e., VALUE OF CONTRACT) shall be deemed to include and cover the cost of all royalties and fees for the articles and processes, protected by letters, patent or otherwise incorporated in or used in connection with the WORK, also all royalties, rents and other payments in connection with obtaining materials of whatsoever kind for the WORK and shall include an indemnity to the EMPLOYER which the CONTRACTOR hereby gives against all actions, proceedings, claims, damages, costs and expenses arising from the incorporation in or use on the WORK of any such articles, processes or materials, octroi or other municipal or local Board Charges, if levied on materials, equipment or machineries to be brought to site for use on WORK shall be borne by the CONTRACTOR.





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v) SCHEDULE OF RATES TO COVER TAXES AND DUTIES:

No exemption or reduction of Customs Duties, Excise Duties, Sales Tax, Sales Tax on works Contract quay or any port dues, transport charges, stamp duties or Central or State Government or local Body or Municipal Taxes or duties, taxes or charges (from or of any other body), whatsoever, will be granted or obtained, all of which expenses shall be deemed to be included in and covered by the Schedule or Rates. The CONTRACTOR shall also obtain and pay for all permits or other privileges necessary to complete the WORK.

vi) SCHEDULE OF RATES TO COVER RISKS OF DELAY:

The Schedule of Rates shall be deemed to include and cover the risk of all possibilities of delay and interference with the CONTRACTOR's conduct of WORK which occur from any causes including orders of the EMPLOYER in the exercise of his power and on account of extension of time granted due to various reasons and for all other possible or probable causes of delay.

vii) SCHEDULE OF RATES CANNOT BE ALTERED:

For WORK under unit rate basis, no alteration will be allowed in the Schedule of Rates by reason of works or any part of them being modified, altered, extended, diminished or committed. The Schedule of Rates are fully inclusive of rates which have been fixed by the CONTRACTOR and agreed to by the EMPLOYER and cannot be altered.

For lumpsum CONTRACTS, the payment will be made according to the WORK actually carried out, for which purpose an item wise, or work wise Schedule of Rates shall be furnished, suitable for evaluating the value of WORK done and preparing running account bill. Payment for any additional work which is not covered in the Schedule of Rates, shall only be released on issuance of change order.

**88 Procedure for measurement and billing of work in progress:**

88.1 BILLING PROCEDURE:

Following procedures shall be adopted for billing of works executed by the CONTRACTOR.

88.1.1 All measurements shall be recorded in sixuplicate on standard measurement sheets supplied by EMPLOYER and submitted to EMPLOYER/CONSULTANT for scrutiny and passing.

88.1.2 EMPLOYER/CONSULTANT shall scrutinize and check the measurements recorded on the sheets and shall certify correctness of the same on the measurement sheets.

88.1.3 ENGINEER-IN-CHARGE shall pass the bills after carrying out the comprehensive checks in accordance with the terms and conditions of the CONTRACTS, within 7 days of submission of the bills, complete in all respects and send the same to the Employer to effect payment to the CONTRACTOR.

88.1.4 TFL shall make all Endeavour to make payments of undisputed amount of the bills submitted based on the joint measurements within 15 (Fifteen) days from the date





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of certification by the Engineer-in-Charge.

88.1.5 Measurements shall be recorded as per the methods of measurement spelt out in EMPLOYER/CONSULTANT SPECIFICATIONS / CONTRACT DOCUMENT. EMPLOYER/CONSULTANT shall be fully responsible for checking the measurements quantitatively and qualitatively as recorded in the Measurement Books/ Bills.

88.1.6 While preparing the final bills overall measurements will not be taken again. Only volume of work executed since the last measured bill along with summary of final measurements will be considered for the final bill. However, a detailed check shall be made as to missing measurements and in case there are any missing items or measurements the same shall be recorded.

88.2 SECURED ADVANCE ON MATERIAL:

Unless otherwise provided elsewhere in the tender, no 'Secured Advance' on security of materials brought to site for execution of contracted items(s) shall be paid to the Contractor whatsoever.

88.3 DISPUTE IN MODE OF MEASUREMENT:

In case of any dispute as to the mode of measurement not covered by the CONTRACT to be adopted for any item of WORK, mode of measurement as per latest Indian Standard Specifications shall be followed.

88.4 ROUNDING OF AMOUNTS:

In calculating the amount of each item due to the CONTRACTOR in every certificate prepared for payment, sum of less than 50 paise shall be omitted and the total amount on each certificate shall be rounded off to the nearest rupees, i.e., sum of less than 50 paise shall be omitted and sums of 50 paise and more upto one rupee shall be reckoned as one rupee.

**89 Lumpsum in tender:**

89.1 The payment against any Lumpsum item shall be made only on completion of that item as per the provision of the CONTRACT after certification by ENGINEER-IN-CHARGE.

**90 Running account payments to be regarded as advance:**

90.1 All running account payments shall be regarded as payment by way of advance against the final payment only and not as payments for WORK actually done and completed and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due performance of the CONTRACT, or any part thereof, in this respect, or of the accruing of any claim by the CONTRACTOR, nor shall it conclude, determine or affect in any way the powers of the EMPLOYER under these conditions or any of them as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary or affect the CONTRACT. The final bill shall be submitted by the CONTRACTOR within one month of the date of physical completion of the WORK, otherwise, the ENGINEER-IN-CHARGE's certificate of the measurement and of total amount payable for the WORK accordingly shall be final and binding on all parties

**91 Notice of claims for additional payments:**

91.1 Should the CONTRACTOR consider that he is entitled to any extra payment for any extra/additional WORKS or MATERIAL change in original SPECIFICATIONS carried out by him in respect of WORK he shall forthwith give notice in writing to the ENGINEER-IN-CHARGE that he claims extra payment. Such notice shall be given to the ENGINEER-IN-CHARGE upon which



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CONTRACTOR bases such claims and such notice shall contain full particulars of the nature of such claim with full details of amount claimed. Irrespective of any provision in the CONTRACT to the contrary, the CONTRACTOR must intimate his intention to lodge claim on the EMPLOYER within 10 (ten) days of the commencement of happening of the event and quantify the claim within 30 (thirty) days, failing which the CONTRACTOR will lose his right to claim any compensation/reimbursement/damages etc. or refer the matter to arbitration. Failure on the part of CONTRACTOR to put forward any claim without the necessary particulars as above within the time above specified shall be an absolute waiver thereof. No omission by EMPLOYER to reject any such claim and no delay in dealing therewith shall be waiver by EMPLOYER of any of this rights in respect thereof.

91.2 ENGINEER-IN-CHARGE shall review such claims within a reasonably period of time and cause to discharge these in a manner considered appropriate after due deliberations thereon. However, CONTRACTOR shall be obliged to carry on with the WORK during the period in which his claims are under consideration by the EMPLOYER, irrespective of the outcome of such claims, where additional payments for WORKS considered extra are justifiable in accordance with the CONTRACT provisions, EMPLOYER shall arrange to release the same in the same manner as for normal WORK payments. Such of the extra works so admitted by EMPLOYER shall be governed by all the terms, conditions, stipulations and specifications as are applicable for the CONTRACT. The rates for extra works shall generally be the unit rates provided for in the CONTRACT. In the event unit rates for extra works so executed are not available as per CONTRACT, payments may either be released on day work basis for which daily/hourly rates for workmen and hourly rates for equipment rental shall apply, or on the unit rate for WORK executed shall be derived by interpolation/extrapolation of unit rates already existing in the CONTRACT. In all the matters pertaining to applicability of rate and admittance of otherwise of an extra work claim of CONTRACTOR the decision of ENGINEER-IN-CHARGE shall be final and binding.

**92 Payment of contractor's bill:** 92.1 No payment shall be made for works estimated to cost less than Rs.10,000/- till the whole of the work shall have been completed and a certificate of completion given. But in case of works estimated to cost more than Rs.10,000/-, that CONTRACTOR on submitting the bill thereof be entitled to receive a monthly payment proportionate to the part thereof approved and passed by the ENGINEER-IN-CHARGE, whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the CONTRACTOR. This payment will be made after making necessary corrections/deductions as stipulated elsewhere in the CONTRACT DOCUMENT for materials, Contract Performance Security, taxes etc.

92.2 Payment due to the CONTRACTOR shall be made by the EMPLOYER by Account Payee cheque forwarding the same to registered office or the notified office of the CONTRACTOR. In no case will EMPLOYER be responsible if the cheque is mislaid or misappropriated by unauthorized person/persons. In all cases, the CONTRACTOR shall present his bill duly pre-receipted on proper revenue stamp payment shall be made in Indian Currency.

92.3 In general payment of final bill shall be made to CONTRACTOR within 60 days of the submission of bill on joint measurements, after completion of all the obligations under the CONTRACT.

**93 Receipt for payment:** 93.1 Receipt for payment made on account of work when executed by a firm, must be signed by a person holding due power of attorney in this respect on behalf of the



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CONTRACTOR, except when the CONTRACTOR's are described in their tender as a limited company in which case the receipts must be signed in the name of the company by one of its principal officers or by some other person having authority to give effectual receipt for the company.

**94 Completion certificate:**

94.1 APPLICATION FOR COMPLETION CERTIFICATE:

When the CONTRACTOR fulfils his obligation under Clause 81.1 he shall be eligible to apply for COMPLETION CERTIFICATE.

The ENGINEER-IN-CHARGE shall normally issue to the CONTRACTOR the COMPLETION CERTIFICATE within one month after receiving any application therefore from the CONTRACTOR after verifying from the completion documents and satisfying himself that the WORK has been completed in accordance with and as set out in the construction and erection drawings, and the CONTRACT DOCUMENTS.

The CONTRACTOR, after obtaining the COMPLETION CERTIFICATE, is eligible to present the final bill for the WORK executed by him under the terms of CONTRACT.

94.2 COMPLETION CERTIFICATE:

Within one month of the completion of the WORK in all respects, the CONTRACTOR shall be furnished with a certificate by the ENGINEER-IN-CHARGE of such completion, but no certificate shall be given nor shall the WORK be deemed to have been executed until all scaffolding, surplus materials and rubbish is cleared off the SITE completely nor until the WORK shall have been measured by the ENGINEER-IN-CHARGE whose measurement shall be binding and conclusive. The WORKS will not be considered as complete and taken over by the EMPLOYER, until all the temporary works, labour and staff colonies are cleared to the satisfaction of the ENGINEER-IN-CHARGE.

If the CONTRACTOR fails to comply with the requirements of this clause on or before the date fixed for the completion of the WORK, the ENGINEER-IN-CHARGE may at the expense of the CONTRACTOR remove such scaffolding, surplus materials and rubbish and dispose off the same as he thinks fit and clean off such dirt as aforesaid, and the CONTRACTOR shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

94.3 COMPLETION CERTIFICATE DOCUMENTS:

For the purpose of Clause 94.0 the following documents will be deemed to form the completion documents:

- i) The technical documents according to which the WORK was carried out.
- ii) Six (6) sets of construction drawings showing therein the modification and correction made during the course of execution and signed by the ENGINEER-IN-CHARGE.
- iii) COMPLETION CERTIFICATE for 'embedded' and 'covered' up work.



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- iv) Certificates of final levels as set out for various works.
- v) Certificates of tests performed for various WORKS.
- vi) Material appropriation, Statement for the materials issued by the EMPLOYER for the WORK and list of surplus materials returned to the EMPLOYER's store duly supported by necessary documents.

- 95 Final decision and final certificate:** 95.1 Upon expiry of the period of liability and subject to the ENGINEER-IN-CHARGE being satisfied that the WORKS have been duly maintained by the CONTRACTOR during monsoon or such period as hereinbefore provided in Clause 80 & 81 and that the CONTRACTOR has in all respect duly made-up any subsidence and performed all his obligations under the CONTRACT, the ENGINEER-IN- CHARGE shall (without prejudice to the rights of the EMPLOYER to retain the provisions of relevant Clause hereof) otherwise give a certificate herein referred to as the FINAL CERTIFICATE to that effect and the CONTRACTOR shall not be considered to have fulfilled the whole of his obligations under CONTRACT until FINAL CERTIFICATE shall have been given by the ENGINEER-IN- CHARGE notwithstanding any previous entry upon the WORK and taking possession, working or using of the same or any part thereof by the EMPLOYER.
- 96 Certificate and payments on evidence of completion:** 96.1 Except the FINAL CERTIFICATE, no other certificates or payments against a certificate or on general account shall be taken to be an admission by the EMPLOYER of the due performance of the CONTRACT or any part thereof or of occupancy or validity of any claim by the CONTRACTOR.
- 97 Deductions from the contract price:** 97.1 All costs, damages or expenses which EMPLOYER may have paid or incurred, which under the provisions of the CONTRACT, the CONTRACTOR is liable/will be liable, will be claimed by the EMPLOYER. All such claims shall be billed by the EMPLOYER to the CONTRACTOR regularly as and when they fall due. Such claims shall be paid by the CONTRACTOR within 15 (fifteen) days of the receipt of the corresponding bills and if not paid by the CONTRACTOR within the said period, the EMPLOYER may, then, deduct the amount from any moneys due i.e., Contract Performance Security or becoming due to the CONTRACTOR under the CONTRACT or may be recovered by actions of law or otherwise, if the CONTRACTOR fails to satisfy the EMPLOYER of such claims.

### SECTION-VII Taxes and Insurance

- 98 Taxes, Duties, Octroi etc:** 98.1 The CONTRACTOR agrees to and does hereby accept full and exclusive liability for the payment of any and all Taxes, Duties, including Excise duty, octroi etc. now or hereafter imposed, increased, modified, all the sales taxes, duties, octrois etc. now in force and hereafter increased, imposed or modified, from time to time in respect of WORKS and materials and all contributions and taxes for unemployment compensation, insurance and old age pensions or annuities now or hereafter imposed by any Central or State Government authorities which are imposed with respect to or covered by the wages, salaries, or other compensations paid to the persons employed by the CONTRACTOR and the CONTRACTOR shall be responsible for the compliance of all SUB-CONTRACTORS, with all applicable Central, State, Municipal and local law and regulation and requirement of any Central, State or local Government agency or authority. CONTRACTOR further agrees to defend, indemnify and hold EMPLOYER harmless from any liability or penalty which may be imposed by the Central, State or Local authorities by reason or any violation by CONTRACTOR or SUB-CONTRACTOR of such laws, suits or proceedings that may be brought against the EMPLOYER arising under, growing out of, or by reason of the work



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provided for by this CONTRACT, by third parties, or by Central or State Government authority or any administrative sub-division thereof.

Tax deductions will be made as per the rules and regulations in force in accordance with acts prevailing from time to time.

**99 Sales tax/turnover tax:** 99.1 Tenderer should quote all inclusive prices including the liability of Sales Tax/Turnover Tax whether on the works contract as a whole or in respect of bought out components used by the CONTRACTOR in execution of the CONTRACT. EMPLOYER shall not be responsible for any such liability of the CONTRACTOR in respect of this CONTRACT.

**100 Statutory variations** 100.1 Tenderer should quote prices inclusive of excise-duty and sales tax applicable on finished product. Any statutory variations in Excise Duty and sales tax on finished product during the contractual completion period, shall be to the Employer's account for which the Contractor will furnish documentary evidence(s) in support of their claims to TFL. However, any increase in the rate of these taxes and duties (E.D. and S.T.) beyond the contractual completion period shall be to Contractor's account and any decrease shall be passed on to TFL.

**101 Insurance:** 101.1 GENERAL

CONTRACTOR shall at his own expense arrange secure and maintain insurance with reputable insurance companies to the satisfaction of the EMPLOYER as follows:

CONTRACTOR at his cost shall arrange, secure and maintain insurance as may be necessary and to its full value for all such amounts to protect the WORKS in progress from time to time and the interest of EMPLOYER against all risks as detailed herein. The form and the limit of such insurance, as defined here in together with the under works thereof in each case should be as acceptable to the EMPLOYER. However, irrespective of work acceptance the responsibility to maintain adequate insurance coverage at all times during the period of CONTRACT shall be that of CONTRACTOR alone. CONTRACTOR's failure in this regard shall not relieve him of any of his responsibilities and obligations under CONTRACT.

Any loss or damage to the equipment, during ocean transportation, port/custom clearance, inland and port handling, inland transportation, storage, erection and commissioning till such time the WORK is taken over by EMPLOYER, shall be to the account of CONTRACTOR. CONTRACTOR shall be responsible for preferring of all claims and make good for the damage or loss by way of repairs and/or replacement of the parts of the Work damaged or lost. CONTRACTOR shall provide the EMPLOYER with a copy of all insurance policies and documents taken out by him in pursuance of the CONTRACT. Such copies of document shall be submitted to the EMPLOYER immediately upon the CONTRACTOR having taken such insurance coverage. CONTRACTOR shall also inform the EMPLOYER at least 60(Sixty) days in advance regarding the expiry cancellation and/or changes in any of such documents and ensure revalidation/renewal etc., as may be necessary well in time.

Statutory clearances, if any, in respect of foreign supply required for the purpose of replacement of equipment lost in transit and/or during erection, shall be made available by the EMPLOYER. CONTRACTOR shall, however, be responsible for obtaining requisite licenses, port clearances and other formalities relating to such import. The risks that are to be covered under the insurance shall include, but not be limited to the loss or damage in handling, transit, theft, pilferage, riot, civil





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commotion, weather conditions, accidents of all kinds, fire, war risk (during ocean transportation only) etc. The scope of such insurance shall cover the entire value of supplies of equipments, plants and materials to be imported from time to time.

All costs on account of insurance liabilities covered under CONTRACT will be to CONTRACTOR's account and will be included in VALUE OF CONTRACT. However, the EMPLOYER may from time to time, during the currency of the CONTRACT, ask the CONTRACTOR in writing to limit the insurance coverage risk and in such a case, the parties to the CONTRACT will agree for a mutual settlement, for reduction in VALUE OF CONTRACT to the extent of reduced premium amounts.

CONTRACTOR as far as possible shall cover insurance with Indian Insurance Companies, including marine Insurance during ocean transportation.

i) EMPLOYEES STATE INSURANCE ACT:

The CONTRACTOR agrees to and does hereby accept full and exclusive liability for the compliance with all obligations imposed by the Employee State Insurance Act 1948 and the CONTRACTOR further agrees to defend, indemnify and hold EMPLOYER harmless for any liability or penalty which may be imposed by the Central, State or Local authority by reason of any asserted violation by CONTRACTOR or SUB-CONTRACTOR of the Employees' State Insurance Act, 1948, and also from all claims, suits or proceeding that may be brought against the EMPLOYER arising under, growing out of or by reasons of the work provided for by this CONTRACTOR, by third parties or by Central or State Government authority or any political sub- division thereof.

The CONTRACTOR agrees to fill in with the Employee's State Insurance Corporation, the Declaration Forms, and all forms which may be required in respect of the CONTRACTOR's or SUB-CONTRACTOR's employees, who are employed in the WORK provided for or those covered by ESI from time to time under the Agreement. The CONTRACTOR shall deduct and secure the agreement of the SUB- CONTRACTOR to deduct the employee's contribution as per the first schedule of the Employee's State Insurance Act from wages and affix the Employees Contribution Card at wages payment intervals. The CONTRACTOR shall remit and secure the agreement of SUB-CONTRACTOR to remit to the State Bank of India, Employee's State Insurance Corporation Account, the Employee's contribution as required by the Act. The CONTRACTOR agrees to maintain all cards and Records as required under the Act in respect of employees and payments and the CONTRACTOR shall secure the agreement of the SUB- CONTRACTOR to maintain such records. Any expenses incurred for the contributions, making contributions or maintaining records shall be to the CONTRACTOR's or SUB-CONTRACTOR's account.

The EMPLOYER shall retain such sum as may be necessary from the total VALUE OF CONTRACT until the CONTRACTOR shall furnish satisfactory proof that all contributions as required by the Employees State Insurance Act, 1948, have been paid. This will be pending on the CONTRACTOR when the ESI Act is extended to the place of work.

ii) WORKMEN COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE:





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Insurance shall be effected for all the CONTRACTOR's employees engaged in the performance of this CONTRACT. If any of the work is sublet, the CONTRACTOR shall require the SUB-CONTRACTOR to provide workman's Compensation and employer's liability insurance for the later's employees if such employees are not covered under the CONTRACTOR's Insurance.

iii) ACCIDENT OR INJURY TO WORKMEN:

The EMPLOYER shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workman or other person in the Employment of the CONTRACTOR or any SUB-CONTRACTOR save and except an accident or injury resulting from any act or default of the EMPLOYER, his agents or servants and the CONTRACTOR shall indemnify and keep indemnified the EMPLOYER against all such damages and compensation (save and except and aforesaid) and against all claims, demands, proceeding, costs, charges and expenses, whatsoever in respect or in relation thereto.

iv) TRANSIT INSURANCE

In respect of all items to be transported by the CONTRACTOR to the SITE of WORK, the cost of transit insurance should be borne by the CONTRACTOR and the quoted price shall be inclusive of this cost.

V) COMPREHENSIVE AUTOMOBILE INSURANCE

This insurance shall be in such a form as to protect the Contractor against all claims for injuries, disability, disease and death to members of public including EMPLOYER's men and damage to the property of others arising from the use of motor vehicles during on or off the 'site' operations, irrespective of the Employership of such vehicles.

VI) COMPREHENSIVE GENERAL LIABILITY INSURANCE

- a) This insurance shall protect the Contractor against all claims arising from injuries, disabilities, disease or death of member of public or damage to property of others due to any act or omission on the part of the Contractor, his agents, his employees, his representatives and Sub-Contractor's or from riots, strikes and civil commotion.
- b) Contractor shall take suitable Group Personal Accident Insurance Cover for taking care of injury, damage or any other risks in respect of his Engineers and other Supervisory staff who are not covered under Employees State Insurance Act.
- c) The policy shall cover third party liability. The third party (liability shall cover the loss/ disablement of human life (person not belonging to the Contractor) and also cover the risk of damage to others materials/ equipment/ properties during construction, erection and commissioning at site. The value of third party liability for compensation for loss of human life or partial/full disablement shall be of required statutory value but not less than Rs. 2 lakhs per death, Rs. 1.5



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lakhs per full disablement and Rs. 1 lakh per partial disablement and shall nevertheless cover such compensation as may be awarded by Court by Law in India and cover for damage to others equipment/ property as approved by the Purchaser. However, third party risk shall be maximum to Rs. 10(ten) lakhs to death.

- d) The Contractor shall also arrange suitable insurance to cover damage, loss, accidents, risks etc., in respect of all his plant, equipments and machinery, erection tools & tackles and all other temporary attachments brought by him at site to execute the work.
- e) The Contractor shall take out insurance policy in the joint name of EMPLOYER and Contractor from one or more nationalized insurance company from any branch office at Project site.
- f) Any such insurance requirements as are hereby established as the minimum policies and coverage which Contractor must secure and keep in force must be complied with, Contractor shall at all times be free to obtain additional or increased coverage at Contractor's sole expenses.

vii) ANY OTHER INSURANCE REQUIRED UNDER LAW OR REGULATIONS OR BY EMPLOYER:

CONTRACTOR shall also carry and maintain any and all other insurance(s) which he may be required under any law or regulation from time to time without any extra cost to EMPLOYER. He shall also carry and maintain any other insurance which may be required by the EMPLOYER.

**102 Damage to Property or to any Person or any Third Party**

102.1 i)

CONTRACTOR shall be responsible for making good to the satisfaction of the EMPLOYER any loss or any damage to structures and properties belonging to the EMPLOYER or being executed or procured or being procured by the EMPLOYER or of other agencies within in the premises of all the work of the EMPLOYER, if such loss or damage is due to fault and/or the negligence or willful acts or omission of the CONTRACTOR, his employees, agents, representatives or SUB-CONTRACTORS.

ii)

The CONTRACTOR shall take sufficient care in moving his plants, equipments and materials from one place to another so that they do not cause any damage to any person or to the property of the EMPLOYER or any third party including overhead and underground cables and in the event of any damage resulting to the property of the EMPLOYER or of a third party during the movement of the aforesaid plant, equipment or materials the cost of such damages including eventual loss of production, operation or services in any plant or establishment as estimated by the EMPLOYER or ascertained or demanded by the third party shall be borne by the CONTRACTOR. Third party liability risk shall be Rupees One lakh for single accident and limited to Rupees Ten lakhs.

iii)

The CONTRACTOR shall indemnify and keep the EMPLOYER harmless of all claims for damages to property other than EMPLOYER's property arising under or by reason of this agreement, if



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such claims result from the fault and/or negligence or willful acts or omission of the CONTRACTOR, his employees, agents, representative of SUB-CONTRACTOR.

**SECTION-VIII Labour Laws**

**103 Labour laws:**

- 103.1 i) No labour below the age of 18 (eighteen) years shall be employed on the WORK.
- ii) The CONTRACTOR shall not pay less than what is provided under law to labourers engaged by him on the WORK.
- iii) The CONTRACTOR shall at his expense comply with all labour laws and keep the EMPLOYER indemnified in respect thereof.
- iv) The CONTRACTOR shall pay equal wages for men and women in accordance with applicable labour laws.
- v) If the CONTRACTOR is covered under the Contract labour (Regulation and Abolition) Act, he shall obtain a licence from licensing authority (i.e. office of the labour commissioner) by payment of necessary prescribed fee and the deposit, if any, before starting the WORK under the CONTRACT. Such fee/deposit shall be borne by the CONTRACTOR.
- vi) The CONTRACTOR shall employ labour in sufficient numbers either directly or through SUB- CONTRACTOR's to maintain the required rate of progress and of quality to ensure workmanship of the degree specified in the CONTRACT and to the satisfaction of the ENGINEER-IN-CHARGE.
- vii) The CONTRACTOR shall furnish to the ENGINEER-IN- CHARGE the distribution return of the number and description, by trades of the work people employed on the works. The CONTRACTOR shall also submit on the 4th and 19th of every month to the ENGINEER-IN-CHARGE a true statement showing in respect of the second half of the preceding month and the first half of the current month (1) the accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused by them and (2) the number of female workers who have been allowed Maternity Benefit as provided in the Maternity Benefit Act 1961 on Rules made there under and the amount paid to them.
- viii) The CONTRACTOR shall comply with the provisions of the payment of Wage Act 1936, Employee Provident Fund Act 1952, Minimum Wages Act 1948. Employers Liability Act 1938. Workmen's Compensation Act 1923, Industrial Disputes Act 1947, the Maternity Benefit Act 1961 and Contract Labour Regulation and Abolition Act 1970, Employment of Children Act 1938 or any modifications thereof or any other law relating thereto and rules made there under from time to time.
- ix) The ENGINEER-IN-CHARGE shall on a report having been made by an Inspecting Officer as defined in Contract Labour (Regulation and Abolition) Act 1970 have the power to deduct from the money due to the CONTRACTOR any sum required or estimated to be required for



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making good the loss suffered by a worker or workers by reason of non-fulfillment of the Conditions of the Contract for the benefit of workers, non-payment of wages or of deductions made from his or their wages which are not justified by the terms of the Contract or non-observance of the said regulations.

- x) The CONTRACTOR shall indemnify the EMPLOYER against any payments to be made under and for the observance of the provisions of the aforesaid Acts without prejudice to his right to obtain indemnity from his SUB-CONTRACTOR's. In the event of the CONTRACTOR committing a default or breach of any of the provisions of the aforesaid Acts as amended from time to time, of furnishing any information or submitting or filling and Form/ Register/ Slip under the provisions of these Acts which is materially incorrect then on the report of the inspecting Officers, the CONTRACTOR shall without prejudice to any other liability pay to the EMPLOYER a sum not exceeding Rs.50.00 as Liquidated Damages for every default, breach or furnishing, making, submitting, filling materially incorrect statement as may be fixed by the ENGINEER-IN- CHARGE and in the event of the CONTRACTOR's default continuing in this respect, the Liquidated Damages may be enhanced to Rs.50.00 per day for each day of default subject to a maximum of one percent of the estimated cost of the WORK put to tender. The ENGINEER-IN-CHARGE shall deduct such amount from bills or Contract Performance Security of the CONTRACTOR and credit the same to the Welfare Fund constitute under these acts. The decision of the ENGINEER-IN-CHARGE in this respect shall be final and binding.

**104 Implementation of apprentices act, 1961:**

104.1

The CONTRACTOR shall comply with the provisions of the Apprentices Act, 1961 and the Rules and Orders issued there under from time to time. If he fails to do so, his failure will be a breach of the CONTRACT and the ENGINEER-IN-CHARGE may, at his discretion, cancel the CONTRACT. The CONTRACTOR shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions, of the Act.

**105 Contractor to indemnify the employer:**

105.1 i)

The CONTRACTOR shall indemnify the EMPLOYER and every member, office and employee of the EMPLOYER, also the ENGINEER-IN-CHARGE and his staff against all actions, proceedings, claims, demands, costs and expenses whatsoever arising out of or in connection with the matters referred to in Clause 102.0 and elsewhere and all actions, proceedings, claims, demands, costs and expenses which may be made against the EMPLOYER for or in respect of or arising out of any failure by the CONTRACTOR in the performance of his obligations under the CONTRACT DOCUMENT. The EMPLOYER shall not be liable for or in respect of or arising out of any failure by the CONTRACTOR in the performance of his obligations under the CONTRACT DOCUMENT. The EMPLOYER shall not be liable for or in respect of any demand or compensation payable by law in respect or in consequence of any accident or injury to any workmen or other person. In the employment of the CONTRACTOR or his SUB-CONTRACTOR the CONTRACTOR shall indemnify and keep indemnified the EMPLOYER against all such damages and compensations and against all claims, damages, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.



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ii) PAYMENT OF CLAIMS AND DAMAGES:

Should the EMPLOYER have to pay any money in respect of such claims or demands as aforesaid the amount so paid and the costs incurred by the EMPLOYER shall be charged to and paid by the CONTRACTOR and the CONTRACTOR shall not be at liberty to dispute or question the right of the EMPLOYER to make such payments notwithstanding the same, may have been made without the consent or authority or in law or otherwise to the contrary.

- iii) In every case in which by virtue of the provisions of Section 12, Sub-section (i) of workmen's compensation Act, 1923 or other applicable provision of Workmen Compensation Act or any other Act, the EMPLOYER is obliged to pay compensation to a workman employed by the CONTRACTOR in execution of the WORK, the EMPLOYER will recover from the CONTRACTOR the amount of the compensation so paid, and without prejudice to the rights of EMPLOYER under Section 12, Sub- section (2) of the said act, EMPLOYER shall be at liberty to recover such amount or any part thereof by deducting it from the Contract Performance Security or from any sum due to the CONTRACTOR whether under this CONTRACT or otherwise. The EMPLOYER shall not be bound to contest any claim made under Section 12, Sub-section (i) of the said act, except on the written request of the CONTRACTOR and upon his giving to the EMPLOYER full security for all costs for which the EMPLOYER might become liable in consequence of contesting such claim.

**106 Health and sanitary arrangements for workers:**

- 106.1 In respect of all labour directly or indirectly employed in the WORKS for the performance of the CONTRACTOR's part of this agreement, the CONTRACTOR shall comply with or cause to be complied with all the rules and regulations of the local sanitary and other authorities or as framed by the EMPLOYER from time to time for the protection of health and sanitary arrangements for all workers.
- 106.2 The CONTRACTOR shall provide in the labour colony all amenities such as electricity, water and other sanitary and health arrangements. The CONTRACTOR shall also provide necessary surface transportation to the place of work and back to the colony for their personnel accommodated in the labour colony.

**SECTION-IX Applicable Laws and Settlement of Disputes**

**107 Arbitration:**

- 107.1 Unless otherwise specified, the matters where decision of the Engineer-in-Charge is deemed to be final and binding as provided in the Agreement and the issues/disputes which cannot be mutually resolved within a reasonable time, all disputes shall be referred to arbitration by Sole Arbitrator.

The Employer [Talcher Fertilizers Ltd.] shall suggest a panel of three independent and distinguished persons to the bidder/contractor/supplier/buyer (as the case may be) to select any one among them to act as the Sole Arbitrator.

In the event of failure of the other parties to select the Sole Arbitrator within 30 days from the receipt of the communication suggesting the panel of arbitrators, the right of selection of the sole arbitrator by the other party shall stand forfeited and the EMPLOYER (TFL) shall have discretion to proceed with the appointment of the Sole Arbitrator. The decision of Employer on the appointment of the sole arbitrator shall be final and binding on the parties.



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The award of sole arbitrator shall be final and binding on the parties and unless directed/awarded otherwise by the sole arbitrator, the cost of arbitration proceedings shall be shared equally by the parties. The Arbitration proceedings shall be in English language and venue shall be New Delhi, India.

Subject to the above, the provisions of (Indian) Arbitration & Conciliation ACT 1996 and the Rules framed there under shall be applicable. All matter relating to this contract are subject to the exclusive jurisdiction of the court situated in the state of Delhi.

Bidders/suppliers/contractors may please note that the Arbitration & Conciliation Act 1996 was enacted by the Indian Parliament and is based on United Nations Commission on International Trade Law (UNCITRAL model law), which were prepared after extensive consultation with Arbitral Institutions and centers of International Commercial Arbitration. The United Nations General Assembly vide resolution 31/98 adopted the UNCITRAL Arbitration rules on 15 December 1976.

107.2 FOR THE SETTLEMENT OF DISPUTES BETWEEN GOVERNMENT DEPARTMENT AND ANOTHER AND ONE GOVERNMENT DEPARTMENT AND PUBLIC ENTERPRISE AND ONE PUBLIC ENTERPRISE AND ANOTHER THE ARBITRATION SHALL BE AS FOLLOWS:

"In the event of any dispute or difference between the parties hereto, such dispute or difference shall be resolved amicably by mutual consultation or through the good offices of empowered agencies of the Government. If such resolution is not possible, then, the unresolved dispute or difference shall be referred to arbitration of an arbitrator to be nominated by Secretary, Department of Legal Affairs ("Law Secretary") in terms of the Office Memorandum No.55/3/1/75-CF, dated the 19th December 1975 issued by the Cabinet Secretariat (Department of Cabinet Affairs), as modified from time to time. The Arbitration Act 1940 (10 of 1940) shall not be applicable to the arbitration under this clause. The award of the Arbitrator shall be binding upon parties to the dispute. Provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to Law Secretary whose decision shall bind the parties finally and conclusively.

**108 Jurisdiction:**

The CONTRACT shall be governed by and constructed according to the laws in force in INDIA. The CONTRACTOR hereby submits to the jurisdiction of the Courts situated at DELHI for the purposes of disputes, actions and proceedings arising out of the CONTRACT, the courts at DELHI only will have the jurisdiction to hear and decide such disputed, actions and proceedings.

**SECTION-X Safety Codes**

**109 General:**

109.1 CONTRACTOR shall adhere to safe construction practice and guard against hazardous, and unsafe working conditions and shall comply with EMPLOYER's safety rules as set forth herein. Prior to start of construction, CONTRACTOR will be furnished copies of EMPLOYER's "Safety Code" for information and guidance, if it has been prepared.

**110 Safety regulations:**

110.1 i) In respect of all labour, directly employed in the WORK for the performance of CONTRACTOR's part of this agreement, the CONTRACTOR shall at his own expense arrange for all the





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safety provisions as per safety codes of Standards Institution. The Electricity Act, such other acts as applicable. C.P.W.D., Indian The Mines Act and

- ii) The CONTRACTOR shall observe and abide by all fire and safety regulations of the EMPLOYER. Before starting construction work CONTRACTOR shall consult with EMPLOYER's safety Engineers or ENGINEER- IN-CHARGE and must make good to the satisfaction of the EMPLOYER any loss or damage due to fire to any portion of the work done or to be done under this agreement or to any of the EMPLOYER's existing property.

**111 First aid and industrial injuries:**

111.0

- i) CONTRACTOR shall maintain first aid facilities for its employees and those of its SUB-CONTRACTOR.
- ii) CONTRACTOR shall make outside arrangements for ambulance service and for the treatment of industrial injuries. Names of those providing these services shall be furnished to EMPLOYER prior to start of construction and their telephone numbers shall be prominently posted in CONTRACTOR's field office.
- iii) All critical industrial injuries shall be reported promptly to EMPLOYER, and a copy of CONTRACTOR's report covering each personal injury requiring the attention of a physician shall be furnished to the EMPLOYER.

**112 General rules:**

112.0

Smoking within the battery area, tank farm or dock limits is strictly prohibited. Violators of the no smoking rules shall be discharged immediately.

**113 Contractor's barricades:.**

113.0

- i) CONTRACTOR shall erect and maintain barricades required in connection with his operation to guard or protect:-
- a) Excavations
- b) Hoisting Areas.
- c) Areas adjudged hazardous by CONTRACTOR's or EMPLOYER's inspectors.
- d) EMPLOYER's existing property subject to damage by CONTRACTOR's Operations.
- e) Rail Road unloading spots.
- ii) CONTRACTOR's employees and those of his SUB-CONTRACTOR's shall become acquainted with EMPLOYER's barricading practice and shall respect the provisions thereof.
- iii) Barricades and hazardous areas adjacent to, but not located in normal routes of travel shall be marked by red flasher lanterns at nights.

**114 Scaffolding:**

114.1

- i) Suitable scaffolding should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period work as can be done safely from ladders. When a ladder is used an extra Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying material as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be



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given an inclination not steeper than 1 in 4 (1 horizontal and 4 vertical).

- ii) Scaffolding or staging more than 4 metres above the ground or floor, swing suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise retarded at least one metre high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
- iii) Working platform, gangway and stairway should be so constructed that they should not sag unduly or unequally and if the height of platform of the gangway or the stairway is more than 4 metres above the ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as in ii) above.
- iv) Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum heights shall be 1 metre.
- v) Safe-means of access shall be provided to all working platforms and other working places, every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length while the width between side rails in rung ladder shall in no case be less than 30 cms for ladder upto and including 3 metres in length. For longer ladder this width should be increased 5mm for each additional foot of length. Uniform steps spacing shall not exceed 30 cms. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed to cause danger or inconvenience to any person or public. The CONTRACTOR shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defense of every suit, action or other proceeding of law that may be brought by any person for injury sustained owing to neglect of the above precautions and pay any damages and costs which may be awarded in any such suit or action or proceeding to any such person or which may with the consent of the CONTRACTOR be paid to compromise any claim by any such person.

**115 Excavation and trenching:** 115.1 All trenches 1.2 metres or more in depth, shall at all times be supplied with at least one ladder for each 50 metres length or fraction thereof.

Ladder shall be extended from bottom of the trenches to atleast 1 metre above the surface of the ground. The sides of the trenches which are 1.5M in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides to collapse. The excavated materials shall not be placed within 1.5 metres of the edge of the trench or half of the trench width whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or under-cutting shall be done.

**116 Demolition/general safety:** 116.1

- i) Before any demolition work is commenced and also during the progress of the demolition work
  - a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.



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- b) No electric cable or apparatus which is liable to be a source of danger shall remain electrically charged.
- c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
- ii) All necessary personal safety equipment as considered adequate by the ENGINEER-IN-CHARGE, should be kept available for the use of the persons employed on the SITE and maintained in condition suitable for immediate use, and the CONTRACTOR shall take adequate steps to ensure proper use of equipment by those concerned.
- a) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective gloves.
- b) Those engaged in white washing and mixing or stacking or cement bags or any material which are injurious to the eyes be provided with protective goggles.
- c) Those engaged in welding and cutting works shall be provided with protective face & eye shield, hand gloves, etc.
- d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- e) When workers are employed in sewers and manholes, which are in use, the CONTRACTOR shall ensure that the manhole covers are opened and are ventilated atleast for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or board to prevent accident to the public.
- f) The CONTRACTOR shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken.
- 1) No paint containing lead or lead product shall be used except in the form of paste or readymade paint.
- 2) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
- 3) Overalls shall be supplied by the CONTRACTOR to the workmen and adequate facilities shall be provided to enable the working painters to wash them during and on cessation of work.
- iii) When the work is done near any place where there is risk of drowning, all necessary safety equipment should be provided and kept ready for



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use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

- iv) Use of hoisting machines and tackles including their attachments, anchorage and supports shall conform to the following standards or conditions:
- These shall be of good mechanical construction, sound materials and adequate strength and free from patent defect and shall be kept in good working order.
  - Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.
  - Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding, winch or give signals to the operator.
  - In case of every hoisting machine and of every chain ring hook, shackle, swivel, and pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gears referred to above shall be plainly marked with the safe working load of the conditions under which it is applicable and the same shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond safe working load except for the purpose of testing.
  - In case of departmental machine, the safe working load shall be notified by the ENGINEER- IN-CHARGE. As regards CONTRACTOR's machines, the CONTRACTOR shall notify the safe working load of the machine to the ENGINEER-IN-CHARGE whenever he brings any machinery to SITE of WORK and get it verified by the Engineer concerned.
- v) Motors, gears, transmission lines, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as to reduce to minimum the accidental descent of the load, adequate precautions should be taken to reduce the minimum risk of any part or parts of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves, and boots as may be necessary should be provided. The workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.
- vi) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffolds, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.
- vii) These safety provisions should be brought to the notice of all



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concerned by displaying on a notice board at a prominent place at the work-spot. The person responsible for compliance of the safety code shall be named therein by the CONTRACTOR.

viii) To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the CONTRACTOR shall be open to inspection by the Welfare Officer, ENGINEER-IN-CHARGE or safety Engineer of the Administration or their representatives.

ix) Notwithstanding the above clauses there is nothing in these to exempt the CONTRACTOR for the operations of any other Act or rules in force in the Republic of India. The work throughout including any temporary works shall be carried out in such a manner as not to interfere in any way whatsoever with the traffic on any roads or footpath at the site or in the vicinity thereto or any existing works whether the property of the Administration or of a third party.

In addition to the above, the CONTRACTOR shall abide by the safety code provision as per C.P.W.D. Safety code and Indian Standard Safety Code from time to time.

- |  |       |   |
|--|-------|---|
| <b>117 Care in handling inflammable gas:</b> | 117.1 | The CONTRACTOR has to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinder/inflammable liquids/paints etc. as required under the law and/or as advised by the fire Authorities of the EMPLOYER   |
| <b>118 Temporary combustible structures:</b> | 118.1 | Temporary combustible structures will not be built near or around work site.  |
| <b>119 Precautions against fire:</b>         | 119.1 | The CONTRACTOR will have to provide Fire Extinguishers, Fire Buckets and drums at worksite as recommended by ENGINEER-IN-CHARGE. They will have to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinders/ inflammable liquid/ paints etc. as advised by ENGINEER-IN-CHARGE. Temporary combustible structures will not be built near or around the work-site.   |
| <b>120 Explosives:</b>                       | 120.1 | Explosives shall not be stored or used on the WORK or on the SITE by the CONTRACTOR without the permission of the ENGINEER-IN-CHARGE in writing and then only in the manner and to the extent to which such permission is given. When explosives are required for the WORK they will be stored in a special magazine to be provided at the cost of the CONTRACTOR in accordance with the Explosives Rules. The CONTRACTOR shall obtain the necessary licence for the storage and the use of explosives and all operations in which or for which explosives are employed shall be at sole risk and responsibility of the CONTRACTOR and the CONTRACTOR shall indemnify the EMPLOYER against any loss or damage resulting directly or indirectly therefrom. |
| <b>121 Mines act:</b>                        | 121.1 | <b>SAFETY CODE:</b> The CONTRACTOR shall at his own expense arrange for the safety provisions as required by the ENGINEER-IN-CHARGE in respect of all labour directly employed for performance of the WORKS and shall provide all facilities in connection therewith. In case the CONTRACTOR fails to make arrangements and provides necessary facilities as aforesaid, the ENGINEER-IN-CHARGE shall be entitled to do so and recover the costs thereof from the CONTRACTOR.  |



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- 121.2 Failure to comply with Safety Code or the provisions relating to report on accidents and to grant of maternity benefits to female workers shall make the CONTRACTOR liable to pay Company Liquidated Damages an amount not exceeding Rs.50/- for each default or materially incorrect statement. The decision of the ENGINEER-IN-CHARGE in such matters based on reports from the Inspecting Officer or from representatives of ENGINEER-IN-CHARGE shall be final and binding and deductions for recovery of such Liquidated Damages may be made from any amount payable to the CONTRACTOR from all the provisions of the Mines Act, 1952 or any statutory modifications or re-enactment thereof of the time being in force and any Rules and Regulations made there under in respect of all the persons employed by him under this CONTRACT and shall indemnify the EMPLOYER from and against any claim under the Mines Act or the rules and regulations framed there under by or on behalf of any persons employed by him or otherwise.
- 122 Preservation of place:** 122.1 The CONTRACTOR shall take requisite precautions and use his best endeavors to prevent any riotous or unlawful behavior by or amongst his worker and others employed or the works and for the preservation of peace and protection of the inhabitants and security of property in the neighborhood of the WORK. In the event of the EMPLOYER requiring the maintenance of a Special Police Force at or in the vicinity of the site during the tenure of works, the expenses thereof shall be borne by the CONTRACTOR and if paid by the EMPLOYER shall be recoverable from the CONTRACTOR.
- 123 Outbreak of infectious diseases:** 123.1 The CONTRACTOR shall remove from his camp such labour and their facilities who refuse protective inoculation and vaccination when called upon to do so by the ENGINEER-IN-CHARGE's representative. Should Cholera, Plague or other infectious diseases break out the CONTRACTOR shall burn the huts, beddings, clothes and other belongings or used by the infected parties and promptly erect new huts on healthy sites as required by the ENGINEER-IN-CHARGE failing which within the time specified in the Engineer's requisition, the work may be done by the EMPLOYER and the cost thereof recovered from the CONTRACTOR.
- 124 Use of intoxicants:** 124.1 The unauthorized sale of spirits or other intoxicants, beverages upon the work in any of the buildings, encampments or tenements owned, occupied by or within the control of the CONTRACTOR or any of his employee is forbidden and the CONTRACTOR shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.



In addition to the above, the CONTRACTOR shall abide by the safety code provision as per C.P.W.D. safety code and Indian Standard Code framed from time to time.



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## SECTION-V

### SPECIAL CONDITIONS OF CONTRACT



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## **SPECIAL CONDITIONS OF CONTRACT**

### **1.0 INTRODUCTION:**

- 1.1. Talcher Fertilizers Ltd. (TFL), hereinafter also referred to as "OWNER", A joint venture company of four major Public Sector Units – M/s. Gas Authority India Limited (GAIL), M/s. Rastriya Chemicals & Fertilizers Ltd. (RCF), M/s. Coal India Ltd. (CIL) and M/s. Fertilizers Corporation of India Ltd. (FCIL) has decided to build a world class Coal based fertilizer complex. The fertilizer complex is to be built at **Talcher, Angul District, Odisha (India)** and will consist of Coal Gasification Plant, Ammonia Plant and Urea Plant, along with Offsite and Utility Plants. Talcher Fertilizers Ltd. intend to invite quotations from eligible Contractors for **Renovation Works for Barrack Buildings along with Construction of New Quarter Guard Building and allied works at Talcher Fertilizers Ltd., Angul, Odisha.**
- 1.2 Projects & Development India Ltd. (PDIL) has been retained as Consultant for providing Engineering Consultancy Services and Project Management Services for the aforesaid project.



### **2.0 LOCATION OF THE PROJECT SITE**

A brief description of infrastructure at Talcher Fertilizer Plant Site is furnished below:

- The proposed project will be located within the premises of existing closed coal based Ammonia-Urea complex of FCI Ltd. Talcher Unit.
- The total land area of the site is 904.53 acres out of which lease hold land from Government of Odisha is 894.207 acres and land purchased from private parties is 10.33 acres.
- The area is not falling under coal bearing zone up to a depth of 200-250 meter.
- Talcher site is located at Vikrampur in Angul district of Odisha on the Cuttack-Sambalpur National Highway NH-42. NH-42 is passing at about 8 km from the site. The nearest railway station is Talcher at about 7 km from the site. Nearest air port Bhubaneswar is 150 km, 3 hours journey by road/ rail. Nearest sea port is Paradeep, 200 km by rail/road from the site. Talcher is situated at 21° 10" N Latitude and 82° 5" E Longitude.

### **3.0 GENERAL**



- 3.1 Special Conditions of Contract shall be read in Conjunction with the General conditions of Contract, specification of work, Drawings and any other documents forming part of this Contract wherever the context so requires.
- 3.2 Notwithstanding the sub-division of the documents into these separate sections and volumes, every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.

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- 3.3 Where any portion of the General Condition of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, unless a different intention appears, the provisions of the Special Conditions of Contract shall be deemed to override the provisions of the General Conditions of Contract and shall to the extent of such repugnancy, or variations, prevail.
- 3.4 Wherever it is mentioned in the specifications that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost and the value of contract shall be deemed to have included cost of such performance and provisions, so mentioned.
- 3.5 The materials, design, and workmanship shall satisfy the relevant Indian Standards and CPWD specifications, the Job Specifications contained herein and Codes referred to. Where the job specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.
- 3.6 It will be the Contractor's responsibility to bring to the notice of Engineer-in-Charge any irreconcilable conflict in the contract documents before starting the work (s) or making the supply with reference which the conflict exists.
- 3.7 In the absence of any Specifications covering any material, design of work (s) the same shall be performed / supplies / executed in accordance with Standard Engineering Practice as per the instructions / directions of the Engineer-in-Charge, which will be binding on the Contractor.



#### **4.0 GENERAL PROVISION WITH REGARD TO MATERIALS**

- 4.1 The CONTRACTOR shall, within the scope of work, undertake the following activities and responsibilities with respect to and in addition and without prejudice to the activities and responsibilities under Clause 4.1 and associated clauses there under in respect of materials:
- i) The CONTRACTOR shall in taking delivery, ensure compliance of any condition for delivery applicable to deliveries from the concerned authority or carrier, and shall be exclusively responsible to pay and bear any detention, demurrage or penalty or other charges payable by virtue of any delay or failure by the CONTRACTOR in lifting the materials or in observing any of the conditions aforesaid, and shall keep the OWNER indemnified from and against all consequences there of
  - ii) The CONTRACTOR shall maintain a day-to-day account of all materials indicating the daily receipt(s), consumption(s) and balance of each material and category thereof. Such account shall be in the format, if any, prescribed by the ENGINEER-IN-CHARGE and shall be supported by all documents necessary to verify the correctness of the entries in the account. Such account shall be maintained at the CONTRACTOR MANAGER's office and site(s) and shall be open for inspection and verification (by verification of documents in support of the entry as also by feasible verification of the stock) at all times by the ENGINEER-IN-CHARGE with authority at all times without obstruction to enter into or upon any godown or other place(s) or premise(s) where the materials or any part of them are lying or stored and to inspect the same himself and or through his representative(s).

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- iii) All materials shall be taken delivery of, held, stored and utilised by the CONTRACTOR as Trustee of the OWNER, and delivery of the material to the CONTRACTOR shall constitute an entrustment thereof to the CONTRACTOR, with the intent that any utilization, application or disposal thereof by the CONTRACTOR otherwise than for permanent incorporation in the contractual works in terms of the contract shall constitute a breach of trust by the CONTRACTOR.
- iv) The CONTRACTOR shall at all times be exclusively responsible for any and all losses, damages, deterioration, misuse, wastage, theft, or other application or misapplication or disposal of the materials or any of them contrary to the provisions hereof and shall keep the OWNER indemnified from and against the same and shall forthwith at its own cost and expenses replace any such material, lost, damaged, deteriorated, misused, wasted, stolen, applied, misapplied and/or disposed as aforesaid with other material of equivalent quality and quantity delivered to site at the CONTRACTOR's risks and costs in all respects.
- v) The CONTRACTOR shall take out, at his own cost and keep in force at all times, during transit, handling, storage, and erection upto completion in all respect of the work, policy (ies) with Insurance Company (ies) approved by the OWNER for the full replacement value of the materials at site against the risks specified in the CONTRACT. Such policies shall be in the joint names of the OWNER and the CONTRACTOR, with exclusive right in the OWNER to receive all monies due in respect of such policy (ies) and with right in the OWNER (but without obligation to do so) to take out and pay the premia for any such policy (ies) and deduct the premia and any other costs and expense in this behalf from the monies for the time being due or in future becoming due to the CONTRACTOR. In case of Insurance claim, the GST leviable on the transfer of the claim money from OWNER to CONTRACTOR shall be over and above the GST cap indicated in the CONTRACT and shall be borne by OWNER.
- vi) If the CONTRACTOR shall default in replacing at the job SITE, without any additional cost to the OWNER, any material lost, damaged, deteriorated, misused, wasted, short, stolen, misapplied or disposed of within the provisions hereof above, the CONTRACTOR shall be liable to pay to the OWNER the cost of such materials.
- a) Notwithstanding anything herein provided, the CONTRACTOR shall be and remain solely and exclusively liable to repair, restore or replace, as the case may be, the materials damaged or destroyed as a result of any act or omission, notwithstanding the existence or otherwise of any policy(ies) of insurance aforesaid, with the intent that any policy(ies) of insurance aforesaid taken out by the CONTRACTOR or by the OWNER, on default by the CONTRACTOR, shall not anyway absolve the CONTRACTOR from his full liability up to and until issue of the Preliminary Acceptance Certificate as provided for herein in respect of the works, the work(s) and all materials incorporated therein shall be and remain at the risks of the CONTRACTOR in all respects, including (but not limited to) accident, lightning, earth-quake, fire, storm, flood, tempest, riot, civil commotion and/or war or otherwise with respect to the materials, but shall constitute merely an additional security and not a substitution of liability.





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- b) It shall be the exclusive responsibility of the CONTRACTOR to lodge and pursue any or all claims in respect of the insurance aforesaid.
- c) The CONTRACTOR shall, as a condition to the certification of any Running Account Bill, satisfy the OWNER/ Engineer-In-Charge of the existence of one or more policy(ies) of insurance, covering the materials as specified herein. The policy(ies) of insurance aforesaid shall cover all insurable risks, including but not limited to, any loss or damage commencing from the supplier's ware house in handling, transit, storage and during erection, theft, pilferage, riot, civil commotion, force majeure (including earth quake, flood, storm, cyclone, tidal wave, lightening and other adverse weather conditions), accidents of kinds, fire, war risks and explosion.
- vii) If the CONTRACTOR shall default in replacing at the job site, free of any cost to the OWNER, any material lost, damaged, deteriorated, misused, wasted, short, stolen, misapplied or disposed of within the provisions hereof above, the CONTRACTOR shall be liable to pay to the OWNER the cost of such materials.

## 4.2 SUPPLY OF MATERIALS

- 4.2.1 The CONTRACTOR shall supply the materials required to be supplied within the Contractor's scope of supply for incorporation in the permanent works in accordance with and to meet the requirements in quality, quantity and other particulars of the descriptions, specifications, plans, drawings, designs and other documents applicable thereto, and the CONTRACTOR shall be deemed to have undertaken that all materials selected, procured and supplied by the CONTRACTOR within the scope of supply shall be of the best quality and workmanship and shall be capable of producing the designed desired results and to perform the designed and desired functions to meet the contractual requirements in all respects for the project.
- 4.2.2 The CONTRACTOR shall undertake and complete the supply of materials within the scope of supply to meet the scheduled progress and requirements of the WORK within the scope of work.
- 4.2.3 All materials shall be deemed to have been accepted only when the material is received at the project SITE and accepted by the ENGINEER-IN-CHARGE. Such acceptance shall however be subject to the terms and conditions of CONTRACT, including the right of rejection and/or replacement as elsewhere herein specified.
- 4.2.4 Without prejudice to any other terms of the contract, it is clarified that the mere agreement, acceptance or prescription of a Delivery or other Schedule containing an extended time of commencement or completion in respect of the entire delivery(ies) or any of them shall not anyway constitute an extension of time in a terms of the CONTRACT so as to bind the OWNER or relieve the CONTRACTOR of all or any of his liabilities under CONTRACT, nor shall constitute a promise on behalf of the OWNER or a waiver by the OWNER of any of its rights in terms of the contract relative to the performance of the CONTRACT within the time specified or otherwise, but shall be deemed only (at the most) to be a guidance to the CONTRACTOR for better organising his work on a recognition that the CONTRACTOR has failed to organise his supplies and/or make the same within the time specified in the Delivery Schedule.
- 4.2.5 If the CONTRACTOR fails to supply the materials in accordance with the dates in this behalf specified in the Delivery Schedule which has an impact on the critical path of the schedule, the CONTRACTOR shall provide the OWNER with a suitable plan to

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recover the delay, but without prejudice to any other rights, discount or remedy available to the OWNER in respect of such delay or failure.

#### 4.2.6 MAKE OF MATERIALS

- i) All equipment and materials to be supplied under this CONTRACT shall be from approved vendors as indicated in the Bidding Document or as otherwise approved by the ENGINEER-IN-CHARGE / OWNER.
- ii) Where the makes of materials are not indicated in the Bidding document, the CONTRACTOR shall furnish details of proposed makes and supplies and supply the same after obtaining the OWNER's/ ENGINEER-IN-CHARGE's approval.

#### 5.0 OWNER'S OBLIGATIONS:

The OWNER'S obligations are limited to the following:



- a) Handing over the site in sections/ stages progressively.
- b) Approval of Construction drawings supplied by the Contractor.
- c) Payment to the contractor for performance of work under the contract as per the terms and conditions specified therein.
- d) A piece of land for setting up temporary office, Godown, etc., if available.

#### 6.0 POWER & WATER FOR CONSTRUCTION AND OTHER PURPOSES

Availability of water & power at site is very limited. Contractor shall have to make his own arrangements for Construction work.

#### 7.0 RATES

- 7.1 OWNER shall pay to contractor the total rates quoted by them for the due and faithful performance of contractor's obligation under the contract. The rates quoted by the contractor in SOR shall remain fixed and firm and not subject to any escalation unless and otherwise specified in the tender.
- 7.2 The rates shall be deemed to allow for all minor extras and constructional details which are not specifically shown on drawings or given in the specifications but are essential in the opinion of the Owner/ Consultant to the execution of work to conform to good workmanship and sound engineering practice. The Owner / Consultant reserve the right to make any minor changes during the execution without any extra payment.
- 7.3 The Owner / Consultant decision to classify any item 'minor changes', 'minor extras' and 'constructional details' shall be final conclusive and binding on the Contractor.
- 7.4 Rates quoted shall include for payment of royalties for obtaining earth, morrum, sand, aggregates, stones, etc. Nothing extra shall be paid to the Contractor on this account.
- 7.5 Contractor shall be responsible for making all necessary approach roads to the sites of execution for taking his rigs, cranes & equipments. No extra claim in this regard shall be entertained.
- 7.6 Schedule of rates submitted by the Tenderer shall be the true copy of the schedule of rates enclosed with the tender documents

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7.7 The quantities and items of work given in the Schedule of Rates are tentative and approximate. The OWNER reserves the right to order variation of work during the currency of the contract of its original contract value within the stipulated variation as per clause no. 60.2 of GCC.

The contractor shall not be entitled to any **increase** whatsoever **on the SOR rates** on account of any variation in the quantities and/or omission/addition of items **vis-à-vis the quantities mentioned** in the “Schedule of Rates (**Section VII**)” as long as the contract value finally determined on the basis of the certified final quantities and the contract item rates is within the stipulated variation as per clause no. 60.2 of GCC.

## 8.0 SPECIFICATIONS

8.1 If specification for an item of work is not covered by CPWD/ BIS specifications or Technical Specifications, the same shall be decided by the Owner/ Consultant and shall be binding on the Contractor.

8.2 The Owner/ Consultant shall have the right to cause the Contractor to purchase and use such materials of particular make or from a particular source which may in his opinion be necessary for proper and reasonable compliance with the specifications and execution of work.

8.3 (a) As and when required by the Owner/ Consultant, the Contractor shall provide all facilities at site or at manufacture’s works or in approved laboratory for testing of materials and/or workmanship. All the expenditure in respect of this shall be borne by the Contractor. The Contractor shall, when required to do so by the Owner/Consultant, confirm that the materials have been tested in accordance with requirements of the specifications.

(b) Neither the omission by the Owner/ Consultant to test the materials nor the production of manufacturer(s) certificate, etc. shall affect the right of the Owner/Consultant to reject, after delivery, the materials found not in accordance with the specifications.

## 9.0 GATE PASSES



All tools, plant and materials shall be brought by the Contractor to the works site through a covering note to be submitted in 3 copies. One copy of the covering note will be delivered to the security staff and one copy to the Owner/Consultant. The third copy shall be retained by the Contractor. The Contractor shall follow all rules and regulations for entry / exit of their men and materials in/from project site as framed by Owner/Consultant.

## 10.0 TIME SCHEDULE

10.1 Bidder shall be required to complete the WORK under the CONTRACT so as to achieve the GUARANTEED COMPLETION DATE in accordance with the following:

<b>Completion Period/ Completion Schedule</b>	<b>15 (Fifteen) Months from date of issuance of FOA (Fax of Acceptance)</b>
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10.2 The basic consideration and essence of the Contract is the strict adherence to the Time schedules for performing the specified works as stipulated in the Contract.

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10.3 If at any time, the Owner/Consultant is of opinion that the Contractor has fallen behind the approved construction schedule, the Owner/ Consultant may, without any cost to Owner/ Consultant, require the Contractor to take such steps as may be necessary to improve his progress, especially require him to employ overtime operations, increase the number of shifts, work on holidays and Sundays or increase the capacity of his construction plant and equipment and require him to submit evidence demonstrating the manner in which the Contractor proposes to comply with the construction schedule. Failure of the Contractor to comply with the above will be considered a failure to execute the work with due diligence.

#### **10.4 Time schedule network/ bar chart.**

10.4.1 Together with the Work Order/ Contract confirmation, Contractor shall submit to Owner/ Consultant, his time schedule regarding the documentation, supply of materials as well as information about of his Subcontracts to be placed with their parties, including the dates on which Contractor intends to issue such Subcontracts.

10.4.2 The time schedule will be in the form of a network or a bar chart clearly indicating all main or key events regarding documentation, supply of materials, delivery and site fabrication, erection, inspection, testing and completion.

10.4.3 The original issue and subsequent revisions of Contractor's time schedule and or Sub-contractor's time schedules shall be sent to Consultant in two copies (of which one shall be in Soft copy) and two copies to Owner.

10.4.4 The time schedule network/bar chart shall be updated at least every fortnight.

#### **10.5 Progress Trend Chart/ Monthly Report**

10.5.1 Contractor shall report weekly to Owner/ Consultant the progress of the execution of Work Order/ Contract and achievement of targets set out in time bar chart.

10.5.2 The progress will be expressed in percentages shown in the progress trend chart.

10.5.3 The first issue of the progress trend chart will be forwarded together with the time bar chart along with the Work Order confirmation.



10.5.4 The fortnightly reporting will bear the updating of the progress trend chart.

10.5.5 All reports shall be submitted through e-mail. Monthly reports to be also submitted in hard copy.

#### **11.0 ISSUE OF WORKING DRAWINGS**

All Working drawings shall be submitted by the CONTRACTOR for OWNER/ CONSULTANT's approval. Working drawings submitted by the CONTRACTOR progressively during the pendency of the contract, shall be approved/ marked "Good for execution/ construction" by Owner/ Consultant. The Contractor on this account shall not be entitled to put forth any claim whatsoever on account of delay in submission of the drawings to the Owner/ Consultant.

#### **12.0 SERVING OF NOTICES**

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The Contractor shall furnish to the Owner/ Consultant the name, designation and address of his authorized Agent for the purpose of serving of notice(s) regarding all complaints, communications and references and shall be deemed to have been duly given to the Contractor if delivered to the Contractor or his authorized agent or left at or posted to the address so given and shall be deemed to have reached such address in the ordinary course of post or on the day on which they were so delivered or left. In the case of contract by partnership firm, any change in the constitution of the firm shall be forthwith informed by the Contractor to the Owner/ Consultant.

- All correspondence from the CONTRACTOR to the OWNER shall be as per the correspondence distribution schedule. All communications including technical-commercial clarifications and/ or comments shall be addressed to OWNER/ CONSULTANT and shall always bear reference of DLOA number.
- Correspondence on technical and commercial matters shall be dealt with in separate letters and each copy of the letter shall be complete with all Annexures, if any.
- Any notice to the CONTRACTOR under the terms of the CONTRACT shall be served by registered e-mail/Speed Post, fax or courier.
- Any notice to the OWNER shall be served from the CONTRACTOR's Principal office in the same manner.
- Any written order or instruction of OWNER or his duly authorised representative, communicated to authorised representative of the CONTRACTOR at site office shall be deemed to have been communicated to the CONTRACTOR at his legal address.

### **13.0 NOTHING EXTRA FOR ADVERSE SUB-SOIL CONDITION**

There may be variation in nature of sub-soil both horizontally and vertically. The Contractor shall have to take necessary precaution during excavation against any happening like collapsing of sides etc. Any slip or fall in excavation shall have to be cleared by the Contractor at his own cost. In case of excessive heaving, it shall have to be cut and refilled with lean concrete by the Contractor at his own cost. The Contractor shall have to adopt underwater work in case of occurrence of piping/quick conditions without any cost to Owner/Consultant.

### **14.0 CONTRACTOR'S RESPONSIBILITY FOR THE MANNER OF EXECUTION OF WORK**



The Contractor shall be responsible for the manner and the method of executing the work. The work shall be subject to the approval of Owner/ Consultant from time to time for purposes of determination of the question whether the work is executed by the Contractor in accordance with the contract.

### **15.0 NO WORK SHALL BE UNDERTAKEN WITHOUT APPROVED WORKING DRAWINGS**

No work shall be undertaken at Site by the Contractor until detailed approved working drawings submitted by the Contractor are marked "Good for execution/ construction" by Owner/ Consultant. Any work done without the aforesaid approved working drawing shall be at the Contractor's own risk and costs.

### **16.0 CONTRACTOR SHALL KEEP FOUNDATION PITS/TRENCHES DRY**



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The Contractor, during the pendency of contract, shall keep in dry condition of pits, trenches, which are not yet back filled due to technical reasons, if not shall be Bail-out/Pump-out all accumulation at his own cost for the safety of the structure / element. During pumping, the Contractor shall have to ensure that 'Loss of Ground' does not occur. Other approved methods shall be undertaken by the Contractor to avoid 'Loss of Ground' if occurred, at his own cost.

#### **17.0 NOTHING EXTRA FOR INTRICATE CONCRETE SHUTTERING OR REINFORCEMENT WORK**

Nothing extra shall be paid for any intricate concrete, shuttering or reinforcement work for foundations of equipment and machinery and for other foundation/superstructure works or for any delay inherent in concreting in small and thin sections in concrete or RCC works etc.

#### **18.0 NOTHING EXTRA FOR REBATING ETC.**

Nothing extra shall be paid in concrete/RCC works for all rebating, chamfering, grooving, sinking, trotting weathering, moulding, etc. to accord with the details shown on the working drawings.

#### **19.0 CONSTRUCTION JOINTS**

19.1 In case of execution of massive concrete elements both in foundation and in superstructure and in some other locations as would be permitted except where specified in the working drawings, the work shall be carried out in one single operation without any break in concreting within time limit that would be specified by the Owner / Consultant without any additional cost to Owner/ Consultant.

19.2 All specified construction joints, either horizontal or vertical, in any element of concrete member shall be provided with shear keys of such dimensions as would be determined by the Owner/Consultant. Before adopting the next operation for the other half of the element these shear keys along with the entire surface of the joint shall be roughened and deepened to above 20 mm by chipping, washing and cleaning thoroughly. The Contractor shall provide cement slurry in sufficient quantity over the cleaned surface for proper bond as per the direction of Owner/Consultant. The Contractor shall not be entitled to any extra/payment; on this account.

#### **20.0 SUBMISSION OF BILL**



Contractor is to submit the bills and record of measurements in three (3) copies for works executed by him.

##### **20.1 FOR R/A BILLS:**

Contractor is to submit the bills and record of measurements to EIC complete in all respect for certification by Owner/Consultant in three copies for works executed by him progressively.

##### **20.2 MEASUREMENT OF WORKS**



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In addition to the provisions of relevant Clause of GCC, following shall also apply:

Measurement of work shall be made in the units mentioned in the schedule of rates. The abbreviations used in the schedule of rates are mentioned in Schedule of Rates.

The Engineer-in-Charge shall, except as otherwise stated ascertain and determine by measurement the value of Work done, in accordance with the Contract and as per actual Work done. The Engineer-in-Charge shall, when he requires any part or parts of the Works to be measured, give notices to the Contractor's authorized agent or representative who shall forthwith attend or send a qualified agent to assist the Engineer-in-Charge in making such measurement and shall furnish all particulars required by either of them. Should the Contractor not attend or neglect or omit to send such representative then the measurement made by the Engineer-in-Charge shall be taken to be the correct measurement of the Work. For all measurements, figured dimensions given in the drawings shall be followed. Measurement of all hidden items shall be carried out by the Engineer-in-Charge. The Contractor or his representative who attends may at the time of measurement take such notes and measurements as he may desire.

The measurements for excavations shall be restricted and limited to minimum excavation line as per drawing for payment purposes.

### 20.3 DISPUTE IN MODE OF MEASUREMENT



Where Works have to be measured for any purpose whatsoever, it shall be in accordance with item specifications as per relevant Indian Standards unless otherwise specifically indicated in the Contract Specifications. All measurements will be recorded in metric units only. In case of absence of mode of measurement of any item not covered by both the methods mentioned above, the Engineer-in-Charge's decision shall be final and binding. The required number of bills, registers, bill forms, level/field books, materials/ account registers, testing registers, site order books and any other stationary item pertaining to this contract shall be printed and provided for by the contractor, at his own cost in the format prescribed and approved by the Engineer-in-Charge in writing. The Measurement Sheet will have three copies in different colour pages and will be printed so that proper referring and record of complete measurement is maintained. Original sheet will be retained in the book and will be returned to Owner on completion of Work.

### 20.4 SUBMISSION OF FINAL BILL

The final bill complete in all respect shall be submitted after certified completion of work.

20.4.1 On the basis of the rates provided in the CONTRACT and subsequent Change Order(s)/Amendment(s), if any, the CONTRACTOR shall prepare the Final Bill as per GST norms. Additions claimed on account of CHANGE ORDER(s) shall be separately indicated in the Final Bill with reference to the relative CHANGE ORDERS(s).

20.4.2 The Final Bill shall, in addition to the payment entitlements arrived at according to the provisions of Clause 20.4.1 hereof shall separately state and include therein all claims of the CONTRACTOR, if any, with full particulars of the nature of such claim and grounds on which it is based and the amount claimed.

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20.4.3 The Final Bill drawn in accordance with Clause 20.4.1 shall be submitted (together with the COMPLETION CERTIFICATE along with other documents as stipulated at Clause No. 39.8 of SCC, to the ENGINEER-IN-CHARGE for certification, who shall certify the Final Bill, if drawn in accordance with Clause 20.4.1. After certification of the ENGINEER-IN-CHARGE, the Final Bill shall be submitted in quadruplicate (or in such other number of copies as the OWNER may prescribe) to the OWNER for payment.

20.4.4 All monies payable under the CONTRACT for WORKS to be performed and MATERIALS to be supplied up to and including successful completion shall become due and payable to the CONTRACTOR only after submission to the OWNER of the Final Bill prepared in accordance with the provisions of Clause 20.4.1 hereof and associated provisions there under accompanied by the COMPLETION CERTIFICATE in respect of the WORKS.

20.4.5 Payments of the amount(s) due on the Final Bill to the extent certified by the ENGINEER-IN-CHARGE, shall be made within 30 (Thirty) days from the due date as specified in Clause 20.4.4 hereof, subject to the deductions provided in Clause 20.4.5.1.

20.4.5.1 All payments due to the CONTRACTOR on the Final Bill shall be subject to tax deductions and any other deductions provided in the CONTRACT or required to be made under any law, rule or regulation having the force of law for the time being applicable, or elsewhere provided for in the CONTRACT documents.

## 21.0 CLAIMS BY THE CONTRACTOR



21.1 No claim(s) shall on any account be made by the CONTRACTOR after submission of the Final Bill, with the intent that the Final Bill prepared by the CONTRACTOR shall reflect any and all claims whatsoever of the CONTRACTOR against the OWNER arising out of or in connection with the CONTRACT or any supply made or work performed by the CONTRACTOR there under or in relation thereto, and notwithstanding any enabling provision in any law or CONTRACT and notwithstanding any claim that the CONTRACTOR could have with respect thereto, the CONTRACTOR hereby waives and relinquishes any and all such claims not included in the Final Bill and absolves and discharges the OWNER from and against the same, even if in not including the same as aforesaid, the CONTRACTOR shall have acted under a mistake of law or of fact, or shall claim to have acted under economic compulsion or necessity.

21.2 If required by the OWNER, the ENGINEER-IN-CHARGE shall be authorised to require the CONTRACTOR to furnish, and the CONTRACTOR shall, upon the request of the ENGINEER-IN-CHARGE /OWNER, furnish all invoices, vouchers and accounting records as may be deemed necessary by the ENGINEER-IN-CHARGE /OWNER for the purpose of verifying any CONTRACTOR's claim.

## 22.0 PROVISION FOR MULTIFARIOUS CHECKING OF WORK

Before commencement of the actual concreting operation the position and layout of foundations, pedestals, inserts, pockets, recess, reinforcement and form work shall be checked repeatedly by Owner/Consultant. No claim whatsoever shall be entertained on this account. The level of foundations shall be accurately maintained as shown in the drawings or as directed by the Owner/Consultant. No padding, plastering or chipping shall be allowed for achieving the results.

## 23.0 DEFECT LIABILITY PERIOD

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Defect Liability Period shall be 12 months from the date of completion of works in all respects as declared by EIC.

#### **24.0 CLEARING, FILLING AND LEVELING OF SITE**

The site shown on the layout plan shall be cleared by the Contractor of all obstructions, loose stones, materials, rubbish of all kinds of bushes, trees, grass as well as brush wood. All holes/hollow, whether originally existing or produced by removal of loose stones or brush wood, shall be carefully filled up with earth, well rammed and levelled off as directed by the Owner/ Consultant. The Contractor will not be entitled to any payment in his regard.

#### **25.0 CONTRACTOR TO COMPLY ALL LAWS**

25.1 The contract shall be governed by the law in force in the Republic of India.

25.2 The Contractor shall comply with all laws etc. The Contractor shall be responsible to secure compliance with the Central and States Laws as well as the Rules, Regulations, by-laws and orders of the legal authorities and statutory bodies which are in force or as may be in force from time to time. He shall give to the Municipal Corporation Committees, police and other relevant authorities all such notices, etc. as may be required by law and obtain all requisite license for temporary constructions, enclosures, etc. and pay all fees, taxes and such other dues or charges which may be leviable on account of any of his operations in executing the works under this contract. Owner/Consultant shall not pay anything extra to the Contractor on this account. The Contractor shall also make good at his own cost, any damage done by him to any adjoining property, during execution of work.

#### **26.0 CONTRACTOR TO USE THE MATERIALS ONLY AFTER THE APPROVAL OF OWNER**

The Contractor shall use the materials only after the approval of Owner/ Consultant, before incorporation of the same in the works.

#### **27.0 COMPLIANCE OF ENTIRE PROVISIONS IS OBLIGATORY TO CONTRACTOR**



It shall always prevail, unless otherwise specifically stated, that the entire provisions of the Tender Document have been accepted for compliance by the Contractor without any reservation.

#### **28.0 DELIVERY AND DOCUMENTS**

Delivery of the Goods shall be made by the Contractor in accordance with the terms specified by the Owner/Consultant in the schedule of requirements in Technical Specifications and the special conditions of Contract.

#### **29.0 WEATHER CONDITIONS**

Owner/Consultant may order Contractor to suspend any work which in the opinion of Owner/Consultant may be subject to damage by prevailing weather conditions. No claim whatsoever on this account shall be entertained.

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It is presumed that the Contractor has familiarized himself with the weather conditions prevailing in the area therefore in such weather parameters if it appears to the Engineer –in –charge (EIC) that certain weather condition may damage the work or specified quality of the work can be achieved without stoppage of the work, the EIC in such conditions may require the Contractor to stop the work till such time as he thinks fit and appropriate. It is understood by the contractor that no compensation will be admissible on this count.

### **30.0 INSTRUCTIONS, DIRECTIONS AND CORRESPONDENCE**

30.1 The work described in Contract is to be executed according to the standards, data sheets, tables, Specifications and Drawings and according to all conditions both general and specific enclosed with the Tender document, unless any or all of them shall have been modified or cancelled in writing as a whole or in part.

- i) All instructions and orders to Contractor shall, except what is herein provided, given by Owner/Consultant.
- ii) All the work shall be carried out under the direction of and to the satisfaction of Owner/Consultant.
- iii) All communications including technical/commercial clarifications and/or comments shall bear reference to the DLOA/ Contract.
- iv) Invoice for payment against DLOA/ Contract shall be addressed to Owner/ Consultant.
- v) The DLOA number shall be shown on all invoices, communications, packing lists, containers and bills of lading etc.

30.2 Correspondence on technical and commercial matters shall be dealt with in separate letters and each copy of the letter shall be complete with all Annexures. Wherever possible, correspondence should be through e-mails.



30.3 Correspondence for expediting and Third Party Inspection (TPI), if applicable, shall be done directly with inspector with a copy to consultant & owner.

### **31.0 QUALITY ASSURANCE / QUALITY CONTROL**

31.1 After the award of the contract detailed quality assurance programme shall be prepared by the Contractor for the execution of contract for various works which will be mutually discussed and agreed to.

31.2 The Contractor shall establish document and maintain an effective quality assurance system outlined in recognized codes.

31.3 Quality Assurance System plans/procedures of the Contractor shall be furnished in the form of a QA manual after award of job. This document should cover details of the personnel responsible for the Quality Assurance, plans or procedures to be followed for quality control in respect of Design, Engineering, Procurement, Supply, Installation, Testing and completion in all respect till final acceptance by Owner. The quality assurance

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system should indicate organizational approach for quality control and quality assurance of the construction activities, at all stages of work at site.

- 31.4 The Owner/ Consultant or their representative shall reserve the right to inspect/ witness, review any or all stages of work at shop/site as deemed necessary for quality assurance.
- 31.5 The Contractor has to ensure the deployment of quality Assurance and Quality Control Engineer(s) depending upon the quantum of work.  
This QA/QC group shall be fully responsible to carry out the work as per standards and all code requirements. In case Engineer-in-charge feels that Contractor's QA/QC Engineer(s) are incompetent or insufficient, Contractor has to deploy other experienced Engineer(s) as per site requirement and to the full satisfaction of Engineer-In-Charge.
- 31.6 In case Contractor fails to follow the instructions of Engineer-in-charge with respect to above clauses, next payment due to him shall not be released unless until he complies with the instructions to the full satisfaction of Engineer-in-charge.
- 31.7 The Contractor shall adhere to the approved quality assurance system

### 32.0 HEALTH SAFETY AND ENVIRONMENT (HSE) MANAGEMENT



The Contractor, during entire duration of the Contract, shall adhere to HSE requirement as per Specification enclosed in the Bidding Document as per **Annexure - I (Annexure to Special Conditions of Contract)**

### 33.0 SUSPENSION OF WORKS

- 33.1 The OWNER reserves the right to suspend and reinstate execution of the whole or any part of the WORK without invalidating the provisions of the CONTRACT. Orders for suspension or reinstatement of the WORKS will be issued by the OWNER to the CONTRACTOR in writing. The time for completion of the WORKS will be extended for a period equal to the duration of the suspension along with mutually agreed remobilization period.
- 33.2 If such suspension of WORK by OWNER delays or is likely to delay the progress of WORK or the carrying out of WORK under CONTRACT resulting in additional expenses or increased liability to CONTRACTOR, the OWNER shall pay to the CONTRACTOR all reasonable expenses, mutually agreed between OWNER and CONTRACTOR, arising from suspension of the work by an order in writing of the OWNER provided that such suspensions of work is more than a cumulative period of Sixty days (60) days and provided that such suspension is not due to some fault on the part of the CONTRACTOR or a SUB-CONTRACTOR.
- 33.3 If the OWNER has;
- (i) failed to pay the CONTRACTOR any sum due under the CONTRACT within the period specified in the Contract; or
  - (ii) failed to approve invoice or supporting document without just cause within the period specified in the Contract; or
  - (iii) committed substantial breach of the Contract:

Then, CONTRACTOR may give a notice requesting OWNER to remedy aforesaid default within 30 days. If OWNER fails to remedy it within the said period,



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CONTRACTOR may suspend the performance of its obligations under the CONTRACT.

33.4 If the CONTRACTOR's performance of its obligations is suspended under the CONTRACT pursuant to clause 33.3 as above, then the COMPLETION TIME shall be extended and all reasonable additional costs or expenses incurred by the CONTRACTOR and mutually agreed between OWNER and CONTRACTOR, as a result of such suspension shall be paid by the OWNER to the CONTRACTOR provided that such suspension is not due to fault on the part of CONTRACTOR or its SUB CONTRACTOR.

#### 34.0 INCOMING MATERIAL REPORT/ INSPECTION



All material entering the site shall be properly recorded by contractor's representative with detail of challan, bill and quantity.

- a) All equipment shall be inspected and tested as per an agreed Quality Assurance Plan before the same is packed and dispatched from the Contractor's/ Vendor's Works. The Contractor shall carry out tests as specified/ directed by Engineer.
- b) Contractor shall perform all such tests as may be necessary to meet requirements of Local Authorities, Municipal or other statutory laws/ bye-laws in force. No extra shall be paid for these.
- c) The OWNER/ CONSULTANT may, at his sole discretion, carry out inspection at different stages during manufacturing and final testing after manufacturing.
- d) Approvals or passing of any inspection by the OWNER/ CONSULTANT or his authorized representative shall not however, prejudice the right of the OWNER/ CONSULTANT to reject the plan if it does not comply with the specification when erected or give complete satisfaction in service.
- e) All materials and equipment found defective shall be replaced and the whole work again tested to meet the requirements of the specifications, at the cost of the contractor. Contractor has to obtain a performance certificate/approval for the complete layout of piping/equipment erected.

#### 35.0 THIRD PART INSPECTION

- i. A Third Party Inspection Agency (TPIA), shall be engaged to carryout inspection of equipment/ materials at manufacturer/ supplier works, prior to dispatch, unless the TPI is explicitly waived off (in writing) by the OWNER/ CONSULTANT.
- ii. The TPI shall be carried out by any of the below mentioned approved agencies only:
  - Bureau Veritas (Ind.) Pvt. Ltd. (BVIS)
  - Lloyd's Register (LRIS)
  - Indian Register of Shipping (IRS)/
  - DNV GL
  - TUV India Pvt. Ltd. (TUV)



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- iii. Third Party Inspection Release Note clearly indicating that material has been inspected and accepted as per QAP approved by OWNER shall be submitted for OWNER/ CONSULTANT review prior to dispatch.
- iv. Approvals or passing of any inspection by the TPIA shall not however, prejudice the right of the OWNER/ CONSULTANT to reject the plan if it does not comply with the specification when erected or give complete satisfaction in service.
- v. The entire Cost for engagement of TPIA and the necessary modification/ rectifications (if any) prior to dispatch, shall be borne by the Contractor and no extra claim whatsoever shall be admissible on this account.
- vi. The OWNER/ CONSULTANT's Engineer may, at his sole discretion, carry out inspection at different stages during manufacturing and final testing after manufacturing. Testing performed in the presence of the Purchaser's representatives shall not relieve the supplier of their own responsibilities and guarantees and any other contractual obligations.



### **36.0 SECURITIES OF MATERIALS / EQUIPMENTS**

Contractor shall be solely responsible for the security of the material at site and TFL/ Consultant shall not be responsible for any loss/theft of the materials.

- a) Materials required for the works, whether brought by the Contractor shall be stored by the Contractor only at places approved by the Engineer-in-Charge, as storage and safe custody of material shall be responsibility of the Contractor.
- b) TFL,'s officials concerned with the Contract shall be entitled at any time to inspect and examine any materials intended to be used in or on the works, either on the site or at factory or workshop or other place(s) where such materials are assembled, fabricated, manufactured or at any place(s) where these are lying or from which these are being obtained and the Contractor shall give such facilities as may be required for such inspection and examination.
- c) The contractor shall be the OWNER of all bought out items and materials and shall be responsible for the safety, security, insurance and care and custody of all the materials lying at site. TFL will have lien on all the items including those brought by the contractor for the purpose of Erection, testing, and commissioning of the work. For all Equipments/Materials, the title of Ownership shall pass on to the OWNER at the time of acceptance of entire work.

However, in case of termination of contract the transfer of title shall pass automatically to OWNER.

- d) CONSTRUCTION EQUIPMENT used by the CONTRACTOR and its SUB-CONTRACTORS in connection with the execution of works shall remain the property of CONTRACTOR or its SUB-CONTRACTORS. All duties, levies, taxes etc. payable on account of

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CONSTRUCTION EQUIPMENT shall be borne by the CONTRACTOR. CONTRACTOR shall indemnify the OWNER on this count.

### 37.0 CONTRACTOR'S PERSONNEL AT SITE:

List of persons employed by Contractor for the subject work mentioning their residential address shall be submitted to TFL. In case of any revision, the same shall be informed to TFL from time-to-time. If required necessary verification from Police / Gram Pradhan shall have to be submitted by the contractor.

The Contractor shall be directly responsible for any/all disputes arising between him and his personnel and keep indemnified against all losses, damage and claims arising thereof.

Within the TFL's premises, the Contractor's personnel shall not do any private work other than their normal duties.

The personnel engaged by the Contractor shall be subject to security check by the TFL's security staff while entering/leaving the premises. The contractor & his personnel shall be required to follow the rules and regulations of TFL in force from time-to-time. The contractor may also be required to provide photo passes to the personnel required by him, for security and safety reasons and furnished the details of the same when asked for.

No other person except Contractor's authorized representative shall be allowed to enter TFL premises Contractor shall also not entertain any outsider or extend any service beyond TFL's premises. Entry of Contractor's persons shall be regulated with proper identity/gate pass.

Contractor shall be fully responsible for theft, burglary, fire or any mischievous deeds by his staff and any loss to TFL shall be recovered from the immediate bill of the Contractor.



Contractor shall provide all necessary tools and tackles, equipments, safety belt, wheel burrow, scaffolding, ladders, drilling m/c & safety equipment etc. required to carry out job at his cost and material used by Contractor shall be of standard make and approval of Engineer-In-Charge shall be taken for the same.

TFL also reserves the right to ask the Contractor to remove particular person(s) from site with immediate effect if in the opinion of TFL, his behaviour/ performance is not up to the mark and/or found indulging in unlawful activities, Contractor shall immediately comply with such instructions.

It will be the responsibility of contractor's engineer to ensure that their personnel behave in a proper manners and behaviour and not to undergo the argument with the employees. It will be the responsibility of the Contractor's Engineer to deal with such complaints or co-ordinate with the TFL Engineer.

### 38.0 SETTING OUT THE WORKS

The CONTRACTOR shall supply dimensioned drawings, levels and other information necessary to set out the works and the Contractor shall set out the works and be



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responsible for the accuracy of the same. He shall rectify at his own cost and to the satisfaction of the Engineer-in-Charge any error found at any stage which may arise through in accurate setting out. The Contractor shall protect and preserve all bench marks used in setting out the works till end of the Defects Liability Period unless the Engineer-in-Charge direct their earlier removal.

### **39.0 COMPLIANCE WITH LABOUR/ INDUSTRIAL LAWS**

**RESPONSIBILITIES OF THE CONTRACTOR AND COMPLIANCE WITH LABOUR/ INDUSTRIAL LAWS:**

- a. The contractor shall have his own PF code no. with the RPFC as required under Employee PF & Miscellaneous Provisions Act, 1952 and ESI code No. required under Employee State Insurance Act 1948 before commencement of work.
- b. The contractors shall periodically submit the challans / receipts / proof for the depositing PF contribution with RPFC and ESIC.
- c. The contractor is require to obtain labour license under the provisions of Contract Labour (R&A) Act, 1970 from the office of ALC (Central), Ministry of Labour, Govt. of India.
- d. The contractor is liable to abide by all necessary licenses / permissions from the concerned authorities as provided under the various labor legislations
- e. The contractor shall discharge obligations as provided under various statutory enactment including the employees Provident Fund and Miscellaneous Provisions Act, 1952, Contract Labour (R&A) Act, 1970, Minimum Wages Act, 1948, Payment of wages act 1936, Workman Compensation Act 1923, Employees' State Insurance Act 1948 and other relevant acts, rules and regulations enforced from time to time.
- f. The contractor shall be solely responsible for the payment of wages and other dues to the personnel, if any, deployed by him latest by 7<sup>th</sup> day of the subsequent month.
- g. The contractor shall be solely responsible and indemnify the TFL against all charges, dues, claim etc. arising out of the disputes relating to the dues and employment of personnel, if any, deployed by him.
- h. The contractor shall indemnify TFL against all losses or damages, if any, caused to it on account of acts of the personnel, if any, deployed by him.
- i. All personnel deployed by the contractor should be on the rolls of the contractor.
- j. The contractor shall ensure regular and effective supervision and control of the personnel, if any, deployed by him and gives suitable direction for undertaking the contractual obligations.
- k. The personnel to be deputed by the contractor shall observe all security, fire and safety rules of TFL while at the site. His Work/Services will be supervised by the supervisors of contractor. Contractor has to be strictly adhere to guidance, instruction when required.
- l. Contractor shall provide proper identification cards for his employees to be deputed by him for Work/Services, duly signed by the contractor or authorized person on behalf of

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contractor. Also the contractor should obtain entry passes from Security Dept. through OPERATION-IN-CHARGE for his employees.

- m. Contractor has to deploy the personnel with no past criminal records. Reformed people, names of such persons should be clearly indicated in case of. Also the contractor has to provide police verification for all the persons deployed by him.
- n. While confirming to any of these conditions, the contractor should ensure that no law of state regarding labour, their welfare, conduct etc, is violated. The contractor shall indemnify TFL for any action brought against him for violation, non-compliance of any act, rules & regulation of centre / state / local statutory authorities.
- o. All existing and amended safety / fire rules of TFL are to be followed at the work site.
- p. Contractor shall ensure payment of wages to the personnel employed and meet all statutory obligations of payment as per Minimum Wages act 1948 and payment of wages Act 1936.
- q. Special safety equipment e.g. safety belts, helmets, hand gloves, goggles, safety shoes etc shall be provided to the personnel engaged by the contractor.
- r. Suitable site office space may be provided by TFL if required and available.
- s. In case of accident, injury and death caused to the employee of the contractor while executing the Work under the contract, the contractor shall be solely responsible for payment of adequate compensation, insurance money etc. to the next kith & kin of injured / diseased. Contractor shall indemnify TFL from such liabilities.
- t. The contractor shall also undertake to obtain necessary group insurance coverage covering all risks connected with the job to be undertaken by him under the contract from insurance company and pay the premium accordingly.
- u. The contractor shall not employ or permit to be employed any person suffering from any contagious, loathsome or infectious disease. The contractor shall get examined his employees / persons deployed from a civil govt. doctor.
- v. No employees or person of contractor (including contractor) be allowed to consume alcoholic drinks or any narcotics within the plant premises. If found under the influence of above, the owner / TFL will terminate the contract immediately and may refer the case to police.
- w. The contractor hereby agrees to indemnify owner/ TFL and harmless from all claims, demands, actions, cost and charges etc brought by any court, competent authority/ statutory authorities against owner/ TFL.

#### **40.0 TERMS OF PAYMENT**

Following terms of payment shall be released after submitting valid Tax Invoice. GST no. of Contractor as well as Owner should be mentioned by Contractor on Invoice.

#### **39.1 Mobilization Advance: Not Applicable**

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### 39.2 Running on Account Payment

Contractor shall raise the invoice for the 100% completed job against the RA bill and payment shall be release as per following manner:

#### **For Supply/Erection and Supply & Erection:**

95% against the value of actual work done shall be paid against running bills certified by OWNER/CONSULTANT after recovery of following payments:

- a) Value of chargeable materials issued by OWNER/CONSULTANT, if any
- b) Mobilization advances if any.
- c) Statutory deductions like income tax, etc. as applicable.
- d) Any other recovery if becomes due.
- e) Value of Chargeable Service provided by owner/Consultant, if any

Payment shall not be released against 1st R/A bill until submission of following documents by contractor to the indenting department.

1. Financial Guarantee for Performance
2. Labour License (as per statutory requirements)
3. EPF Code Registration number
4. Insurance Contractor All Risk (CAR) Policy
5. Workmen compensation policy

Balance 5% (Retention Money) shall be released along with final bill.

#### **For Lumpsum Item:**



- 95% shall be paid against the approval of final drawing in Code-1
- Balance 5% (Retention Money) shall be released along with final bill.

Payment shall be released for supply of materials (wherever applicable) on submission of the following documents:

1. Signed Invoice(s)
2. Delivery Challan
3. Manufacturer's certificate of inspection for shipment in one original and one photocopy / Manufacturer's test certificate (wherever applicable)
4. Third Party Inspection Release Note clearly indicating that material has been inspected and accepted as per QAP approved by OWNER, or waiver certificate issued by OWNER (wherever applicable).
5. Railway Receipt/LR (wherever applicable)
6. Insurance Certificate/Intimation
7. Guarantee/ Warranty certificate (wherever applicable)
8. Operation & Maintenance manual (wherever applicable)

#### **Note :**

The amount of CGST & SGST or IGST and GST cess, if any will be released when the same will appear in the GSTR-2A of OWNER, in the common portal of GST and supplier

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has filed the valid return in accordance with the provisions of the GST Act and the rules made there under. If, input tax credit is not available to OWNER for any reason attributable to the bidder, then OWNER shall not be obligatory or liable to pay or reimburse GST claimed in invoice and shall be entitled to deduct /setoff/ recover such GST together with all the penalty and interest if any, against any paid or payable to bidder. Further in this case, OWNER reserves the right to upload the name of such defaulter on the Company website and may also consider for giving Holiday or debarred from participation in future tender.

### 39.3 **PAYING AUTHORITY**

Director (Finance),  
Talcher Fertilizers Ltd.,  
C/o GAIL Training Institute, PARC Building,  
Plot No. 24, Sector – 16A, Film City, NOIDA (U. P.)

39.4 Payment in R.A. bills shall based on quantity of work executed at site (as per the item of work) & verified by Owner/ Consultant as per the Contract. Owner/ Consultant is authorized to allow part rate/ reduced rate for any item as mentioned in Contract. The engineer in charge shall specify the reason for the part rate payment in the R.A. bill. Payment has been made in R.A. bill for any item but later on, if some defect is noticed by the Owner/ Consultant, then Owner/ Consultant shall disallow the payment in successive R.A. bill till rectification of the work has been done.

### 39.5 **RELEASE OF 1st R/A BILL**

Payment will be released against 1st R/A bill only on submission of following documents by contractor to the EIC/ OWNER:

- i. Contract Performance Security
- ii. Labour License (as per statutory requirements)
- iii. EPF Code Registration number with RPFC/ARPF
- iv. Insurance Contractor All Risk (CAR) Policy
- v. Workmen compensation policy



39.6 Balance 5% (Retention Money) shall be released along with final bill subject to the following:

The status of the contractor as L-1 bidder shall be ensured keeping in view the final executed Bill of Quantity. All the valid tenders considered in evaluation at the time of award of work shall be re-evaluated at the respective quoted rate with a view to assess whether L-1 contractor's price of completed works continues to be the lowest. In case after such re-evaluation, final contract value is not the lowest, the contractor shall reimburse to Owner the difference in the amount between the re-evaluated tender and the lowest tendered amount. This difference of amount shall be adjusted from their final bill.

If the amount recoverable exceeds the amount payable in final bill, the balance amount shall be recovered by the Owner, from the retention money and or performance bank guarantee/any other moneys or bank guarantees available with the owner for any other job being done by the contractor. The contractor shall restore the performance guarantee to the requisite value to the extent of 3% of contract price in such case where recovery is required to be affected by the encashment of full amount or a part of the performance bank guarantee as soon as the contractor receives such intimation from the owner/ consultant.

39.7 The contractor shall raise invoices on fortnightly basis. Bidder shall enclose all documents as per check list issued by CONSULTANT/TFL. However, EIC may authorize payments for bills more frequently i.e. periodicity of less than fortnight, depending on site requirements.



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After receipt of complete R.A. Bill as per terms and conditions of the contract and duly certified by Engineer-in-Charge (EIC), on-account payment equivalent to seventy percent (70%) of the net payable certified amount of the R.A. Bill will be released to the Contractor within a period of seven (07) working days from submission of certified bill by EIC to OWNER. The balance amount will be released within a period of 15 days from submission of certified bill by EIC to OWNER.

39.8 The final bill complete in all respect shall be submitted by the contractor within three (3) months of certified completion of work. The bill should be accompanied along with the following documents.

1. Job completion certificate.
2. No claim certificate on Owner's prescribed proforma.
3. Site clearance certificate.
4. Contract Performance Security duly amended to cover Defect Liability Period.
5. Material reconciliation statement (statement of material issued by Owner or consultant to be got certified from stores dept.).
6. Indemnity certificate towards labour payment and all statutory payments.

No claim shall be entertained after receipt of final bill. Settlement of final bill shall be made subject to settlement of all disputes and furnishing of all required documents/clarifications and grant of extension of time, if any, by Owner's competent authority.

**In case any claim with regard to the wages of any labour employed by Contractor for the subject job is pending/ reported, TFL shall be fully entitled to withhold payment of final bill pending finalisation of such claims.**



#### **41.0 DISPATCH, TRANSPORTATION/SHIPPING**

CONTRACTOR shall be responsible for dispatch of EQUIPMENT by sea/ rail/ road/ air after proper packing and protection. The consignment shall be dispatched after inspection by Third Party Inspection Agency as specified in the Tender document, unless otherwise agreed to in writing however such inspection shall not constitute waiver of the CONTRACTOR's obligations, responsibilities for the EQUIPMENT including care, safety and preservation in any way and manner and the CONTRACTOR's responsibility and obligation in this behalf shall continue till ACCEPTANCE OF ENTIRE WORK .



**The Consignee for all bought-out material shall be CONTRACTOR.**

#### **42.0 WORK CONTRACT SERVICES**



41.1 The award of work shall be on 'Work Contract Service' basis. The contractor shall be responsible for payment of any tax levied on the transfer of property and goods involved with relevant GST act and rules made there under including amendments, if any. The contractor shall be liable to ensure to have registered with the respective tax authorities and to submit self-attested copy of such registration certificate(s) and any taxes/ duties/ levies being charged by the Contractor would be claimed by issuing proper tax invoice/ challan indicating details/ elements of all taxes charged and necessary requirements as prescribed under the respective tax laws and also to mention correct and valid registration number(s) on all tax invoices raised to TFL.

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- 41.2 Irrespective of single or separate insurances, the CONTRACTOR shall take the same in the joint name of OWNER and CONTRACTOR, with OWNER as Primary Beneficiary and CONTRACTOR as Joint Beneficiary, to cover all risk including marine cum erection insurance (MCE), workmen compensation / Employees State Insurance (ESI) under ESI Act 1948 for Contractor's personnel, fire risk policy etc. till handing over of PLANT to OWNER duly commissioned and tested. However, for CONTRACTOR's EQUIPMENT, CONTRACTOR can be the sole beneficiary. Further, OWNER shall have the first right over the claim amount for all insurance claims, where owner has made part or full payment to the contractor.
- 41.3 CONTRACTOR shall be fully responsible for pursuing and settling all claims under the underwriters. In the event of accident, injury, damage or loss likely to form a claim under the above insurance policies, CONTRACTOR shall, as quickly as possible submit the insurance claims by underwriters under intimation to OWNER. CONTRACTOR shall also keep OWNER fully informed about progress of each such case. CONTRACTOR shall undertake immediate repair and replacement of the equipment lost in transit, storage, assembly, erection and COMMISSIONING of PLANT pending settlement of claim thereafter by the underwriters.
- 41.4 The CONTRACTOR at his cost shall arrange, secure and maintain all insurance as may be pertinent to the works and obligatory in terms of law to protect his interest and interest of OWNER in the project, against all perils detailed herein. The Form and the limit of such insurance as defined herein together with the under-writer in each case shall be acceptable to the OWNER and OWNER's acceptance shall not be unreasonably withheld. However, irrespective of such acceptance, the responsibility to maintain adequate insurance coverage at all times including third party liability during the period of contract shall be as of CONTRACTOR alone. The contractor's failure in this regard shall not relieve him of any of his contractual responsibilities and obligations. The insurance covers to be taken by the CONTRACTOR shall be in the joint names of OWNER and the CONTRACTOR. The CONTRACTOR shall, however, be authorized to deal directly with insurance company or companies and shall be responsible in regard to maintenance of all insurance covers.
- 41.5 Any loss or damage to the equipment during handling, transportation, storage, erection, putting the equipment into satisfactory operation and all activities to be performed till the successful completion of trial operation of the plant shall be to the account of the CONTRACTOR. The CONTRACTOR shall be responsible for reference of all claims and make good the damages or loss by way of repairs and/or replacement of the equipment, damaged or lost. The transfer of title shall not in any way relieve the CONTRACTOR of the above responsibility during the period of CONTRACT. The CONTRACTOR shall provide the OWNER with copies of all insurance policies and documents taken out by him in pursuance of the CONTRACT. Such copies of documents shall be submitted to the OWNER immediately after such insurance coverage. However, if Marine cargo insurance or Third party liability Insurance is a part of their global policies; insurer certificate (including the main terms of policy) shall be submitted by CONTRACTOR. The CONTRACTOR shall also inform the OWNER in the writing at least thirty (30) days in advance regarding the expiry/ cancellation and/or change in any of such documents and ensure revalidation, renewal etc. as may be necessary well in time. However adequacy, credibility and maintenance of Insurance policies is the sole responsibility of CONTRACTOR and CONTRACTOR shall keep the OWNER indemnified against any such failure.

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- 41.6 If the material/ equipment or any portion thereof is damaged or lost during transit and handling, storage, erection, commissioning at site, the replacements of such material / equipment shall be effected by the CONTRACTOR within a reasonable time to avoid unnecessary delay in the COMMISSIONING of the EQUIPMENT and without waiting for realization of cost of damages from the insurance company, appointed by him for this purpose. This will not alter the schedule of commissioning & guarantee tests in any way.
- 41.7 All works and operations necessary to lift and to remove the material from port, warehouse, railway or other siding, factory or other places of delivery, loading, handling, transporting and unloading and safely stacking, placing or storing the same at approved godowns, yards or other place(s) of storage including lashing or other-wise securing or protecting the same in transit and during and in storage.
- 41.8 The CONTRACTOR shall maintain a day-to-day account of all materials indicating the daily receipt(s), consumption(s) and balance of each material and category thereof. Such account shall be in the format, if any, prescribed by the Engineer-in-Charge and shall be supported by all documents necessary to verify the correctness of the entries in the account. Such account shall be maintained at the CONTRACTOR MANAGER"s office and site(s) and shall be open for inspection and verification (by verification of documents in support of the entry as also by feasible verification of the stock) at all times by the Engineer-in-Charge with authority at all times without obstruction to enter into or upon any godown or other place(s) or premise(s) where the materials or any part of them are lying or stored and to inspect the same himself and or through his representative(s).
- 41.9 The CONTRACTOR shall at all times be exclusively responsible for any and all losses, damages, deterioration, misuse, wastage, theft, or other application or misapplication or disposal of the materials or any of them contrary to the provisions hereof and shall keep the OWNER indemnified from and against the same and shall forthwith at its own cost and expenses replace any such material, lost, damaged, deteriorated, misused, wasted, stolen, applied, mis-applied and/or disposed as aforesaid with other material of equivalent quality and quantity delivered to site at the CONTRACTOR's risks and costs in all respects.
- 41.10 Notwithstanding anything herein provided, the CONTRACTOR shall be and remain solely and exclusively liable to repair, restore or replace, as the case may be, the materials damaged or destroyed as a result of any act or omission, notwithstanding the existence or otherwise of any policy(ies) of insurance aforesaid, with the intent that any policy(ies) of insurance aforesaid taken out by the CONTRACTOR or by the OWNER, on default by the CONTRACTOR, shall not anyway absolve the CONTRACTOR from his full liability up to and until issue of the Completion Certificate as provided for herein in respect of the works, the work(s) and all materials incorporated therein shall be and remain at the risks of the CONTRACTOR in all respects, including (but not limited to) accident, lightning, earth-quake, fire, storm, flood, tempest, riot, civil commotion and/or war or otherwise with respect to the materials, but shall constitute merely an additional security and not a substitution of liability.

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41.11 If the CONTRACTOR shall default in replacing at the job site, free of any cost to the OWNER, any material lost, damaged, deteriorated, misused, wasted, short, stolen, misapplied or disposed of within the provisions hereof above, or shall fail to return to the OWNER any surplus material or empties within the provision hereof above, the CONTRACTOR shall be liable to pay to the OWNER the cost of such materials or empties delivered at OWNER's stockpile/ godown.

#### 43.0 CONSTRUCTION EQUIPMENT, TOOLS AND TACKLES DEPLOYMENT



- i. The details of key construction equipment in good condition, required to be mobilized by the contractor, to complete the work within the schedule is listed below (not limited to only the following) :

Sl. No.	Equipment Description
1	Hydraulic Telescopic Boom Pick & Carry Crane of suitable capacity
2	Hydraulic Excavator
3	Dumper
4	Tractor Trailer
5	Water Tanker
6	Total Station
7	Dumpy level
8	Welding Machine
9	Dewatering Pump
10	Concrete Mixer
11	Electrical tool Kit
12	Breaker
13	Manual/ Electrical Lifting Equipment/ Hoists/ Pullers of suitable capacity
14	Any, other equipments to complete the job

- ii. Contractor to confirm that the above equipments are available with him in good working condition and shall be timely mobilized on this project site. Contractor has the option to hire some these equipment from equipment hiring agencies also, however contractor shall be responsible for all the machinery deployed at site.
- iii. In addition to above, Contractor shall be required to deploy all the machinery/ tools & tackles at site as required for the successful completion of the job/ as directed by the Engineer-in-charge.
- iv. Owner/ consultant reserve the right to physically check & verify the availability of these equipments prior to award of work
- v. Contractor shall replace any defective/ damaged equipment promptly to complete the work without any time & cost implication to the owner/ consultant
- vi. The actual deployment of equipments shall be finalized or approved by Engineer-in-charge.

#### 44.0 BOCW (BUILDING AND OTHER CONSTRUCTION WORKS)

Applicable BOCW shall be included in the quoted TOTAL CONTRACT PRICE. The contractor shall pay the cess under BOCW Act for subject works and submit proof of submission of cess to owner before submitting the next R.A. bill. In case, contractor does not

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submit the said proof, applicable BOCW shall be deducted at source by the OWNER from the contractor's invoice and deposit the deducted amount to the concerned authority. OWNER does not undertake any further responsibility in this regard.

#### 45.0 COMPLIANCE TO DMI & SP (DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS) POLICY

##### (THIS POLICY IS NOT APPLICABLE FOR THIS TENDER)



~~Contractor shall ensure compliance to the DMI&SP policy as per updated policy issued by the Government of India from time to time. The Policy is attached as **Annexure II** for reference (**Annexure to Special Conditions of Contract**).~~

~~Format for Affidavit & Undertaking with respect to Policy for providing preference to domestically manufactured Iron & Steel products is attached as Form **F-18** in the ITB.~~

#### 46.0 SUB-CONTRACTOR/VENDOR AND MANUFACTURER WARRANTIES

- (a) CONTRACTOR shall ensure that all equipment and other items used in connection with the performance of the WORK or incorporated in the PLANT (other than minor items) will be purchased in compliance with CONTRACT Technical Specifications and requirements in order to allow the PLANT to achieve the Guarantee and Warrantee as provided for in the CONTRACT, unless otherwise agreed with OWNER. Any residual warranty from sub-contractor/vendor shall be passed to the OWNER after expiry of DEFECT LIABILITY PERIOD.
- (b) Neither CONTRACTOR nor its SUB-CONTRACTORS/SUB-VENDORS nor any person under the control of either thereof, shall take any action which could release, void, impair or waive any Guarantee or Warranty on EQUIPMENT or services relating to the PROJECT or the WORK. Any residual warranty from sub-contractor/sub-vendor shall be passed to the OWNER after expiry of DEFECT LIABILITY PERIOD.
- (c) Nothing in this clause shall derogate from the obligations of CONTRACTOR to provide the Guarantees and Warranties described in and to comply with the provisions hereinabove.
- (d) CONTRACTOR shall, based on its past professional judgement, enforce all guarantees and warranties provided hereunder to the fullest extent thereof till such time they are transferred to the OWNER pursuant to sub-clause (g) below.
- (e) Upon the expiration or termination of any of the guarantees or warranties provided by CONTRACTOR pursuant to the CONTRACT, the CONTRACTOR shall assign, and hereby assigns, effective as of such date, or otherwise make available, to OWNER all of CONTRACTOR's rights under all such SUBCONTRACTOR's residual Guarantees and warrantee as per 45.0 (a) & (b) (except to the extent CONTRACTOR has thereof provided warranty services to OWNER and is enforcing CONTRACTOR's rights with respect to such services under the applicable guarantee or warranty) and shall deliver to OWNER copies of all contracts providing for such guarantees and warranties.
- (f) CONTRACTOR, in accordance with the CONTRACT, shall require all SUB-CONTRACTORS/ SUB-VENDORS to be covered by the insurance covers specified in the CONTRACT, during the time in which they are engaged in performing WORK.
- (g) CONTRACTOR shall require all SUB-CONTRACTORS/ SUB-VENDORS to



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release and waive any and all rights of recovery against OWNER including its affiliates, subsidiaries, employees, successors, permitted assigns, insurers and underwriters) and against CONTRACTOR and all other SUB-CONTRACTORS/ VENDORS which the releasing SUB-CONTRACTOR/ VENDOR may otherwise have or acquire, in or from or in any way connected with any loss covered by policies of insurance maintained or required to be maintained pursuant to this the CONTRACT (other than third party liability insurance policies) or because of deductible clauses in or inadequacy of limits of any such policies of insurance. CONTRACTOR shall further require all SUB-CONTRACTORS/VENDORS to include in all policies of insurance maintained by the SUB-CONTRACTORS/VENDORS clauses providing that each underwriter shall release and waive all of its rights of recovery, under subrogation or otherwise, against OWNER, its promoters, affiliates, subsidiaries, employees, successors, permitted assigns, insurers and underwriters, and against CONTRACTOR and all other SUB-CONTRACTORS/VENDORS.

- (h) OWNER shall not be deemed by virtue of the CONTRACT to have any contractual obligation to or relationship with any SUB-CONTRACTOR/ VENDOR.



#### **47.0 CONTRACTOR's LIABILITY FOR APPROVED SUB CONTRACTOR :**

The review by and approval and consent of OWNER as to the approved SUB-CONTRACTORS list or as to CONTRACTOR entering into any SUB-CONTRACT with any approved SUB-CONTRACTOR or as to any WORK done or supply made or services provided by any such approved SUB-CONTRACTOR/ SUB-VENDOR shall not relieve CONTRACTOR of any of his duties, liabilities or obligations under this CONTRACT, and CONTRACTOR shall be liable hereunder to the same extent as if any such SUB-CONTRACT had not been entered into. Any inspection review or approval by OWNER permitted under this CONTRACT of any portion of the work or of any work in progress by CONTRACTOR or SUB-CONTRACTORS/ SUB-VENDORS shall not relieve CONTRACTOR of any duties, liabilities or obligations under this CONTRACT.



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**ANNEXURE - I**  
**TO**  
**SPECIAL CONDITIONS OF CONTRACT**  
  
**SPECIFICATION**  
**FOR**  
**HEALTH, SAFETY AND**  
**ENVIRONMENT (HSE) MANAGEMENT**

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**HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT**

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**HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT**

**1.0 SCOPE**

This Specification establishes the Health, Safety and Environment (HSE) management requirement to be complied with by the Contractors during construction. Requirements stipulated in this specification shall supplement the requirements of HSE Management given in relevant Act (s)/ legislations. General Conditions of Contract (GCC), Special Conditions of Contract (SCC), and Job Specifications. Where different documents stipulate for different requirements, the most stringent shall be adopted.

**2.0 REFERENCES**

This document should be read in conjunction with following:

- General Conditions of Contract (GCC)
- Special Condition of Contract (SCC)
- Job Specifications
- Relevant IS Codes (Refer Annexure-IA)
- Reporting Formats (Refer Annexure-IB)

**3.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENT (HSE) MANAGEMENT SYSTEM TO BE COMPILED BY BIDDERS**



**3.1 MANAGEMENT RESPONSIBILITY**

The contractor should have a documented HSE policy to cover commitment of their organization to ensure health, safety and environment aspects in their line of operation.

3.1.2 The HSE management system of the Contractor shall cover the HSE requirements including but not limited to what is specified under Para 1.0 and Para 2.0 above.

3.1.3 Contractor shall be fully responsible for planning and implementing HSE requirements. Contractor as a minimum requirement shall designate/deploy the following to coordinate the above.

- |                                     |  |
|-------------------------------------|--|
| No. of workers deployed<br>Upto 250 | - Deploy one qualified and experienced safety Engineer/Officer |
| Above 250 & Upto 500                | - One additional safety engineer/officer, as above             |



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Above 500  
(For every 500 or less)

- One additional safety engineer/officer,  
for each 200 workers.

Contractor shall indemnify & hold harmless Owner/Consultant & their representatives free from any and all liabilities arising out of non-fulfillment of HSE requirements.

- 3.1.4 The Contractor shall ensure that the Health, Safety and Environment (HSE) requirements are clearly understood & faithfully implemented at all levels at site.
- 3.1.5 The Contractor shall promote and develop consciousness for Health Safety and Environment among all personnel working for the Contractor. Regular awareness programs and fabrication shop/work site meetings shall be arranged on HSE activities to cover hazards involved in various operations during construction.
- 3.1.6 Arrange suitable First-Aid measures such as First Aid Box, trained personnel to First Aid, Standby Ambulance or Vehicle and install fire protection measures such as adequate number of steel buckets with sand and water and adequate extinguishers to the satisfaction of Consultant/Owner.
- 3.1.7 The Contractor shall evolve a comprehensive planned and documented system for implementation and monitoring of the HSE requirements. This shall be submitted to Consultant/Owner for approval. The monitoring for implementation shall be done by regular inspections and compliance to the observations thereof. The Contractor shall get similar HSE requirements implemented at his sub-contractor(s) work site/office. However, compliance of HSE requirements shall be the sole responsibility of Contractor. Any review/approval by Consultant/Owner shall not absolve contractor of his responsibility / liability in relation to all HSE requirements.
- 3.1.8 Non-Conformance on HSE by Contractor (including his Sub-contractors) as brought out during review/audit by Consultant/Owner representative shall be resolved forthwith by Contractor. Compliance report shall be provided to Consultant/Owner.
- 3.1.9 The Contractor shall ensure participation of his Resident Engineer/ Site-in-Charge in the Safety Committee / HSE Committees. Meetings arranged by Consultant/Owner. The compliance of any observations shall be arranged urgently. He shall assist Consultant/Owner to achieve the targets set by them on HSE during the project implementation.
- 3.1.10 The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliance or continuous failure in implementation of any of HSE provisions; Consultant/Owner may impose stoppage of work without any Cost & time implication to Owner and/or impose a suitable penalty for noncompliance with a notice of suitable period upto a cumulative limit of 1.0% (one percent) of Contract Value with a ceiling of Rs 10 lakhs. This penalty shall be in addition to all other penalties specified else where in the contract. The decision of imposing stoppage

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work, its extent & monetary penalty shall rest with Consultant/Owner & binding on the Contractor.



3.1.11 However **fatal accident** may lead to termination of the Contract. The personnel accidents shall be investigated by a team of Contractor's senior personnel for root cause & recommend corrective and preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to Consultant/Owner. Owner/Consultant shall have the liberty to independently investigate such occurrences and Contractor shall extend all necessary help and co-operation in this regard.

### 3.2.0 HOUSE KEEPING

3.2.1 Contractor shall ensure that a high degree of house keeping is maintained and shall ensure inter-racial the followings:



- a. All surplus earth and debris are removed/disposed off from the working areas to identified location(s).
- b. Unused / Surplus Cables different places within location(s). Steel items and steel scrap lying scattered at the working areas are removed to identified
- c. All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to indemnified location(s).
- d. Roads shall be kept clear and materials like pipes steel sand, boulders concrete, chips and bricks etc shall not be allowed on the roads to obstruct free movement of men & machineries.
- e. Fabricated steel structural, pipes & piping materials shall be stacked properly for erection.
- f. Water logging on roads shall not be allowed.
- g. No parking of trucks/trolleys, cranes and trailers etc shall be allowed on roads which may obstruct the traffic movement.
- h. Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
- i. Trucks carrying sand, earth and pulverized materials etc shall be covered while moving within the plant area.

### 3.3.0 HEALTH, SAFETY AND ENVIRONMENT

	<p style="text-align: center;">RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</p> <p style="text-align: center;"><b>HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT</b></p>	PC-183 / E / 203 /S-V	0	
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- 3.3.1 The Contractor shall provide safe means of access to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen, and, Consultant/Owner. Contractor shall ensure deployment of appropriate equipment and appliances for adequate safety and health of the workmen and protection of surrounding areas.
- 3.3.2 The Contractor shall ensure that all their staff and workers including their subcontractor(s) shall wear Safety Helmet and Safety shoes. Contractor shall also ensure, use of safety belt protective goggles, gloves etc. by the personnel as per job requirements. All these gadgets shall conform to relevant IS specifications or equivalent.
- 3.3.3 Contractor shall ensure that a proper Safety Net System shall be used at appropriate locations. The safety net shall be located not more than 30 feet (9.0 meters) below the working surface at site to arrest or to reduce the consequences of a possible fall of persons working at different heights.
- 3.3.4 Contractor shall ensure that flash back arrester shall be used while using Gas Cylinders at site. Cylinders shall be mounted on trolleys.
- 3.3.5 The Contractor shall assign to his workmen tasks commensurate with their qualification experience and state of health for driving of vehicles, handling and erection of materials and equipments. All lifting equipments shall test certified for its capacity before use. Adequate and suitable lighting at every work place and approach there to, shall be provided by the contractor before starting the actual operations at night.
- 3.3.6 Hazardous and/or toxic materials such as solvent coating or thinners shall be stored in appropriate containers.
- 3.3.7 All hazardous materials shall be labeled with the name of materials the hazards associated with its use and necessary precautions to be taken.
- 3.3.8 Contractor shall ensure that during performance of the work, all hazards to the health of personnel have been indemnified, assessed and eliminated.
- 3.3.9 Chemical spills shall be contained & cleaned up immediately to prevent further, contamination.
- 3.3.10 All personnel exposed to physical agents such as ionizing or non-ionizing radiations ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.
- 3.3.11 Where contact or exposure of hazardous materials could exceed limits or could otherwise have harmful affects, appropriate personal protective equipments such as gloves, goggles, aprons chemical resistant clothing and respirator shall be used.



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3.3.12 Suitable facilities for toilet, drinking water, proper lighting shall be provided at site and labor camps, commensurate with applicable Laws/Legislation.

3.3.13 Contractor shall ensure storage and utilization methodology of materials that are not detrimental to environment. Where required, Contractor shall ensure that only the environment friendly materials are selected.

3.3.15 All persons deployed at site shall be knowledgeable of and comply with the environment laws, rules & regulations relating to the hazardous materials substances and wastes. Contractor shall not dump release or otherwise discharge or dispose off any such materials without the express authorization of Consultant / Owner.

#### **4.0 DETAILS OF HSE MANAGEMENT SYSTEM BY CONTRACTOR**

##### **4.1 On Award of Contract**



The Contractor shall prior to start of work submit his Health, Safety and Environment Manual or procedure and HSE Plans for approval by Consultant/Owner. The contractor shall participate in the pre-start meeting with Consultant/Owner to finalize HSE Plans including the following.

- Job procedure to be followed by Contractor for activities covering handling of equipments, Scaffolding, Electric Installation, describing the risks involved, actions to be taken and methodology for monitoring each activity.
- Consultant/Owner review /audit requirements.
- Organization structure along with responsibility and authority records/ reports etc on HSE activities.

##### **4.2 During job execution**



4.2.1 Implement approved Health, Safety and Environment management procedure including but not limited to as brought out under Para 3.0. Contractor shall also ensure to:

- Arrange workmen compensation insurance registration under ESI Act third party liability insurance etc, as applicable:
- Arrange all HSE permits before start of activities (as applicable) like hot work, confined space, work at heights, storage of chemicals/explosive materials and its use and implement all precautions mentioned their in.
- Submit timely the completed checklist on HSE activities, Monthly HSE reports, accident reports, and investigation reports etc as per Consultant/Owner

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requirements. Compliance of instructions on HSE shall be done by contractor and informed urgently to Consultant /Owner.

- Ensure that resident Engineer/Site-In-Charge of the Contractor shall attend all the Safety Committee/HSE meetings arranged by Consultant/Owner. Only in case of his absence from site that a second senior most person shall be nominated by him in advance and communicated to Consultant/Owner.
- Display at site office and work locations caution boards list of hospitals emergency services available.
- Provide posters, banners for safe working to promote safety consciousness.
- Carry out audits/inspection at sub-contractor works as per approved HSE document & submit the reports for Consultant/Owner review.
- Assist in HSE audits by Consultant /Owner and submit compliance reports
- Generate & submit HSE records/report as per HSE Plan.
- Appraise Consultant /Owner on HSE activities at site.

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## ANNEXURE -1A

### RELEVANT IS - CODES FOR PERSONAL PROTECTION

IS: 2925 - 1984	Industrial Safety Helmets
IS: 4770 - 1968	Rubber gloves for electrical purposes
IS: 6994 - 1973 (Part-I)	Industrial Safety Gloves (Leather & Conon Gloves)
IS: 1989 - 1986 (Part -I & III)	Leather safety boots and shoes
IS: 3738 - 1975	Rubber knee boots
IS: 5557 - 1969	Industrial and Safety rubber knee boots
IS: 6519 - 1971	Code of practice for selections, care and repair of Safety footwear
IS: 11226 - 1985	Leather Safety footwear having direct moulding sole
IS: 5983 - 1978	Eye protectors
IS: 9167 -1979	Ear protectors
IS: 3521 -1983	Industrial Safety belts and harness



#### NOTE:

For necessary Codes for safety/Environmental requirement, concerned statutory authorities may be consulted.

**ANNEXURE –1B**

**1.0 HEALTH SAFETY & ENVIRONMENT (HSE) PLAN**

<p><b><u>HEALTH SAFETY &amp; ENVIRONMENT (HSE) PLAN</u></b></p> <p>Project: ..... Contractor: .....                  Date: ..... Owner: .....</p> <p style="text-align: center;">(To be prepared by each construction Agency )</p>						
Activity description	Procedure /with guide lines	Code of Conformance	Performing function			Audit function
			Performer	Checker	Approver	

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2.0 **MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT** (1/6)

**PROJECT:**

**CONTRACTOR:**



**DATE:**

**OWNER:**

**INSPECTION BY:**

**NOTE:** Write N.A. where the item is not applicable.



ITEM	Yes	No	Remarks	Action
<b>HOUSEKEEPING</b>				
Waste containers provided and used				
Sanitary facilities adequate and clean				
Passageways and walkways clear				
General neatness of working areas				
Other				
<b>PERSONAL PROTECTIVE EQUIPMENTS</b>				
Goggles, Shields				
Face protection				
Hearing protection				
Safety shoes provided				
Hand protection				
Respiratory mask etc.				
Safety belts				
Other				
<b>EXCAVATION / OPENINGS</b>				
Opening properly covered or barricaded				
Excavation shored				
Excavation barricaded				
Overnight lightening provided				
Other				

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### MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (2/6)



ITEM	Yes	No	Remarks	Action
<b>WELDING ,CUTTING</b>				
Gas cylinders chained upright				
Cables and hoses not obstructing				
Screens or shields used				
Flammable materials protected				
Fire extinguisher (s) accessible				
other				
<b>SCAFFOLDING</b>				
Fully decked platforms				
Guard and intermediate rails in place				
Toe boards in place				
Adequate shoring				
Adequate access				
Other				
<b>LADDERS</b>				
Extension side rails 1 m above				
Top of landing				
Properly secured				
Angle $\pm 70^\circ$ from horizontal				
Other				



	RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA  <b>HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT</b>	PC-183 / E / 203 /S-V	0	
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### MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd. 3/6)

ITEM	Yes	No	Remarks	Action
<b>HOISTS, CRANES AND DERRICKS</b>				
Condition of cables and sheaves OK				
Condition of slings, chains hooks and eyes O.K.				
Inspection and maintenance logs maintained				
Outriggers used				
Sign/l barricades provided				
signals observed and understood				
Qualified operators				
Other				
<b>MACHINERY, TOOLS AND EQUIPMENT</b>				
Proper instruction				
Safety devices				
Proper cords				
Inspection and maintenance				
Other				
<b>VEHICLE AND TRAFFIC</b>				
Rules and regulations observed				
Inspection and maintenance				
Licensed drivers				
Others				

	<b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</b>  <b>HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT</b>	PC-183 / E / 203 /S-V	0	
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### MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd. 4/6)

ITEM	Yes	No	Remarks	Action
<b>TEMPORARY FACILITIES</b>				
Emergency instructions posted				
Fire extinguisher provided				
Fire-aid equipment available				
Secured against storm damage				
General neatness				
In accordance with electrical requirements				
Other				
<b>FIRE PREVENTION</b>				
Personnel instructed				
Fire extinguishers checked				
No smoking in prohibited areas.				
Hydrants Clear				
Other				
<b>ELECTRICAL</b>				
Proper wiring				
ELCB's provided				
Ground fault circuit interrupters				
Protection against damage				
Prevention of tripping hazards				
Other				

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### MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd. 5/6)



ITEM	Yes	No	Remarks	Action
<b>HANDLING AND STORAGE OF MATERIALS</b>				
Properly Stored or stacked				
Passageways clear				
Other				
<b>FLAMMABLE GASES AND LIQUIDS</b>				
Container clearly identified				
Proper storage				
Fire extinguishers nearby				
Other				
<b>WORKING AT HEIGHT</b>				
Erection plan				
Safety nets				
Safety belts and lanyards: chute lines				
Other				
<b>ENVIRONMENT</b>				
Chemical and other Effluents properly disposed				
Cleaning liquid of pipes disposed off properly				
Sea water used for hydro-testing disposed off as per agreed procedure				
Lubricant waste/Engine oils properly disposed				
Waste from Canteen, offices, sanitation etc disposed properly				
Disposal of surplus earth stripping materials Oily rags and combustible materials done properly				
Green belt protection				

	<b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</b>  <b>HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT</b>	PC-183 / E / 203 /S-V	0	
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**MONTHLY HSE CHECK LIST CUM COMPLIANCE REPORT (Contd. 6/6)**

ITEM	Yes	No	Remarks	Action
<b>HEALTH CHECKS</b>				
Hygienic conditions at labour camps O.K.				
Availability of first Aid facilities				
Proper sanitation at site ,office and labour camps				
Arrangement of medical facilities				
Measures for dealing with illness				
Availability of potable drinking water for working and staff				
Provision of crèches for children				

(Signature of Resident Engineer with Seal)



	RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA  <b>HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT</b>	PC-183 / E / 203 /S-V	0	
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3.0 **ACCIDENT CUM FIRE REPORT**

STANDARD TFL FORMAT SHALL BE SUPPLIED AT SITE

4.0 **SUPPLEMENTRY ACCIDENT & INVESTIGATION REPORT**

STANDARD TFL FORMAT SHALL BE SUPPLIED AT SITE

	<b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZERS LTD., ANGUL, ODISHA</b>	PC-183 / E / 203 /S-V	0	
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<b>HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT</b>				

## 5.0 MONTHLY HEALTH, SAFETY & ENVIRONMENT (HSE) REPORT

(To be submitted by each Contractor)

Actual work start Date:

Project:

Name of the Contractor:

Name of work:

For the Month of:

Report No:

Status as on:

Name of safety officer:

ITEM	THIS MONTH	CUMMULATIVE
Total Strength (Staff + Workmen)		
Number of HSE meetings organized at site		
Number of HSE awareness programs conducted at site		
Whether workmen compensation policy taken		
Whether workmen compensation policy is valid		
Whether workmen registered under ESI Act		
No. of fatal accidents		
Number of Loss time accidents(other than fatal)		
Other accidents (Non Loss Time)		
Total No. of Accidents		
Total man-hours worked		
Man-hour loss due to fire and accidents		
Compensation cases raised with Insurance		
Compensation cases resolved and paid to workmen		
Remarks		

Date:

**Safety Officer / Resident Engineer**

(Signature and name)

To:

OWNER.....

1 Copy

RCM/SITE-IN-Charge (CONSULTANT) 1 Copy



 पी डी आई एल <b>PDIL</b>	<b>PROJECTS &amp; DEVELOPMENT INDIA LIMITED</b>	PC-183 / E / 203 /S-V	0	 <b>Talcher Fertilizers</b>
		DOC. NO.	REV.	
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**NOT APPLICABLE FOR THIS TENDER**

**ANNEXURE - II**  
**TO**  
**SPECIAL CONDITIONS OF CONTRACT**

**POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY  
MANUFACTURED IRON & STEEL PRODUCTS IN GOVERNMENT  
PROCUREMENT**



# भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (i)

PART II—Section 3—Sub-section (i)

प्राधिकार से प्रकाशित

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अधिसूचना

नई दिल्ली, 29 मई, 2019

**सा.का.नि. 385(अ).**—घरेलू रूप से उत्पादित किए जाने वाले लौह एवं स्टील उत्पाद की सरकारी खरीद को प्राथमिकता दिए जाने के लिए संशोधित नीति सामान्य सूचना हेतु प्रकाशित की जाती है।

[फा. सं. 3(2)/2018-आईडीडी]

रसिका चौबे, अपर सचिव

**सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों को बरीयता देने के लिए नीति - संशोधित, 2019**

**1. भूमिका**

- 1.1 यह नीति सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों (डी एम आई एंड एस पी) को बरीयता देती है।
- 1.2 यह नीति यथा लागू निर्धारित गुणवत्ता मानदंडों के अनुपालन में उत्पादित लौह एवं इस्पात उत्पादों जिसे परिशिष्ट क में दिया गया है और परिशिष्ट ख में दिए गए लौह एवं इस्पात उत्पादों के लिए पूंजीगत माल पर लागू होती है।
- 1.3 यह नीति सरकार के प्रत्येक मंत्रालय अथवा विभाग और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों तथा सरकारी परियोजनाओं के वास्ते लौह एवं इस्पात उत्पादों की खरीद के लिए इन एजेंसियों द्वारा वित्त पोषित परियोजनाओं पर लागू है। हालांकि, यह नीति वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए वस्तुओं के उत्पादन में उपयोग करने के उद्देश्य से लौह एवं इस्पात उत्पादों की खरीद पर लागू नहीं होगी।

**2. परिभाषाएं**

- 2.1 **बोली** लगाने वाला लौह एवं इस्पात का कोई घरेलू/विदेशी निर्माता अथवा उनके बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह अथवा सरकारी एजेंसियों द्वारा वित्त पोषित निधि परियोजनाओं की बोली लगाने में कार्यरत कोई अन्य कंपनी हो सकती है।

- 2.2 **घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पाद (डी एम आई एंड एस पी)** वे लौह एवं इस्पात उत्पाद हैं जिनका निर्माण उन प्रतिष्ठानों द्वारा किया जाता है जो भारत में पंजीकृत और स्थापित हैं, जिसमें विशेष आर्थिक क्षेत्र (एम ई ज़ेड) शामिल है। इसके अलावा, इस प्रकार के उत्पाद परिशिष्ट क में किये गये उल्लेख के अनुसार घरेलू न्यूनतम मूल्यवर्धन के मानदंडों को पूरा करेंगे।
- 2.3 **घरेलू निर्माता** खंड 7 में दिशा-निर्देशों और केंद्रीय उत्पाद शुल्क अधिनियम में दी गई 'निर्माता' की परिभाषा के अनुरूप लौह एवं इस्पात उत्पादों का एक निर्माता है।
- 2.4 इस नीति के प्रयोजन से **सरकार** का तात्पर्य भारत सरकार से है।
- 2.5 **सरकारी एजेंसियों** में सरकार के सार्वजनिक क्षेत्र के उपक्रम, सरकार द्वारा स्थापित सोसायटी, ट्रस्ट और सांविधिक निकाय शामिल हैं।
- 2.6 **एम ओ एस** का आशय इस्पात मंत्रालय, भारत सरकार से है।
- 2.7 **निवल बिक्री कीमत** बीजक कीमत होगी जिसमें निवल घरेलू कर और शुल्क शामिल नहीं होंगे।
- 2.8 **अर्ध तैयार इस्पात** का तात्पर्य इनगोट्स, बिलेट, ब्लूम और स्लेब्स से है, जिसे बाद में प्रसाधित कर तैयार इस्पात बनाया जा सकता है।
- 2.9 **तैयार इस्पात** का तात्पर्य सपाट और लंबे उत्पादों से होगा जिन्हें बाद में प्रसाधित कर निर्मित मद बनाया जा सकता है।
- 2.10 **एल1** का तात्पर्य निविदा अथवा अन्य खरीद संबंधी अनुरोध के अनुसार मूल्यांकन प्रक्रिया में यथाघोषित निविदा, बोली लगाने संबंधी प्रक्रिया अथवा अन्य खरीद संबंधी अनुरोधों में प्राप्त निम्नतम निविदा अथवा निम्नतम बोली अथवा निम्नतम भाव से होगा।
- 2.11 **खरीद वरीयता के मार्जिन** का तात्पर्य उस अधिकतम सीमा से है जिस सीमा तक किसी घरेलू आपूर्तिकर्ता द्वारा लगाई गई कीमत खरीद वरीयता के प्रयोजन से एल1 से अधिक हो। डी एम आई एंड एस पी नीति के मामले में, खरीद वरीयता का मार्जिन परिशिष्ट ख में मदों के लिए 20 प्रतिशत होगा।
- 2.12 **लौह एवं इस्पात उत्पाद** का तात्पर्य ऐसे लौह एवं इस्पात उत्पादों से होगा जिनका उल्लेख परिशिष्ट क में किया गया है।
- 2.13 **घरेलू मूल्यवर्धन** निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजक कीमत) होगी जिससे प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण संयंत्र (सभी सीमा शुल्कों सहित) में आयात की गई इनपुट सामग्री की पहुंच लागत घटाई गई हो, 'घरेलू मूल्यवर्धन' परिभाषा डी पी आई आई टी (पूर्व में डी आई पी पी) के दिशानिर्देशों के अनुरूप होगी और उसमें भविष्य में डी पी आई आई टी द्वारा परिवर्तन किये जाने की स्थिति में उपयुक्त रूप से संशोधन किया जाएगा। इस नीति दस्तावेज के प्रयोजन के लिए घरेलू मूल्यवर्धन और स्थानीय विषय वस्तु का उपयोग एक दूसरे के स्थान पर किया गया है।
- 3. अपवर्जन**
- 3.1 इस्पात मंत्रालय द्वारा इस प्रकार की सभी सरकारी खरीदों के लिये निम्नलिखित शर्तों के अधीन छूट प्रदान की जाएगी।
- 3.1.1 जहां विशिष्ट शेडों के इस्पात का निर्माण इस देश में नहीं किया जाता हो, अथवा
- 3.1.2 जहां परियोजना की मांग के अनुसार इन मात्राओं को घरेलू स्रोतों के माध्यम से पूरा नहीं किया जा सकता हो।
- अपवर्जन संबंधी अनुरोधों को घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों के उपलब्ध न होने के पर्याप्त प्रमाण के साथ स्थायी समिति को प्रस्तुत किया जाएगा।
- 4. स्थायी समिति**
- इस नीति के कार्यान्वयन का पर्यवेक्षण करने के लिए इस्पात मंत्रालय (एम ओ एस) के अधीन एक स्थायी समिति का गठन किया जाएगा। जिसके अध्यक्ष सचिव इस्पात होंगे। इस समिति में उद्योग/उद्योग संघ/सरकारी संस्था अथवा निकाय/इस्पात मंत्रालय (एम ओ एस) से लिए गए विशेषज्ञ होंगे। इस्पात मंत्रालय में उक्त समिति के पास निम्नलिखित के लिए अधिदेश होगा :
- 4.1 इस नीति के कार्यान्वयन की मॉनीटरिंग करना
- 4.2 परिशिष्ट क और परिशिष्ट ख में यथा उल्लिखित लौह एवं इस्पात उत्पादों की सूची और घरेलू बिक्री वर्धन की आवश्यकता से संबंधित मानदंडों की समीक्षा करना और उसे अधिसूचित।



- 4.3 खंड 3 के अनुसार खरीद एजेंसियों को अपवर्जन की स्वीकृति देने सहित इस नीति के कार्यान्वयन के लिए आवश्यक स्पष्टीकरण जारी करना।
- 4.4 शिक्कायत निवारण करने के लिए एक अलग समिति का गठन करना।
- 4.5 स्थायी समिति इस्पात मंत्रालय को अनुमोदन हेतु अपनी सिफारिशें प्रस्तुत करेगी।
- 5. सरकार द्वारा खरीदे जाने वाले लौह एवं इस्पात उत्पादों को अधिसूचित करना**
- 5.1 निम्नलिखित दिशानिर्देशों का उपयोग इस नीति के अंतर्गत उपरोक्त उत्पादों की पहचान करने और उमें अधिसूचित करने के लिए किया जा सकता है :
- 5.1.1 यह नीति परिशिष्ट क में दिए गए अनुसार लौह एवं इस्पात उत्पादों और परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल पर लागू है।
- 5.1.2 परिशिष्ट क में लौह एवं इस्पात उत्पादों की सूची दी गई है जिसका निर्माण अनन्य रूप से घरेलू स्तर पर किया जाना है और उसका आयात इस्पात मंत्रालय के अनुमोदन के बिना नहीं किया जा सकता है।
- 5.1.3 परिशिष्ट ख में पूंजीगत माल की एक सूची (जो विस्तृत नहीं है) दी गई है जिसके लिए खरीद संबंधी बरीयता घरेलू स्तर पर निर्मित पूंजीगत माल को दी जाएगी, यदि उनकी दी गई कीमत सदृश्य आयात किये गये पूंजीगत माल के लिए दी गई कीमत के 20 प्रतिशत के अंदर आती हो।
- 5.1.4 इस नीति का उद्देश्य सभी लौह एवं इस्पात उत्पादों को अधिसूचित करना है जिसकी खरीद सरकारी एजेंसियों द्वारा सरकारी परियोजनाओं के लिए की जाती है और न कि वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए उत्पादों के उत्पादन में प्रयोग करने के उद्देश्य से की गई हो।
- 5.1.5 यह नीति सरकार के मंत्रालय अथवा विभाग के द्वारा निधि प्रदत्त सभी परियोजनाओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों पर लौह एवं इस्पात उत्पादों की खरीद के लिए लागू है।
- 5.1.6 यह नीति उन परियोजनाओं पर लागू होगी जहां लौह एवं इस्पात उत्पादों का खरीद मूल्य 25 करोड़ रुपए से अधिक होता हो। यह नीति अन्य खरीद (गैर परियोजना) के लिए भी लागू होगी जहां उस सरकारी संगठन के लिए लौह एवं इस्पात उत्पादों का वार्षिक खरीद मूल्य 25 करोड़ रुपए से अधिक होता हो।
- 5.1.7 यह नीति सरकार के मंत्रालय अथवा विभाग अथवा उनके सार्वजनिक क्षेत्र के उपक्रमों की किसी अन्य आवश्यकता को पूरा करने के लिए और/अथवा ई पी सी संविदा को पूरा करने के लिए प्राइवेट एजेंसियों द्वारा लौह एवं इस्पातों की खरीद पर लागू है।
- 5.1.8 घरेलू लौह एवं इस्पात उत्पादों के विभिन्न ग्रेडों की उपलब्धता का विश्लेषण इस नीति के अंतर्गत अधिसूचित करने से पहले करना होगा। केवल उन लौह एवं इस्पात को उत्पादों को जिनके संबंध में कम से कम एक घरेलू निर्माता मौजूद हो, अधिसूचित किया जाएगा। स्थायी समिति से परामर्श किया जा सकता है।
- 5.1.9 यह नीति यथा लागू निर्धारित गुणवत्ता मानदंडों के अनुपालन में उत्पादित परिशिष्ट ख में दिए गए लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के लिए लागू है।
- 5.1.10 लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत मालों की घरेलू खरीद के लिए नीति लौह एवं इस्पात उत्पादों का निर्माण करने के लिए और न कि वाणिज्यिक पुनः बिक्री के उद्देश्य से पूंजीगत मालों की खरीद के वास्ते और सार्वजनिक क्षेत्र के इस्पात विनिर्माताओं और उनके प्रशासनिक नियंत्रणाधीन सभी एजेंसियों/प्रतिष्ठानों पर लागू है।
- 5.1.11 यह नीति ई पी सी संविदा और/अथवा सार्वजनिक क्षेत्र से इस्पात निर्माताओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों की किसी अन्य आवश्यकता को पूरा करने के लिए निजी एजेंसियों द्वारा लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की खरीद पर लागू है।
- 5.1.12 सरकारी एजेंसियां जो लौह एवं इस्पात उत्पादों के निर्माण के लिए पूंजीगत माल और लौह एवं इस्पात उत्पादों की खरीद में उन स्थितियों में शामिल है जहां लौह एवं इस्पात उत्पादों का उल्लेख परिशिष्ट क और परिशिष्ट ख में नहीं किया गया हो, स्थायी समिति को निर्धारित मानदंडों के साथ इस उत्पाद के विवरण और तकनीकी विनिर्देशन उपलब्ध करायेगा। स्थायी समिति खंड 3 और खंड 4 में अधिदेश के अनुसार कार्य करेगी।

- 5.2 इस्पात मंत्रालय (एम ओ एम) परिशिष्ट क में दिए गए न्यूनतम निर्धारित घरेलू मूल्यवर्धन के साथ लौह एवं इस्पात उत्पादों को अधिसूचित करेगा।
- 5.3 लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के संबंध में नीतिगत दिशानिर्देश, परियोजना के आकार पर विचार किये बिना परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की सभी खरीदों के लिए सार्वजनिक क्षेत्र के इस्पात निर्माताओं पर लागू होंगे।
- 5.4 परिशिष्ट क में लौह एवं इस्पात उत्पादों के लिए तथा परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के लिए सुझाव दिए गए न्यूनतम घरेलू मूल्यवर्धन आवश्यकता घरेलू आपूर्तिकर्ता का आधार, आपूर्तिकर्ताओं की संख्या और खपत की तुलना में आयात का अनुपात जैसे कारकों के आधार पर तय किया गया है।
- 5.5 घरेलू मूल्यवर्धन आवश्यकता संबंधी मानदंडों का इस प्रकार से निर्धारण किया जाएगा जिस से कि यह किमी दिए गए समय में लौह एवं इस्पात उत्पादों के लिए घरेलू उद्योग की औसत/औसत से अधिक निर्माण क्षमता दर्शाता हो। स्थायी समिति द्वारा समय समय पर उपयुक्त रूप से इसकी समीक्षा की जाएगी और आवश्यकता पड़ने पर इस्पात मंत्रालय के अनुमोदन से इसमें संशोधन किया जाएगा।
- 6. सरकार एवं सरकारी एजेंसियों द्वारा खरीद के लिए निविदा प्रक्रिया**
- 6.1 खरीद करने वाली/सरकारी एजेंसियां डी एम आई एंड एस पी का पालन करते समय वित्त मंत्रालय और सी वी सी के अनुदेशों के अनुसार मानक खरीद संबंधी प्रक्रियाओं का पालन करेगी। यह नीति सभी निविदाओं जहां कीमत बोली नहीं खोली गई है, में इसके अधिसूचना की तिथि से लागू होगी।
- 6.2 दोनों वस्तुओं की खरीद तथा ई पी सी संविदाओं के लिए निविदा दस्तावेज में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए लौह एवं इस्पात उत्पादों तथा पूंजीगत माल (जैसा कि परिशिष्ट क और परिशिष्ट ख में दर्शाया गया है, के लिए बोली लगाने वाले द्वारा न्यूनतम निर्धारित घरेलू मूल्यवर्धन का पालन करने के लिए अर्हता मानदंडों का स्पष्ट उल्लेख होना चाहिए।
- 6.3 घरेलू उत्पादों के विकास का सहयोग करने में, लौह एवं इस्पात व्यापार क्रियाकलापों में घरेलू मूल्यवर्धन का लक्ष्य निर्धारित किया गया है जिसे परिशिष्ट क और परिशिष्ट ख में दिया गया है।
- 6.4 परिशिष्ट क में लौह और इस्पात उत्पादों के खरीद की प्रक्रिया केवल उन निर्माताओं/आपूर्तिकर्ताओं के लिए ही खुली रहेगी जिसमें घरेलू मूल्यवर्धन लक्ष्यों को पूरा करने/उमसे ज्यादा पूरा करने की क्षमता हो। घरेलू मूल्यवर्धन लक्ष्यों को पूरा न करने वाले निर्माता/आपूर्तिकर्ता बोली लगाने में भाग लेने के लिए पात्र नहीं हैं।
- 6.5 परिशिष्ट ख में दी गई मदों के मामलों में, यदि खरीद करने वाली कंपनी की राय में, निविदाओं (खरीदी गई मात्रा) को 50:50 के निर्धारित अनुपात में नहीं बांटा जा सकता है, तब उनके पास मात्रा जो 50 प्रतिशत से कम नहीं हो, जो कि विभाज्य हो, के लिए पात्र घरेलू निर्माता को संविदा देने का अधिकार होगा।
- 6.6 उपर्युक्त शर्त को जारी रखते हुए, परिशिष्ट ख की मदों के लिए, यदि निविदा दी गई मद विभाज्य न हो (खरीद करने वाली कंपनी द्वारा निविदा दस्तावेज में शामिल किए जाने के लिए) यह संविदा समग्र मात्रा के लिए पात्र घरेलू निर्माता को दी जा सकती है।
- 6.7 परिशिष्ट ख के मदों के मामलों में, यदि घरेलू मूल्यवर्धन की आवश्यकताओं को पूरा करने वाले पात्र निर्माताओं में से कोई भी एल1 की बोली के अनुरूप न हो, तब एल1 की बोली धारण करने वाले मूल बोली लगाने वाला खरीद के पूर्ण मूल्य के लिए आदेश प्राप्त करेंगे।
- 6.8 वे बोली लगाने वाले जो लौह एवं इस्पात उत्पादों के घरेलू निर्माताओं के बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह हैं इस नीति के अंतर्गत घरेलू निर्माताओं की ओर से बोली लगाने के लिए पात्र हैं। हालांकि, यह निम्नलिखित शर्तों के अध्वधीन होगा।
- 6.8.1 बोली लगाने वाले घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों की बिक्री करने के लिए घरेलू निर्माता द्वारा जारी किए गए अधिकार प्रमाण पत्र प्रस्तुत करेगा।



- 6.8.2 यदि खरीद को डी एम आई एंड एम पी नीति के परिशिष्ट क के अंतर्गत शामिल किया गया हो तब बोली लगाने वाला यह घोषणा करते हुए खरीद करने वाली एजेंसी को घरेलू निर्माता द्वारा जारी किया गया स्व-प्रमाणन का शपथ पत्र प्रस्तुत करेगा कि लौह और इस्पात उत्पादों का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के मामले में किया जाता है।
- 6.8.3 यदि खरीद को डी एम आई एंड एम पी नीति के परिशिष्ट ख के अंतर्गत शामिल किया गया हो तब बोली लगाने वाला यह घोषणा करते हुए घरेलू निर्माता को सांविधिक लेखा परीक्षक द्वारा जारी किया गया प्रमाणन प्रस्तुत करेगा कि लौह और इस्पात उद्योग में उपयोग किये जाने वाले पूंजीगत माल का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के मामले में किया जाता है।
- 6.8.4 बोली लगाने वाले की यह जिम्मेदारी होगी कि वह इस नीति के अनुसार खरीद करने वाली एजेंसी को घरेलू निर्माता द्वारा जारी किये जाने के लिए अपेक्षित अन्य आवश्यक दस्तावेज प्रस्तुत करे।

## 7. घरेलू मूल्यवर्धन आवश्यकता

- 7.1 घरेलू रूप में निर्मित लौह और इस्पात उत्पाद अथवा पूंजीगत माल के रूप में उत्पाद के रूप में पात्र होने के लिए न्यूनतम घरेलू मूल्यवर्धन आवश्यकता का उल्लेख परिशिष्ट क और परिशिष्ट ख में किया गया है।
- 7.2 घरेलू मूल्यवर्धन निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजक कीमत) होगी जिसमें से प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण करने वाले संयंत्र में आयात की गई इनपुट सामग्री की पहुंच लागत (सभी सीमा शुल्कों को शामिल करते हुए) घटाई जाएगी।
- 7.2.1 यदि लौह और इस्पात उत्पादों को घरेलू इनपुट इस्पात (अर्ध तैयार/तैयार इस्पात) का उपयोग करके निर्माण किया जाता हो, तब खरीदी गई मात्रा और अन्य संबंधित दस्तावेजों के साथ वास्तविक घरेलू उत्पादों से खरीद का बीजक खरीद करने वाली सरकारी एजेंसी को अवश्य प्रस्तुत किया जाना चाहिए।
- 7.2.2 यदि लौह एवं इस्पात उत्पादों ने इनपुट इस्पात का आयात किया हो तब खरीदी गई मात्रा और अन्य संबंधित दस्तावेजों के साथ वास्तविक उत्पादकों से खरीदों के बीजकों को अलग से प्रस्तुत किया जाना चाहिए। घरेलू मूल्यवर्धन की सीमा निकालने के लिए, दोनों इनपुट इस्पातों (आयात किये और घरेलू) की भारित औसत पर विचार यह सुनिश्चित करने के लिए किया जाएगा कि इस नीति की न्यूनतम निर्धारित घरेलू मूल्यवर्धन आवश्यकता का पालन किया गया है।
- 7.3 यह सिफारिश की जाती है कि निविदा की प्रक्रिया में भाग लेने वाले प्रत्येक बोली लगाने वाले को नीचे दिए गए सूत्र का उपयोग करते हुए घरेलू मूल्यवर्धन की गणना करनी चाहिए ताकि यह सुनिश्चित किया जा सके कि दावा किये गये घरेलू मूल्यवर्धन इस नीति के न्यूनतम निर्धारित घरेलू मूल्यवर्धन के अनुरूप है।

### लौह एवं इस्पात उत्पादों के लिए

% घरेलू मूल्यवर्धन

$$= \frac{\text{अंतिम उत्पाद की निवल बिक्री कीमत} - \text{संयंत्र में आयात किये गये लौह अथवा इस्पात की पहुंच लागत}}{\text{अंतिम उत्पाद की निवल बिक्री कीमत}} \times 100\%$$

### पूंजीगत माल के लिए

% घरेलू मूल्यवर्धन

$$= \frac{\text{अंतिम उत्पाद की निवल बिक्री कीमत} - \text{संयंत्र में आयात किये गये इनपुट सामग्री की पहुंच लागत}}{\text{अंतिम उत्पाद की निवल बिक्री कीमत}} \times 100\%$$

## 8. प्रमाणन और लेखा परीक्षण

- 8.1 परिशिष्ट क में दिए गए उत्पादों के लिए, प्रत्येक घरेलू निर्माता यह घोषणा करते हुए खरीद करने वाली सरकारी एजेंसी को स्व-प्रमाणन का शपथ पत्र प्रस्तुत करेगा कि लौह एवं इस्पात उत्पाद का निर्धारित घरेलू मूल्यवर्धन के संबंध में घरेलू स्तर पर निर्माण किया गया है। परिशिष्ट ख के पूंजीगत माल के लिए, बोली लगाने वाला यह घोषणा करते हुए घरेलू निर्माता को सांविधिक लेखा परीक्षक द्वारा जारी किया गया प्रमाणन प्रस्तुत करेगा कि पूंजीगत माल का निर्माण घरेलू स्तर पर निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। वे बोली लगाने वाले जो लौह एवं इस्पात उत्पादों के घरेलू निर्माताओं का एकमात्र बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह हैं, ई पी सी के अंतर्गत घरेलू निर्माताओं की ओर से बोली लगाने के लिए पात्र हैं।



बोली लगाने वाला घरेलू निर्माताओं के द्वारा जारी किए गए स्व-प्रमाणन और सांविधिक लेखा परीक्षकों द्वारा जारी किये गये प्रमाणनों को यह घोषणा करते हुए खरीद करने वाली एजेंसी को प्रस्तुत करेगा कि लौह एवं इस्पात उत्पादों का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। स्व-प्रमाणन का शपथ पत्र इन दिशानिर्देशों से संलग्न **प्रपत्र 1** में प्रस्तुत किया जाएगा।

- 8.2 घरेलू निर्माता की यह जिम्मेदारी होगी कि वह यह सुनिश्चित करे कि इस प्रकार से दावा किये गये उत्पादों का घरेलू स्तर पर उम उत्पाद के लिए निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। बोली लगाने वाले से यह भी अपेक्षित होगा कि वह घरेलू निर्माता के सांविधिक लेखा परीक्षकों द्वारा विधिवत प्रमाणित अर्धवार्षिक (मिंतंबर 30 और मार्च 31) आधार पर घरेलू मूल्यवर्धन प्रमाणपत्र उपलब्ध कराये कि पहले 6 महीनों के दौरान इस उत्पाद के लिए किये गये घरेलू मूल्यवर्धन के दावे इस नीति के अनुसार हैं। इस प्रकार के प्रमाण पत्र को संबंधित सरकारी एजेंसियों को प्रत्येक छमाही के शुरू होने के 60 दिनों के भीतर प्रस्तुत किया जाएगा और उस उत्पादों की आपूर्ति को पूरा करने तक प्रस्तुत करता रहेगा।
- 8.3 खरीद करने वाली एजेंसी बोली लगाने वाले द्वारा प्रस्तुत किये गये इस्पात उत्पाद में घरेलू मूल्यवर्धन के संबंध में स्व-प्रमाणन का शपथ पत्र स्वीकार करेगा। सामान्य तौर पर खरीद करने वाली एजेंसी की यह जिम्मेदारी होगी कि वह इस दावे की सत्यता की जांच करे। इसकी सत्यता प्रदर्शित करने की जिम्मेदारी बोली लगाने वाले की होगी जब उसे ऐसा करने के लिए कहा जाए।
- 8.4 यदि खरीद करने वाली एजेंसी अथवा संबंधित सरकारी एजेंसी द्वारा लौह एवं इस्पात उत्पादों में घरेलू मूल्यवर्धन के संबंध में बोली लगाने वाले के दावे के विरुद्ध कोई शिकायत प्राप्त होती है तब खरीद करने वाली एजेंसी के पास सभी संबंधित दस्तावेजों का निरीक्षण करने और उसकी जांच करने तथा निर्णय लेने का पूर्ण अधिकार होगा। यदि कोई स्पष्टीकरण की आवश्यकता होती है तब मामले को तकनीकी सहायता के लिए अनुरोध के साथ इस्पात मंत्रालय को भेजा जा सकता है।
- 8.5 सरकारी एजेंसी को भेजे गए किसी शिकायत का निपटारा सभी आवश्यक दस्तावेजों को प्रस्तुत करने के साथ इसे भेजे जाने के 4 सप्ताह के भीतर किया जाएगा। बोली लगाने वाले से यह अपेक्षित होगा कि वह शिकायत दायर करने के 2 सप्ताह के भीतर सरकारी एजेंसी को लौह एवं इस्पात उत्पादों में दावा किये गये घरेलू मूल्यवर्धन के समर्थन में आवश्यक दस्तावेज प्रस्तुत करे।
- 8.6 यदि इस मामले को इस्पात मंत्रालय के पास भेजा जाता है तब इस्पात मंत्रालय के अधीन गठित शिकायत निवारण समिति सरकारी एजेंसी के दृष्टिकोण पर विचार करने के बाद बोली लगाने वाले से सभी दस्तावेजों के प्राप्त होने और उसका संदर्भ भेजे जाने के 4 सप्ताह के भीतर शिकायत का निपटारा करेगी। बोली लगाने वाले से यह अपेक्षित होगा कि वे इस मामले के संदर्भ के 2 सप्ताह के भीतर इस्पात मंत्रालय के अंतर्गत शिकायत निवारण समिति को लौह एवं इस्पात उत्पादों में दावा किए गए घरेलू मूल्यवर्धन के समर्थन में आवश्यक दस्तावेज प्रस्तुत करे। यदि बोली लगाने वाले द्वारा कोई सूचना प्रस्तुत नहीं की जाती है तब शिकायत निवारण समिति दावे की प्रमाणिकता अधिक करने के लिए सरकारी एजेंसी के परामर्श से आगे आवश्यक कार्रवाई कर सकती है।
- 8.7 घरेलू मूल्यवर्धन की निर्धारित सीमा का आकलन करने की लागत का वहन खरीद करने वाली एजेंसी द्वारा किया जाएगा यदि घरेलू मूल्यवर्धन प्रमाण पत्र के अनुसार सही पाया गया हो। हालांकि, यदि ऐसा पाया गया हो कि दावा किए गए अनुसार घरेलू मूल्यवर्धन सही नहीं है तब आकलन की लागत बोली लगाने वाले द्वारा भुगतान के योग्य होगी जिन्होंने एक गलत प्रमाण पत्र प्रस्तुत किया है। इसे लागू करने के तरीके को निविदा दस्तावेज में परिभाषित किया जाएगा।

## 9. प्रतिबंध

- 9.1 प्रत्येक सरकारी एजेंसी निविदा दस्तावेज में निर्धारित घरेलू मूल्यवर्धन का बोली लगाने वाले के द्वारा गलत घोषणा किए जाने की स्थिति में दण्ड को स्पष्ट रूप से परिभाषित करेगा। इस दण्ड में ऐसे निर्माता/सेवा प्रदाता की ई एम डी को जब्त करना, अन्य वित्तीय दंड लगाना और उसे काली सूची में डालना शामिल हो सकता है।
- 9.2 संबंधित बोली लगाने वाले के द्वारा इस्पात मंत्रालय को किसी प्रकार की शिकायत भेजे जाने की स्थिति में, 10 लाख रुपए अथवा खरीदी जा रही डी एम आई एंड एस पी के मूल्य का 0.2 प्रतिशत (अधिकतम 20 लाख के अध्यक्षीन) इसमें से जो भी अधिक हो, का शिकायत शुल्क होगा जिसका भुगतान शिकायतकर्ता द्वारा शिकायत के साथ इस्पात मंत्रालय के अधीन शिकायत निवारण समिति के पास जमा किए गए डिमाण्ड ड्राफ्ट के द्वारा किया जाएगा। यदि, शिकायत को सही नहीं पाया जाता है तब सरकारी एजेंसी के पास उक्त राशि को जब्त करने का अधिकार सुरक्षित है। यदि शिकायत पर्याप्त रूप से सही पाई जाती है तब शिकायतकर्ता द्वारा जमा किए गए शुल्क को बिना किसी ब्याज के वापिस किया जाएगा।

**10. इस्पात मंत्रालय द्वारा कार्यान्वयन की मॉनीटरिंग**

- 10.1 इस नीति के प्रावधान प्रकाशन की तिथि से 5 वर्षों की अवधि के लिए लागू रहेंगे। इस नीति की अवधि को इस्पात मंत्रालय के विवेक से और आगे बढ़ाया जा सकता है।
- 10.2 इस्पात मंत्रालय इस नीति के कार्यान्वयन की मानीटरिंग करने के लिए नोडल मंत्रालय होगा।
- 10.3 डी एम आई एंड एम पी नीति के अंतर्गत सभी लागू एजेंसियां इस नीति का कार्यान्वयन मुनिश्चित करेंगी और वार्षिक रूप से जून के महीने में एक घोषणा भेजेगी जिसमें इस नीति के अनुपालन की सीमा और पिछले वित्तीय वर्ष के दौरान उसके अनुपालन न किए जाने के कारणों को दर्शाया जाएगा।

**इस्पात मंत्रालय को संदर्भ**

किमी ऐसे प्रश्न की स्थिति में कि क्या खरीदी जा रही मद इस नीति के अंतर्गत शामिल किए जाने वाले डी एम आई एंड एम पी है, इस मामले को स्पष्टीकरण के लिए इस्पात मंत्रालय के पास भेजा जाएगा।

**परिशिष्ट क - धरेलू स्तर पर निर्मित उत्पादों के लिए अनन्य**

क्र. सं.	लौह एवं इस्पात उत्पादों की सांकेतिक सूची	लागू एच एस कोड	न्यूनतम धरेलू मूल्यवर्धन आवश्यकता
1	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, हॉट रोलड, न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7208	50%
2	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, कोल्ड रोलड (कोल्ड - कम किया हुआ), न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7209	50%
3	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7210	50%
4	600 मि. मी. से कम की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7211	35%
5	600 मि. मी. से कम की चौड़ाई का लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7212	35%
6	लौह एवं गैर एलॉय इस्पात का अनियमित रूप से ऍंठा हुआ क्वाडल में बार्स और रॉड, हॉट रोलड	7213	35%
7	लौह अथवा गैर एलॉय इस्पात के अन्य बार्स और रॉड्स जिसे फोर्ज किए जाने की तुलना में आगे अधिक वर्क नहीं किया हुआ, हॉट रोलड, हॉट ड्रॉन अथवा हॉट एक्सट्रूडेड परंतु रोलिंग के बाद उसे टिबिस्ट किये जाने सहित	7214	35%
8	लौह अथवा गैर एलॉय इस्पात का अन्य बार्स एंड रोड्स	7215	35%
9	लौह अथवा गैर एलॉय इस्पात का एंगल, शेप और सेक्शन	7216	35%
10	लौह अथवा गैर एलॉय इस्पात का तार	7217	50%
11	600 मि. मी. अथवा उससे अधिक की चौड़ाई का स्टेनलैस इस्पात का फ्लेट रोलड इस्पात	7219	50%
12	600 मि. मी. से कम की चौड़ाई का स्टेनलैस इस्पात का फ्लेट रोलड इस्पात	7220	50%
13	स्टेनलैस स्टील का अन्य बार्स और रोड्स; स्टेनलैस स्टील का एंगल शेप और सेक्शन	7222	50%
14	अन्य एलॉय इस्पात का तार	7229	35%
15	लौह अथवा इस्पात को रेल, रेलवे अथवा ट्रामवे ट्रेक निर्माण सामग्री	7302	50%



16	कास्ट लौह का ढूब, पाइप और होलो पाइप	7303	35%
17	लौह (कास्ट आयरन को छोड़कर) अथवा इस्पात का ढूब पाइप और होलो प्रोफाइल, मीमलैस	7304	35%
18	लौह अथवा इस्पात का सर्कुलर क्रॉस सेक्शन वाले अन्य ढूब और पाइप (उदाहरण के लिए, वेल्ड किया हुआ, रिबेट किया हुआ अथवा समान रूप से बंद किया गया हुआ), जिमकी बाहरी त्रिज्या 406.4 मि. मी. से अधिक हो	7305	35%
19	लौह अथवा इस्पात के अन्य ढूब, पाइप और होलो प्रोफाइल (उदाहरण के लिए ओपन मीन अथवा वेल्ड किया हुआ, रिबेट किया हुआ अथवा समान रूप से बंद किया गया हुआ)	7306	35%
20	लौह अथवा इस्पात का ढूब अथवा पाइप फिटिंग (उदाहरण के लिए, कनेक्टर/कप्लिंग, एल्बो स्लीव्स)	7307	35%
21	स्टेनलैस स्टील का अनियमित रूप से ँंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोल्ड	7221	35%
22	स्टेनलैस स्टील का वायर	7223	35%
23	इलेक्ट्रिकल स्टील सहित 600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले अन्य एलॉय स्टील का फ्लेट रोल्ड इस्पात	7225	35%
24	इलेक्ट्रिकल स्टील सहित 600 मि. मी. से कम की चौड़ाई वाले अन्य एलॉय स्टील का फ्लेट रोल्ड इस्पात	7226	35%
25	अन्य एलॉय स्टील का अनियमित रूप से ँंठा हुआ क्वाइल में बार्स और रोड, हॉट रोल्ड	7227	15%
26	अन्य एलॉय स्टील का अन्य बार्स और रोड्स; अन्य एलॉय स्टील का एंगल, शेप्स और सेक्शन्स; एलॉय अथवा नॉन एलॉय स्टील का होलो ड्रिल बार्स और रोड्स	7228	35%
27	लौह अथवा इस्पात की शीट पाइलिंग, चाहे ड्रिल किया हुआ हो अथवा नहीं, चाहे पंच किया हुआ हो अथवा नहीं, चाहे असेम्बल किये हुए तत्वों से बना हुआ हो अथवा नहीं; लौह अथवा इस्पात का वेल्ड किया हुआ एंगल, शेप और सेक्शन्स	7301	15%
28	स्ट्रक्चर्स (9406 के शीर्ष का प्रीफैब्रिकेटेड भवनों को छोड़कर) और स्ट्रक्चर्स का हिस्सा	7308	15%
29	300 लीटर से अधिक क्षमता का लौह अथवा इस्पात का किसी सामग्री (कम्प्रेस किए हुए अथवा सरलीकृत गैस को छोड़कर) के लिए भंडार, टैंक, वैट और समान कन्टेनर चाहे उसे लाइन किया गया हो अथवा नहीं या उसे हीट से इन्सुलेट किया गया हो अथवा नहीं लेकिन यांत्रिक अथवा तापीय उपक्रम से युक्त न हो	7309	15%
30	अधिकतम 300 लीटर की क्षमता का लौह अथवा इस्पात का किसी सामग्री (कम्प्रेस किए हुए अथवा सरलीकृत गैस को छोड़कर) के लिए टैंक, कास्ट, ड्रम, केन, बॉक्स और समान कन्टेनर चाहे उसे लाइन किया गया हो अथवा नहीं या उसे हीट से इन्सुलेट किया गया हो अथवा नहीं लेकिन यांत्रिक अथवा तापीय उपक्रम से युक्त न हो	7310	15%
31	लौह अथवा इस्पात का कम्प्रेस किया हुआ अथवा सरलीकृत गैस के लिए कन्टेनर	7311	15%
32	लौह अथवा इस्पात का स्टेंडिड वायर, रोप, केबल, प्लेटिड बैंड, स्लिंग और उसके समान वस्तु जिसे त्रिचूतीय रूप से इन्सुलेट न किया गया	7312	15%
33	लौह अथवा इस्पात का फेनसिंग के लिए उपयोग किये जाने वाला बार किया हुआ वायर; ट्रिवस्ट किया हुआ हूप अथवा सिंगल प्लेट वायर, बार्स किया हुआ अथवा नहीं और लूज तरीके से ट्रिवस्ट किया हुआ डबल वायर	7313	15%
34	लौह अथवा इस्पात तार का ड्रिल, नेटिंग और फेनसिंग; लौह अथवा इस्पात का विस्तार किया हुआ धातु	7314	15%

35	लौह अथवा इस्पात का चैन और उसका हिस्सा	7315	15%
36	लौह अथवा इस्पात का टैंकर, ग्रेपनेल्म और उसका हिस्सा	7316	15%
37	लौह एवं इस्पात की वस्तुएं	7317	15%
38	लौह एवं इस्पात की वस्तुएं	7318	15%
39	लौह एवं इस्पात की वस्तुएं	7319	15%
40	लौह अथवा इस्पात का स्प्रिंग और स्प्रिंग के लिए लीन्स	7320	15%
41	लौह अथवा इस्पात का स्टोव्स, रेंज, ग्रेड, कूकर (केंद्रीय हिटिंग के लिए सहायक बायलरों के साथ उन वस्तुओं सहित), वारवेक्यूज, ब्रेजियर्स, गैस रिंग, प्लेट वामर्स और समान गैर-विद्युतीय घरेलू उपकरण और उसका हिस्सा	7321	15%
42	लौह अथवा इस्पात का केंद्रीय हिटिंग के लिए रेडियेटर जिसे विद्युतीय रूप से हीट न किया गया हो और उसका हिस्सा; लौह अथवा इस्पात का हेयर हीटर और हॉट एयर वितरक जिसे विद्युतीय रूप से हीट न किया गया हो, फेन अथवा ब्लोअर जो मोटर से चलती हो और उसके हिस्से को शामिल करते हुए	7322	15%
43	लौह अथवा इस्पात का टेबल और समान घरेलू वस्तुएं और उसका हिस्सा	7323	15%
44	लौह अथवा इस्पात का सेनेटरी वेयर और उसको पार्ट्स	7324	15%
45	लौह अथवा इस्पात का अन्य कास्ट सामान	7325	15%
46	लौह अथवा इस्पात का विद्युतीय इस्पात और अन्य वस्तु	7326	15%
47	रेलवे अथवा ट्रामवे पेसेंजर कोच जो स्वयं आगे नहीं बढ़ता हो	8605	50%
48	रेलवे अथवा ट्रामवे माल वेन और वेगेन जो स्वयं आगे नहीं बढ़ता हो	8606	50%
49	रेलवे अथवा ट्रामवे लोकोमोटिव का हिस्सा अथवा रोलिंग स्टॉक जैसे बोगिज, बिसल बोगिज, एक्सेल और फोज्ड किया हुआ पहिया और उसका हिस्सा	8607	50%

विवरणों में शामिल किए गए उत्पाद सांकेतिक हैं, विनिर्दिष्ट एच एम कोड के अंतर्गत सभी उत्पादों को परिशिष्ट के भाग के रूप में शामिल किया गया है।

## परिशिष्ट ख

## लौह और इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की सांकेतिक सूची (जो विस्तृत नहीं है)

क्र. सं.	संयंत्र शॉप	पूंजीगत माल	न्यूनतम घरेलू मूल्यवर्धन आवश्यकता
1	कच्चा माल संभाल प्रणाली	चूर्ण की हुई सामग्री के लिए एप्रोन फीडर, बेरल कप्लिंग, हैवी ड्यूटी वियेरिंग, हाइड्रोलिक डिक्स ब्रेक्स, टैंकर एंड कंटेनर, पाइप कंवेयर के लिए कंवेयर बेल्ट, हार्ड एंगल कंवेयर प्रणाली, क्रशर्स, क्रेन रेल लुब्रिकेशन, चार गरडर ग्राइडर ई ओ टी क्रेन, क्रेन वेइंग प्रणाली, क्रेन एयर कंडीशनिंग, फ्यूड कप्लिंग, 4 लिफ्ट ट्रक्स, हाइड्रोलिक मोटर्स, हाइड्रोलिक सिस्टम, लॉकिंग एसेम्बली (फ्रिक्शन ग्रिप), लोड सेल्स, लेवल सेन्सर्स, पाइप कंवेयर प्रणाली, प्लग/पाडेल फीडर, न्यूमेटिक हुलाई - धना एवं लिन फेस, रिक्लेमर्स, रेडियो रिमोट कंट्रोल, रेल फिक्सिंग व्यवस्था (विशेष), रेपिड/फ्लेड लोडिंग प्रणाली, स्टेर्स, स्पेशल स्क्रीन, स्लिव रिंग वियेरिंग, ट्रिप्लर्स, ट्रांसफर कार, टॉर्स (स्पेशल), वाइब्रेशन, आइसोलेशन प्रणाली (स्प्रिंग डम्पर) वेगन टिप्लर्स, वेगन लोडर	50%
2	मिनिरल बेनिफिकेशन (लौह अयस्क और कोयला) उपकरण	इंडस्ट्रीयल क्रशर्स, ग्राइनिंग मिल, परम्परागत स्क्रीन, स्लूरी पम्पस, हिरेट थिकनर्स, फिल्टर्स, हाइड्रोक्लोन्स	50%



3	कॉक अवेन	कॉक ओवन मिलिका रिफेक्टरी, एन्क्रेज सिस्टम, ब्रंच तरडन के साथ वेस्ट गैस वाल, फ्लेस प्लेट, डोर फ्रेम, डोर बॉडी, माइनर कास्टिंग: गुजनेक, बाल बॉक्स, ए पी लिड, चार्जिंग और इन्स्पेक्शन होल लिड एंड फ्रेम रिचर्सिंग मंकेनिजम, केंद्रीकृत लूत्रिकेशन प्रणाली हाइड्रोजेट डोर क्लीनिंग तंत्र, कोड कंवेयर सिस्टम, स्क्रिप होइस्ट, डोर लोवरिंग रैक, आइसोलेशन/रिचर्सिंग कॉक्स, II ऑटोमेशन, अवेन मशीन	50%
4	उप-उत्पाद संयंत्र	प्राथमिक गैस कूलर, इलेक्ट्रोस्टैटिक तार प्रेसिपिटेटर, H <sub>2</sub> S, NH <sub>3</sub> और नपथलिन स्कूब्वर, कोम्बी स्ट्रीप्पर, फ्लेशिंग लिक्व पम्प, क्लास किन, क्लाक रियेक्टर, वेस्ट हीट बायलर, डिक्लेटर्स	50%
5	सिंटर संयंत्र उपकरण	पेलेट कार, ड्राइव/डिस्चार्ज इंड स्पोकेट एसेम्बली कब्ड रेल, स्लाइड रेल, हॉट सिंटर ब्रेकर और गिजली, डिप रेल एंड रनिंग रेल, प्रोसेस फेन के लिए इम्पेलर एसेम्बली, सिंटर मशीन का ड्राइव एसेम्बली, उच्च तीव्रता वाला मिक्सर और नोडूलाइजर	50%
6	पेलेट संयंत्र उपकरण	पेलेट कार, ड्राइव/डिस्चार्ज इंड स्पोकेट एसेम्बली कब्ड रेल, स्लाइड रेल, रनिंग रेल बरटिकल रोलर मिल, प्रोसेस फेन के लिए इम्पेलर एसेम्बली, इनडूरेटिंग मशीन का ड्राइव एसेम्बली, उच्च तीव्रता वाला मिक्सर, बालिंग डिक्स, सिंगल डेक्स रोलर स्क्रीन एंड डबल डेक्स रोलर स्क्रीन	50%
7	ब्लास्ट फरनेस उपकरण	ब्लेडर बाल के साथ बेल रहित टॉप प्रणाली, एस जी आयरन स्टेव कूलर, कोपर स्टेव कूलर, स्टॉक लेवल इंडिकेटर (रडार टाइप), मड गन, ड्रिलिंग मशीन एंड मेनिपुलेटर, गैस किल्लिंग प्लांट प्रणाली, इसके बाइस-पास वाल सहित टॉप रिक्वरी टूबाइन सिस्टम, डि-ब्रिक्किंग मशीन, रि-रेलिंग उपकरण, पी सी आई प्रणाली, पी सी आई के लिए ग्राइनिंग मिल, स्टॉक लेवल इंडिकेटर, टूयेरे स्टाक एसेम्बली, वेस्ट हीट रिक्वरी प्रणाली, बी एफ एवं हॉट ब्लास्ट स्टोव प्रौद्योगिकीय वाल, एन्व ब्रंडन प्रोब्स, स्लग ग्रेन्यूलेशन यूनिट, टूयेरे एंड टूयेरे कूलर, टोरपेडो लेडल कार, बी एफ हरथ रिफेक्ट्री	50%
8	डायरेक्ट रिडक्शन प्लांट उपकरण	चार्ज डिस्चार्ज, अपर एंड लोअर सील लेग, रिफोमर एंड रि-क्यूरेटर सिस्टम, बर्डन फिडर्स, टूबो-एक्सपेंडर, प्रोसेस गैस कम्प्रेसर, सील गैस कम्प्रेसर एवं बोटम सील गैस कम्प्रेसर, सील गैस जेनरेटर एवं डायर्स, प्रोसेस गैस हीटर, CO <sub>2</sub> रिमूवल प्लांट	50%
9	वेमिक ऑक्सीजन फर्नेस उपकरण	मुख्य और अनुरक्षण उपकरण जिसमें कंवेटर, गनिंग मशीन, रिफेक्ट्री/स्लग मॉनीटरिंग उपकरण, कंवेटर वेसेल, ट्रनिअन रिंग एंड सम्पेशन प्रणाली, ट्रनिअन बियरिंग और हाउसिंग, कंवेटर बुल गियर यूनिट और टिल्ट ड्राइव सिस्टम, कंवेटर के रोटेरी ज्वाइंट, बोटम स्ट्रिंग सिस्टम, क्लपिंग के साथ लांस बाडी, लांस कोपर टिप्स, ऑक्सीजन ब्लोबिंग/बोटम स्टीरिंग के लिए बाल स्टेशन, सब-लान सिस्टम, प्रोसेस मॉड्यूल अर्थात् प्रोसेस साफ्टवेयर/हार्डवेयर के साथ ऑफ गैस एनेलाइजर, कंटेनर लैब मेजरमेंट प्रोब, स्विच ओवर स्टेशन, प्राइमरी गैस के लिए आई डी फेन, हॉट मेटल और स्टील लेडल, लेडल ट्रांसफर कार, लेडल अनुरक्षण उपकरण, स्लेग पोट, स्लग पोट ट्रांसफर कार, स्क्रैप बॉक्स क्रेप ट्रांसफर कार, लांस करेज, लांस गाइड, क्रेन एंड हाइस्ट, लांस होइस्ट एंड ट्राली, लांस टिल्टिंग उपकरण, लांस को लिफ्ट करने के लिए ट्रेवस, विभिन्न आकर के बंकर, बिन बाइब्रेटर, वेइंग हूपर, अनुरक्षण स्टेण्ड, डी इस्टिंग सक्शन हूड, टीमिंग/एच एम, लेडल रिलाइनिंग स्टैंड, स्टैंड कूलिंग स्टेक इन्स्पेक्शन उपकरण, हूड ट्रेवर्स करेज, रिफेक्ट्री, बाइपास एवं आइसोलेशन वाल्व, फ्लेयर स्टेक एवं इगनिशन सिस्टम, स्क्रबिंग टोवर सेल - वेट गैस क्लीनिंग सिस्टम, डॉंग हाउस लेडल डायर, लेडल	50%

		प्री-हीटर, लेडल कूलर, फ्यूम कोलेक्शन हूड्स, क्लीन गैस स्टेक, इस्ट सिलो, वेग ब्रिज, म्लग रिट्रैनिंग उपकरण	
10	इलेक्ट्रिक आर्क फर्नेस	फर्नेस प्रोपर (जिसमें फर्नेस लोवर सेल, अपर सेल और रूफ, टिल्टिंग प्लेटफार्म, फर्नेस गेन्ट्री शामिल है) और ट्रांसफार्मर, इलेक्ट्रोड रेगुलेशन प्रणाली, हाइड्रोलिक सिस्टम, रिफैक्ट्री, लेवल I एंड II आटोमेशन सिस्टम के पार्ट्स। एल एफ - वाटर कूल्ड लेडल रूफ, इलेक्ट्रोड मास्ट एंड आमर्स, इलेक्ट्रोड रेगुलैटिंग सिस्टम, वायर फिडिंग सिस्टम, बोटम इनडरट गैस स्टिरिंग बाल सिस्टम पोरुस प्लग और टॉप लांस के लिए, इमरजेंसी लांसतंत्र, ड्राइव यूनिट के साथ लांस केरेजि सिस्टम, स्वचालित तापक्रम, सेम्पलिंग और बाथ लेबल/ओ2 मेजरमेंट, तापक्रम और आक्सीजन इम्मजन लांस, ड्राइव यूनिट के साथ लांस केरेज सिस्टम, हाइड्रोलिक सिस्टम, रिफैक्ट्री, लेडल रूफ डेल्टा पोरशन, आर एच प्रोपर (जिसमें लेडल ट्रांसफर कार, बेक्यूम वेमेल, वेमेल लिफ्टिंग और लोवरिंग सिस्टम शामिल है, हाइड्रोलिंग सिस्टम, मल्टी फंक्शन लांस, वाल्व रेक्स/स्टेशन, इलेक्ट्रोड क्लेप यूनिट, इलेक्ट्रोड आमर्स का कंडक्टर, वाटर कूल्ड केबल, ए आर स्टेरिंग वाल्व रेक, लांस ट्रांसपोर्ट कार, रिफैक्ट्री लांस, हाइड्रोलिक सिलेंडर, लेडल रूफ लिफ्टिंग सिलेंडर, लूत्रिकेशन प्रणाली, सक्शन हूड, डम्पर, वाइब्रो फीडर, वेडंग होपर, वायर फिडिंग प्रणाली, इलेक्ट्रोड निपिलिंग स्टेड, क्रेन, होइस्ट, तापमान और सेम्पलिंग टिप्स, लेडल स्टेंड, ई एस पी, डिडिक्टिंग हूड, रिफैक्ट्री, वेग फिल्टर, क्रेन इत्यादि।	50%
11	सतत कास्टिंग उपकरण	लाइले टरेट, लेडल कवर मेनिपुलेटर, लेडल शारउड मेनिपुलेटर, टनडिस कार, कंटिन्यूअस टनडिस टेम्पेचर मेजरमेंट सिस्टम, टनडिस स्टोपर रूड मेकेनिजम, इमरजेंसी कट-आफ गेट, मोल्ड एसेम्बली, नोजल क्लिक चेंज डिवाइस, मोल्ड ओसीलेटर एंड ई एम एस सिस्टम, इलेक्ट्रो-मेगेनेटिक ब्रेकिंग सिस्टम, स्ट्रेड गाइड सेगमेंट, विदड्रावल एंड स्ट्रेघटेनिंग यूनिट (डब्ल्यू एस यू), रोल गेप चेकर इमरजेंसी टार्च कटर, टार्च कटिंग मशीन, डेबरर, मार्किंग मशीन, टेकेनोलोजी कंट्रोल सिस्टम एंड प्रोसेस मोडल, ब्लेक रिफैक्ट्रीज, स्ट्रेड गन्डे सेगमेंट, टनडिश, लाइले कवर, रोलर टेबल एंड आक्सीलिरीज, माल्ड एंड सेगमेंट मेनटेनेस इक्यूपमेंट टनडिस मेनटेनेस इक्यूपमेंट, ई एम बी आर सिस्टम	50%
12	प्लेट मिल	लार्ज कास्टिंग एंड फाजिग लाइक मिल हाउसिंग, बेड प्लेट्स वर्क्स रोल, बेकअप रोल, इंड स्पिडल्स; रोलर टेबल, बेकअप रोल एंड वर्क रोल चक्स क्वाडलर/टेनशन रिल/अनक्वाइलर, ए जी सी सिलेंडर, शेयर्स, लेवेलेर्स, लाजेर वेल्डर, पेकेजिंग मशीन, नॉन कान्टेक्ट, गेज/प्रोफाइल गेज, एंटी-फ्रिक्शन रोल नेक बियेरिंग, आयल फिल्म बियेरिंग, गियर बॉक्स, मिल मोटर्स	50%
13	लॉग मिल	मिलम हाउसिंग, बेड प्लेट, वर्क रोल, बेकअप रोल, स्पिनडेल्स; रोलर टेबल, कॉयलर /टेंशन रिल /अनकॉयलर, शेयर्स, बिल्डट वेल्डर, पेकेजिंग मशीन, नान-कान्टेक्ट गॉज/प्रोफाइल गॉज, एंटी-फ्रिक्शन रोल नेक बियेरिंग, आयल फिल्म बियेरिंग, फिनिशिंग ब्लाक्स, गियर बॉक्स, मिल मोटर	50%

\* परिशिष्ट ख में मर्दे निर्माण करने वाले इस्पात के लिए पूंजीगत सामानों की एक सांकेतिक सूची है। यह सूची विस्तृत नहीं है। इस्पात के निर्माण के लिए सभी पूंजीगत मालों पर 50% की न्यूनतम घरेलू मूल्यवर्धन आवश्यकता के साथ इस नीति के अंतर्गत खरीद बरीयता के लिए विचार किया जाएगा।



**फार्म - 1**

100/- रुपए के स्टाम्प पेपर पर दिए जाने के लिए लौह एवं इस्पात उत्पादों/पूँजीगत मालों में घरेलू मूल्यवर्धन के संबंध में स्व-प्रमाणन शपथ के लिए प्रपत्र :

मैं \_\_\_\_\_ सुपुत्र, सुपुत्री, पत्नी, \_\_\_\_\_ का निवासी \_\_\_\_\_  
एतद् द्वारा निष्ठापूर्वक नीचे दिए गए अनुसार वचन देता हूँ और घोषण करता हूँ :

कि मैं अधिसूचना सं. : \_\_\_\_\_ के माध्यम से जारी किए गए भारत सरकार की नीति के नियम और शर्तों का पालन करने के लिए सहमत होऊंगा।

कि यहां नीचे दी गई सूचना मेरे सर्वोत्तम ज्ञान और विश्वास के अनुसार सही है और मैं घरेलू मूल्यवर्धन का आकलन करने के प्रयोजन से खरीद करने वाली एजेंसी के समक्ष संगत रिकार्ड प्रस्तुत करने का वचन देता हूँ।

कि सभी इनपुट्स के लिए घरेलू मूल्यवर्धन जिसमें उक्त लौह एवं इस्पात उत्पाद शामिल हैं का सत्यापन मेरे द्वारा कर लिया गया है और मैं उसमें किये गये दावों की सत्यता के लिए जिम्मेदार हूँ।

कि इसमें उल्लिखित उत्पाद घरेलू मूल्यवर्धन सही नहीं पाये जाने और मूल्यवर्धन के लिए निर्धारित मानदंडों को पूरा नहीं किये जाने की स्थिति में, घरेलू मूल्यवर्धन का आकलन करने के उद्देश्य से खरीद करने वाली एजेंसी के आकलन के आधार पर मैं 36 महीनों की अवधि के लिए किसी सरकारी निविदा से अयोग्य ठहराया जाऊंगा। इसके अलावा मैं इस प्रकार के आकलन की सभी लागतों का वहन करूंगा।

कि मैंने अधिसूचना संख्या \_\_\_\_\_ जिसमें सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों को बरीयता दी गई है, में संदर्भित सभी शर्तों का पालन किया है और यह कि खरीद करने वाली एजेंसी को एतद् द्वारा अधिकार दिया जाता है कि वह मेरे ई एम डी को जप्त करे। मैं यह भी वचन देता हूँ कि आकलन की लागत का भुगतान करूंगा और निविदा दस्तावेज में यथा उल्लिखित सभी दण्ड राशि का भुगतान करूंगा।

मैं 8 वर्षों की अवधि के लिए कम्पनी के रिकॉर्ड में निम्नलिखित सूचना रखने के लिए सहमत हूँ और किसी सांविधिक प्राधिकारी को सत्यापन के लिए इसे उपलब्ध कराऊंगा।

- i. बोली लगाने वाले का नाम और ब्यौरा (पंजीकृत कार्यालय, विनिर्माण इकाई का स्थान, कानूनी प्रतिष्ठान की प्रकृति)
- ii. वह तिथि जब यह प्रमाण पत्र जारी किया गया है।
- iii. लौह एवं इस्पात उत्पाद जिसके लिए इस प्रमाण पत्र को प्रस्तुत किया जाता है।
- iv. खरीद करने वाली एजेंसी जिसे यह प्रमाण पत्र प्रस्तुत किया जाता है।
- v. दावा की गई घरेलू मूल्यवर्धन की प्रतिशतता और क्या यह निर्धारित घरेलू मूल्यवर्धन के आरंभिक मूल्य को पूरा करता है।
- vi. विनिर्माता की इकाई का नाम और संपर्क विवरण
- vii. लौह और इस्पात उत्पादों की निवल बिक्री कीमत
- viii. संयंत्र तक भाड़ा, बीमा और रखरखाव
- ix. लौह एवं इस्पात उत्पादों का निर्माण करने के लिए उपयोग की जाने वाली इनपुट इस्पात (आयात किया गया) की सूची और कुल लागत मूल्य।
- x. इनपुट इस्पात जिसकी आपूर्ति घरेलू स्तर पर की जाती है की सूची और कुल लागत
- xi. कृपया यदि इनपुट इन हाऊस नहीं हो तब आपूर्तिकर्ताओं से प्राप्त घरेलू मूल्यवर्धन प्रमाणपत्र संलग्न करें।
- xii. आयात किये गये इनपुट इस्पात के लिए, सी आई एफ मूल्य, शुल्क और करों, पोर्ट पर उतारने से संबंधित प्रभारों और अंतर्देशीय भाड़े की लागत के ब्यौरे के साथ भारतीय पोर्ट पर पहुंच कीमत।

(प्रतिष्ठान/कंपनी का नाम) के लिए और उसकी ओर से

अधिकृत हस्ताक्षरकर्ता (निदेशक बोर्ड द्वारा विधिवत अधिकृत किये जाने के लिए)

<नाम, पदनाम और संपर्क सं. की प्रविष्टि करें>

## MINISTRY OF STEEL

## NOTIFICATION

New Delhi, the 29th May, 2019

**G.S.R. 385(E).**—The revised Policy for providing preference to domestically manufactured Iron & Steel Products in Government procurement is hereby published for general information.

[F. No.3(2)/2018-IDD]

RASIKA CHAUBE, Addl. Secy.

**POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS IN GOVERNMENT PROCUREMENT- REVISED, 2019**

**1 Background**

- 1.1 This policy provides preference to Domestically Manufactured Iron and Steel Products (DMI&SP) in Government procurement.
- 1.2 The policy is applicable to iron & steel products as provided in Appendix A and capital goods for manufacturing iron & steel products in Appendix B, produced in compliance to prescribed quality standards, as applicable.
- 1.3 The policy is applicable to every Ministry or Department of Government and all agencies/entities under their administrative control and to projects funded by these agencies for purchase of iron & steel products for government projects. However, this policy shall not apply for purchase of iron & steel products with a view to commercial resale or with a view to use in the production of goods for commercial sale.

**2 Definitions**

- 2.1 **Bidder** may be a domestic/ foreign manufacturer of iron & steel or their selling agents/ authorized distributors/ authorized dealers/ authorized supply houses or any other company engaged in the bidding of projects funded by Government agencies.
- 2.2 **Domestically Manufactured Iron & Steel Products (DMI&SP)** are those iron and steel products which are manufactured by entities that are registered and established in India, including in Special Economic Zones (SEZs). In addition, such products shall meet the criteria of domestic minimum value-addition as mentioned in Appendix A.
- 2.3 **Domestic Manufacturer** is a manufacturer of iron & steel products conforming to guidelines in section 7 and confirming to the definition of 'manufacturer' as per Central Excise Act.
- 2.4 **Government** for the purpose of the Policy means Government of India.
- 2.5 **Government agencies** include Government PSUs, Societies, Trusts and Statutory bodies set up by the Government.
- 2.6 **MoS** shall mean Ministry of Steel, Government of India.
- 2.7 **Net Selling Price** shall be the invoiced price excluding net domestic taxes and duties
- 2.8 **Semi-Finished Steel** shall mean Ingots, billet, blooms and slabs, which can be subsequently processed to finished steel.
- 2.9 **Finished Steel** shall mean Flat and Long products, which can be subsequently processed into manufactured items.
- 2.10 **L1** means the lowest tender or the lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.
- 2.11 **Margin of purchase preference** means the maximum extent to which the price quoted by a domestic supplier may be above L1 for the purpose of purchase preference. In case of DMI&SP policy, the margin of purchase preference shall be 20% for items in Appendix B.
- 2.12 **Iron & Steel Product(s)** shall mean such iron and steel product(s) which are mentioned in Appendix A.
- 2.13 **Domestic value addition** shall be the net selling price (invoiced price excluding net domestic taxes and duties) minus the landed cost of imported input materials at the manufacturing plant in India (including all customs duties) as a proportion of the net selling price, in percent. The 'domestic value addition' definition shall be in line with the DPIIT (formerly DIPP) guidelines, and shall be suitably amended in case of any changes by DPIIT in the future. For the purpose of this policy document, domestic value addition and local content have been used interchangeably.



### 3 Exclusions

3.1 Waivers shall be granted by the Ministry of Steel to all such Government procurements subject to the below conditions.

3.1.1 Where specific grades of steel are not manufactured in the country, or

3.1.2 Where the quantities as per the demand of the project cannot be met through domestic sources

The exclusion requests shall be submitted to the Standing Committee along with sufficient proof of unavailability of domestically manufactured iron & steel products

### 4 Standing Committee

A Standing Committee under the Ministry of Steel (MoS) to be chaired by the Secretary (Steel), shall be constituted to oversee the implementation of the policy. The Committee shall comprise of experts drawn from Industry / Industry Association / Government Institution or Body / Ministry of Steel (MoS). The said Committee in MoS shall have the mandate for the following:

4.1 Monitoring the implementation of the policy

4.2 Review and notify the list of Iron & Steel products and the domestic value addition requirement criteria as mentioned at Appendix A and Appendix B.

4.3 Issue necessary clarifications for implementation of the policy including grant of exclusions to procuring agencies as per section 3

4.4 Constitute a separate committee to carry out grievance redressal

4.5 The Standing Committee shall submit its recommendations for approval to Ministry of Steel.

### 5 Notifying Iron & Steel Products Procured by Government

5.1 The following guidelines may be used for identifying and notifying the aforementioned products under the policy:

5.1.1 The policy is applicable to iron & steel products as provided in Appendix A and to capital goods for manufacturing iron & steel products in Appendix B.

5.1.2 Appendix A contains list of iron & steel products which are to be exclusively domestically manufactured and cannot be imported without the approval of the Ministry of Steel

5.1.3 Appendix B contains a list (non-exhaustive) of capital goods for which purchase preference shall be provided to domestically manufactured capital goods, if their quoted price falls within 20% of the price quoted for corresponding imported capital good.

5.1.4 The objective of the policy is to notify all iron & steel products which are procured by Government Agencies for government projects and not with a view to commercial resale or with a view to use in the production of products for commercial sale.

5.1.5 The policy is applicable to all projects funded by Ministry or Department of Government and all agencies/entities under their administrative control for purchase of iron & steel products.

5.1.6 The policy shall be applicable to projects where the procurement value of iron and steel products is greater than Rs. 25 crores. The policy shall also be applicable for other procurement (non-project), where annual procurement value of iron and steel products for that Government organization is greater than Rs. 25 crores.

5.1.7 The policy is applicable to purchase of iron & steel products by private agencies for fulfilling an EPC contract and/or any other requirement of Ministry or Department of Government or their PSUs.

5.1.8 Analysis of the availability of various grades of domestic iron and steel products needs to precede for notification under the policy. Only those iron & steel products, in respect of which at least one domestic manufacturer exists, shall be notified. Consultation may be carried out by the Standing Committee.

5.1.9 The policy is applicable to capital goods for manufacturing iron & steel products in Appendix B produced in compliance to prescribed quality standards, as applicable.

5.1.10 Policy for domestic procurement of capital goods for manufacturing iron and steel products is applicable to all public sector steel manufacturers and all agencies/entities under their administrative control for purchase of capital goods for manufacturing iron & steel products, not with a view to commercial resale.

5.1.11 The policy is applicable to purchase of capital goods for manufacturing iron & steel products by private agencies for fulfilling an EPC contract and/or any other requirement of public sector steel manufacturers and all agencies/entities under their administrative control

- 5.1.12 Government agencies which are involved in procurement of iron and steel products, and capital goods for manufacturing of iron and steel products, in cases where the iron and steel products are not mentioned in Appendix A and Appendix B, shall provide description and technical specifications of the product along with prescribed standards to the Standing Committee. The Standing Committee will act as per mandate in section 3 and section 4.
- 5.2 The Ministry of Steel (MoS) would notify iron & steel products along with the minimum prescribed domestic value addition, furnished at Appendix A.
- 5.3 The policy guidelines on capital goods for manufacturing iron & steel products shall be applicable to public sector steel manufacturers for all purchases of capital goods for manufacturing iron & steel products in Appendix B, irrespective of the project size.
- 5.4 Minimum domestic value addition requirement suggested for iron and steel products in Appendix A, and for capital goods for manufacturing iron and steel products in Appendix B have been decided on the basis of factors such as domestic supplier base, number of suppliers and import to consumption ratio.
- 5.5 The domestic value addition requirement norm shall be so calibrated that it reflects the average/above average manufacturing capability of the domestic industry for the iron & steel products at a point of time. This shall be suitably reviewed by the Standing Committee from time to time and amended, if required with the approval of Ministry of Steel.

#### **6 Tender procedure for procurement by government and government agencies**

- 6.1 The procuring/ Government agencies shall follow standard procurement procedures, in accordance with instructions of Ministry of Finance and CVC while adhering to DMI&SP. The policy shall come into effect from the date of its notification in all tenders where price bid have not been opened.
- 6.2 The tender document, for procurement of both Goods as well as for EPC contracts, should explicitly outline the qualification criteria for adherence to minimum prescribed domestic value addition by the bidder for iron and steel products and capital goods for manufacturing iron & steel products(as indicated in Appendix A and Appendix B)
- 6.3 In supporting the growth of domestic products, the target of domestic value addition in iron and steel business activities has been set as contained in **Appendix A and Appendix B**.
- 6.4 For iron and steel products in Appendix A, the procurement process shall be open only to the manufacturers / suppliers having the capability of meeting / exceeding the domestic value addition targets. Manufacturers / suppliers not meeting the domestic value addition targets are not eligible to participate in the bidding.
- 6.5 In case of Appendix B items, if in the opinion of the procuring company, the tenders (procured quantity) cannot be divided in the prescribed ratio of 50:50, then they shall have the right to award contract to the eligible domestic manufacturer for quantity not less than 50%, as may be divisible.
- 6.6 In continuation to the above clause, for Appendix B items, if the tendered item is non divisible, (to be included in the tender document by procuring company) the contract can be awarded to the eligible domestic manufacturer for the entire quantity.
- 6.7 In case of Appendix B items, if none of the eligible manufacturers meeting domestic value addition requirements match the L1 bid, the original bidder holding L1 bid shall secure the order for full value of procurement.
- 6.8 The bidders who are selling agents/ authorized distributors/ authorized dealers/ authorized supply houses of the domestic manufacturers of iron & steel products are eligible to bid on behalf of the domestic manufacturers under the policy. However, this shall be subject to the following conditions:
- 6.8.1 The bidder shall furnish the authorization certificate issued by the domestic manufacturer for selling domestically manufactured iron & steel products.
- 6.8.2 In case the procurement is covered under Appendix A of the DMI&SP policy, the bidder shall furnish the Affidavit of self-certification issued by the domestic manufacturer to the procuring agency declaring that the iron & steel products is domestically manufactured in terms of the domestic value addition prescribed.
- 6.8.3 In case the procurement is covered under Appendix B of the DMI&SP policy, the bidder shall furnish the certification issued by the statutory auditor to domestic manufacturer declaring that the capital goods to be used in Iron & Steel industry are domestically manufactured in terms of the domestic value addition prescribed.
- 6.8.4 It shall be the responsibility of the bidder to furnish other requisite documents required to be issued by the domestic manufacturer to the procuring agency as per the policy.



**7 Domestic value addition requirement**

- 7.1 Minimum domestic value addition requirement to qualify the product as a domestically manufactured iron & steel product or a Capital good are mentioned in Appendix A and B.
- 7.2 Domestic value addition shall be the net selling price (invoiced price excluding net domestic taxes and duties) minus the landed cost of imported input materials at the manufacturing plant in India (including all customs duties) as a proportion of the net selling price, in per cent.
- 7.2.1 In case the iron & steel products are made using domestic input steel (semi-finished/ finished steel), invoices of purchases from the actual domestic producers along with quantities purchased and the other related documents must be furnished to the procuring Government agency.
- 7.2.2 In case the iron & steel products have imported input steel, the invoices of purchases from the actual producers along with quantities purchased and the other related documents must be furnished separately. To derive the extent of domestic value addition, the weighted average of both (imported & domestic) input steel shall be considered to ensure that the minimum stipulated domestic value addition requirement of the policy is complied with.
- 7.3 It is recommended that each bidder participating in the tender process should calculate the domestic value addition using the below formula below so as to ensure the domestic value addition claimed is consistent with the minimum stipulated domestic value addition requirement of the policy.

**For Iron and Steel products**

*% Domestic value addition*

$$= \frac{\text{Net selling price of final product} - \text{Landed cost of imported iron or steel at plant}}{\text{Net selling price of final product}} \times 100\%$$

**For Capital Goods**

*% Domestic value addition*

$$= \frac{\text{Net selling price of final product} - \text{Landed cost of imported input materials at plant}}{\text{Net selling price of final product}} \times 100\%$$

**8 Certification and audit**

- 8.1 For products in Appendix A, each domestic manufacturer shall furnish the Affidavit of self-certification to the procuring Government agency declaring that the iron & steel products are domestically manufactured in terms of the domestic value addition prescribed. For capital goods in Appendix B, the bidder shall furnish the certification issued by the statutory auditor to the domestic manufacturer declaring that the capital goods are domestically manufactured in terms of the domestic value addition prescribed. The bidders who are sole selling agents / authorized distributors / authorized dealers / authorized supply houses of the domestic manufacturers of iron & steel products are eligible to bid on behalf of domestic manufacturers under the policy. The bidder shall furnish the Affidavits of self-certification issued by the domestic manufacturers and the certifications issued by the statutory auditors, to the procuring agency declaring that the iron & steel products are domestically manufactured in terms of the domestic value addition prescribed. The Affidavit of self-certification shall be furnished in **Form I** attached to these guidelines.
- 8.2 It shall be the responsibility of the domestic manufacturer to ensure that the products so claimed are domestically manufactured in terms of the domestic value addition prescribed for the product. The bidder shall also be required to provide a domestic value addition certificate on half-yearly basis (Sep 30 and Mar 31), duly certified by the Statutory Auditors of the domestic manufacturer, that the claims of domestic value addition made for the product during the preceding 6 months are in accordance with the Policy. Such certificate shall be filed within 60 days of commencement of each half year, to the concerned Government agencies and shall continue to be filed till the completion of supply of the said products.
- 8.3 The procuring agency shall accept the Affidavit of self-certification regarding domestic value addition in a steel product submitted by a bidder. It shall not normally be the responsibility of procuring agency to verify the correctness of the claim. The onus of demonstrating the correctness of the same shall be on the bidder when asked to do so.
- 8.4 In case a complaint is received by the procuring agency or the concerned Government Agency against the claim



of a bidder regarding domestic value addition in iron & steel products, the procuring agency shall have full rights to inspect and examine all the related documents and take a decision. In case any clarification is needed, matter may be referred to MoS with a request for technical assistance.

- 8.5 Any complaint referred to the Government Agency shall be disposed off within 4 weeks of the reference along with submission of all necessary documents. The bidder shall be required to furnish the necessary documentation in support of the domestic value addition claimed in iron & steel products to the Government Agency within 2 weeks of filing the complaint.
- 8.6 In case, the matter is referred to the Ministry of Steel, the grievance redressal committee setup under the MoS shall dispose of the complaint within 4 weeks of its reference and receipt of all documents from the bidder after taking in consideration, the view of the Government Agency. The bidder shall be required to furnish the necessary documentation in support of domestic value addition claimed in iron & steel products to the grievance redressal committee under MoS within 2 weeks of the reference of the matter. If no information is furnished by the bidder, the grievance redressal committee may take further necessary action, in consultation with Government Agency to establish bonafides of claim.
- 8.7 The cost of assessing the prescribed extent of domestic value addition shall be borne by the procuring agency if the domestic value addition is found to be correct as per the certificate. However, if it is found that the domestic value addition as claimed is incorrect, the cost of assessment will be payable by the bidder who has furnished an incorrect certificate. The manner of enforcing the same shall be defined in the tender document.

#### 9 Sanctions

- 9.1 Each Government Agency shall clearly define the penalties, in case of wrong declaration by the bidder of the prescribed domestic value addition, in the tender document. The penalties may include forfeiting of the EMD, other financial penalties and blacklisting of such manufacturer/ service provider.
- 9.2 In case of reference of any complaint to MoS by the concerned bidder, there would be a complaint fee of Rs. 10 Lakh or 0.2 % of the value of the DMI&SP being procured (subject to a maximum of Rs. 20 Lakh), whichever is higher, to be paid by Demand Draft deposited with the grievance redressal committee under MoS along with the complaint by the complainant. In case, the complaint is found to be incorrect, the Government Agency reserves the right to forfeit the said amount. In case, the complaint is found to be substantially correct, deposited fee of the complainant would be refunded without any interest.

#### 10 Implementation monitoring by Ministry of Steel

- 10.1 The policy provisions shall be applicable for a period of 5 years from the date of publication. The policy period may further be extended at the discretion of Ministry of Steel.
- 10.2 MoS shall be the nodal ministry to monitor the implementation of the policy.
- 10.3 All applicable agencies under DMI&SP policy shall ensure implementation of the policy and shall annually, in the month of June, send a declaration indicating the extent of compliance to the policy and reasons for noncompliance thereof, during the preceding financial year.

#### Reference to Ministry of Steel

In case of a question whether an item being procured is a DMI&SP to be covered under the policy, the matter would be referred to the Ministry of Steel for clarification.

#### Appendix A - Exclusive for domestically manufactured products

Sl. No.	Indicative list of Iron & Steel Products	Applicable HS code	Minimum domestic value addition requirement
1	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, hot rolled, not clad, plated or coated	7208	50%
2	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, cold rolled (cold-reduced), not clad, plated or coated	7209	50%
3	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, clad, plated or coated	7210	50%

4	Flat-rolled products of iron or non alloy steel, of a width of less than 600 mm, not clad, plated or coated	7211	35%
5	Flat-rolled products of iron or non alloy steel, of a width of less than 600 mm, clad, plated or coated	7212	35%
6	Bars and rods, hot-rolled, in irregularly wound coils, of iron or non-alloy steel	7213	35%
7	Other bars and rods of iron or non alloy steel, not further worked than forged, hot rolled, hot-drawn or hot-extruded, but including those twisted after rolling	7214	35%
8	Other bars and rods of iron or non alloy steel	7215	35%
9	Angles, shapes and sections of iron or non-alloy steel	7216	35%
10	Wire of iron or non-alloy steel	7217	50%
11	Flat-rolled products of stainless steel, of a width of 600 mm or more	7219	50%
12	Flat-rolled products of stainless steel, of a width of less than 600 mm	7220	50%
13	Other bars and rods of stainless steel; angles, shapes and sections of stainless steel	7222	50%
14	Wire of other alloy steel	7229	35%
15	Rails, railway or tramway track construction material of iron or steel	7302	50%
16	Tubes, pipes and hollow profiles, of cast iron	7303	35%
17	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	7304	35%
18	Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406.4 mm, of iron or steel	7305	35%
19	Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel	7306	35%
20	Tube or pipe fittings (for example, connectors/couplings, elbow sleeves), of iron or steel	7307	35%
21	Bars and rods, hot-rolled, in irregularly wound coils, of stainless steel	7221	35%
22	Wire of stainless steel	7223	35%
23	Flat-rolled products of other alloy steel, of a width of 600 mm or more, including electrical steel	7225	35%
24	Flat-rolled products of other alloy steel, of a width of less than 600 mm, including electrical steel	7226	35%
25	Bars and rods, hot-rolled, in irregularly wound coils, of other alloy steel	7227	15%
26	Other bars and rods of other alloy steel; angles, shapes and sections, of other alloy steel; hollow drill bars and rods, of alloy or nonalloy steel	7228	35%
27	Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel	7301	15%
28	Structures (excluding prefabricated buildings of heading 9406) and parts of structures	7308	15%
29	Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 whether or not lined or heatinsulated, but not fitted with mechanical or Thermal equipment	7309	15%



30	Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 L, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	7310	15%
31	Containers for compressed or liquefied gas, of iron or steel	7311	15%
32	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel, not electrically insulated	7312	15%
33	Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not, and loosely twisted double wire, of a kind used for fencing, of iron or steel	7313	15%
34	Grill, netting and fencing, of iron or steel wire; expanded metal of iron or steel	7314	15%
35	Chain and parts thereof, of iron or steel	7315	15%
36	Anchors, grapnels and parts thereof, of iron or steel	7316	15%
37	Articles of iron and steel	7317	15%
38	Articles of iron and steel	7318	15%
39	Articles of iron and steel	7319	15%
40	Springs and leaves for springs, of iron or steel	7320	15%
41	Stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel	7321	15%
42	Radiators for central heating, not electrically heated, and parts thereof, of iron or steel; air heaters and hot air distributors, not electrically heated, incorporating a motor-driven fan or blower, and parts thereof, of iron or steel	7322	15%
43	Tables and similar household articles and parts thereof, of iron or steel	7323	15%
44	Sanitary ware and parts thereof, of iron or steel	7324	15%
45	Other cast articles of iron or steel	7325	15%
46	Electrical steel and other articles of iron or steel	7326	15%
47	Railway or tramway passenger coaches, not self-propelled	8605	50%
48	Railway or tramway goods vans and wagons, not self-propelled	8606	50%
49	Parts of railway or tramway locomotives or rolling-stock; such as bogies, bissel-bogies, axles and forged wheels, and parts thereof	8607	50%

Products included in descriptions are indicative; all products under the specified HS codes are included as part of the appendix

#### **Appendix B**

#### **Indicative list of capital goods(non-exhaustive) for manufacturing iron & steel products**

Sl. No.	Plant shop	Capital goods	Minimum domestic value addition requirement
1	Raw material handling system	Apron feeder, barrel couplings, heavy duty bearings, hydraulic disc brakes, tanker & container for powdered materials, conveyor belt for pipe conveyors, high angle conveyor system, crushers, crane rail lubrication system, four girder EOT Crane, crane weighing system, crane air conditioning, fluid couplings, fork lift trucks, hydraulic motors, hydraulic system, locking assembly (friction grip), load cells, level sensors, pipe	50%

		conveyor system, plough/ paddle feeder, pneumatic transportation - dense & lean phase, reclaimers, radio remote control, rail fixing arrangements (special), rapid/ flood loading system, stackers, special screen, slew ring bearings, tippers, transfer cars, tongs (special), vibration, isolation system (spring damper), wagon tippers, wagon loaders	
2	Mineral beneficiation (iron ore and coal) equipment	Industrial crushers, grinding mills, conventional screens, slurry pumps, hire thickeners, filters, hydroclones	50%
3	Coke oven	Coke Oven Silica Refractory, Anchorage System, Waste gas valve with branch pipe, Flash Plate, Door Frame, door body, Minor Casting: Gooseneck, Valve box, AP Lid, Charging & inspection hole lid and frame Reversing mechanism, Centralised lubrication system, Hydrojet Door Cleaning Mechanism, Spillage code conveyor system, skip hoist, Door Lowering Rack, Isolation/ Reversing Cocks, Level II automation, Oven machines	50%
4	By-product plant	Primary Gas Cooler, Electrostatic Tar Precipitator, H <sub>2</sub> S, NH <sub>3</sub> & Naphthalene Scrubber, Combi Stripper, Flushing Liquor Pump, Claus Kiln, Claus reactors, Waste Heat Boilers, Decanters	50%
5	Sinter plant equipment	Pallet car, Drive/discharge end Sprocket assembly, Curved rail, Slide rails, Hot sinter breaker and Grizzly, Dip rail & running rail, Impeller assembly for Process fan, Drive assembly of Sinter machine, Hi-intensity Mixer & Noduliser	50%
6	Pellet plant equipment	Pallet car, Drive/discharge end Sprocket assembly, Curved rail, Slide rails, running rail, Vertical roller mill, Impeller assembly for Process fan, Drive assembly of Indurating machine, Hi-intensity Mixer, Balling disc, Single deck roller screen and Double deck roller screen	50%
7	Blast furnace equipment	Bell less top system with Bleeder valve, SG Iron stove coolers, Copper stove coolers, Stock level indicator (Radar Type), Mud gun, Drilling machine and Manipulator, Gas Cleaning Plant system, Top Recovery Turbine system including its by-pass valve, De-bricking Machine, Re-railing equipment, PCI system, Grinding mill for PCI, Stock level indicator, Tuyere Stock assembly, Waste Heat Recovery system, BF & Hot Blast Stoves Technological Valves, Above Burden probes, Slag granulation unit, Tuyere & Tuyere cooler, Torpedo Ladle Car, BF hearth refractory	50%
8	Direct reduction plant equipment	Charge distributor, Upper & lower seal leg, Reformer & Re-cuperator system, Burden feeders, Turbo-expander, Process Gas Compressor, Seal gas compressors & bottom seal gas compressors, Seal gas generators & driers, Process Gas Heater, CO <sub>2</sub> removal plant	50%
9	Basic oxygen furnace equipment	Main and Maintenance equipment comprising of converter, gunning machine, Refractory/ slag monitoring device, converter vessel, trunnion ring and suspension system, trunnion bearings and housing, Converter bull gear unit and tilt drive system, Rotary joint for converter, bottom stirring system, Lance body with clamping, Lance copper tips, Valve stations for oxygen blowing/ bottom stirring, Sub-lance system, Off gas analyzer with process module i.e. Process software/ hardware, container lab Measurement probes, Switch over station, ID fan for primary gas, Hot metal and steel ladle, Ladle Transfer car, Ladle maintenance equipment, Slag pot, Slag pot transfer car, Scrap boxes, Scrap Transfer car, Lance carriage, Lance guide, Crane & hoist, Lance hoist & trolley, Lance tilting device, Traverse for lifting lances, Bunker of various sizes, Bin Vibrator, Weighing Hopper, Maintenance stands, De dusting suction hood, Teeming/HM, ladle relining stands, Stand Cooling stack inspection device, Hood traverse carriage, Refractories, Bypass & isolation valves, Flare stack & ignition system, Scrubbing tower	50%



		shell - Wet gas cleaning system, Dog house, Ladle drier, ladle pre-heater, ladle cooler, Fume collection hoods, Clean gas stack, Dust silo, Weigh Bridge, Slag retaining device	
10	Electric arc furnace	Furnace proper (includes furnace lower shell, upper shell and roof, Tilting platform, Furnace Gantry) and transformer, Electrode regulation system, Hydraulic system, Refractories, Parts of Level I & Level II Automation system. LF - water cooled ladle roof, electrode mast and arms, electrode regulating system, wire feeding system, Bottom inert gas stirring Valve stand for porous plug and top lance, Emergency lance mechanism, Lance carriage system with drive unit, Automatic temperature, sampling & bath level / O2 measurement, Temp. & oxygen immersion lance, lance carriage system with drive unit, Hydraulic system, Refractories, Ladle roof Delta portion, RH proper (includes Ladle transfer car, vacuum vessel, Vessel lifting & lowering system. Hydraulic system, Multi Function lance, Valve racks/station, Electrode clamp unit, conductor of electrode arms, water cooled cable, A R stirring valve rack, lance transport car, Refractory lance, Hydraulic cylinder, Ladle roof lifting cylinder, Lubrication system, Suction hood, damper, Vibro feeder, weighing hopper, wire feeding system, Electrode nippling stand, Cranes, hoist, Temperature & sampling tips, ladle stands, ESP, Deducing hoods, Refractories, bag filter, Cranes etc.	50%
11	Continuous casting equipment	Ladle turret, ladle cover manipulator, Ladle Shroud manipulator, tundish car, Continuous tundish temperature measurement system, Tundish stopper rod mechanism, emergency cut-off gate, mould assembly, Nozzle quick change device, mould oscillator and EMS system. Electro-Magnetic braking system, Strand guide segment, Withdrawal & Straightening unit (WSU), Roll gap checker, Emergency torch cutter, Torch cutting machine, Deburrer, Marking machine, Technological control system & process models, Black Refractories, strand gunde segment, tundish, ladle cover, roller tables & auxiliaries, mould& segment maintenance equipments, tundish maintenance equipments, EMBR system	50%
12	Flat product mills	Large castings and forgings like mill housing, bed plates, work rolls, backup rolls, end spindles; roller tables, backup roll and work roll chucks, coilers / tension reels / uncoilers, AGC cylinders, shears, levelers, lazer welders, packaging machines, non-contact gauges / profile gauges, anti-friction roll neck bearings, oil film bearings, gear boxes, mill motors	50%
13	Long product mills	Mill housing, bed plates, work rolls, backup rolls, spindles; roller tables, coilers / tension reels / uncoilers, shears, billet welder, packaging machines, non-contact gauges / profile gauges, anti-friction roll neck bearings, oil film bearings, finishing blocks, gear boxes, mill motors	50%

*\*Items in appendix B are an indicative list of capital goods for manufacturing steel, the list is not exhaustive. All capital goods for steel manufacturing shall be considered for purchase preference under the policy with a minimum domestic value addition requirement of 50%*

#### Form-1

**Format for Affidavit of Self Certification regarding Domestic Value Addition in Iron & Steel Products/capital goods to be provided on Rs.100/- Stamp Paper Date:**

I \_\_\_\_\_ S/o, D/o, W/o, \_\_\_\_\_ Resident of \_\_\_\_\_ hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the policy of Government of India issued vide Notification No: \_\_\_\_\_.

That the information furnished hereinafter is correct to the best of my knowledge and belief and I undertake to produce relevant records before the procuring agency (ies) for the purpose of assessing the domestic value addition.

That the domestic value addition for all inputs which constitute the said iron & steel products has been verified by me and I am responsible for the correctness of the claims made therein.



That in the event of the domestic value addition of the product mentioned herein is found to be incorrect and not meeting the prescribed value-addition criteria, based on the assessment of procuring agency (ies) for the purpose of assessing the domestic value-addition, I will be disqualified from any Government tender for a period of 36 months. In addition, I will bear all costs of such an assessment.

That I have complied with all conditions referred to in the Notification No. \_\_\_\_\_ wherein preference to domestically manufactured iron & steel products in Government procurement is provided and that the procuring agency (ies) is hereby authorized to forfeit and my EMD. I also undertake to pay the assessment cost and pay all penalties as specified in the tender document.

I agree to maintain the following information in the Company's record for a period of 8 years and shall make this available for verification to any statutory authority.

- i. Name and details of the Bidder (Registered Office, Manufacturing unit location, nature of legal entity)
- ii. Date on which this certificate is issued
- iii. Iron & Steel Products for which the certificate is produced
- iv. Procuring agency to whom the certificate is furnished
- v. Percentage of domestic value addition claimed and whether it meets the threshold value of domestic value addition prescribed
- vi. Name and contact details of the unit of the manufacturer (s)
- vii. Net Selling Price of the iron & steel products
- viii. Freight, insurance and handling till plant
- ix. List and total cost value of input steel (imported) used to manufacture the iron & steel products
- x. List and total cost of input steel which are domestically sourced.
- xi. Please attach domestic value addition certificates from suppliers, if the input is not in house.
- xii. For imported input steel, landed cost at Indian port with break-up of CIF value, duties & taxes, port handling charges and inland freight cost.

**For and on behalf of (Name of firm / entity)**

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>

 <b>PROJECTS &amp; DEVELOPMENT INDIA LTD</b>	PC183-PNCV-SEC-VI-203	0	
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**TENDER DOCUMENT  
(SECTION VI & VII)**

**PROJECT NAME: RENOVATION WORKS FOR BARRACK BUILDINGS  
ALONG WITH CONSTRUCTION OF NEW QUARTER  
GUARD BUILDING AND ALLIED WORKS**

**PLANT NAME: TALCHER FERTILIZER LIMITED, TALCHER, ODISHA –  
INDIA**

0	23.02.2021	FOR IMPLEMENTATION	SK	SS	UPT
P3	09.09.2020	FOR IMPLEMENTATION	SK	SS	UPT
P2	29.11.2019	FOR PRILIMINARY ISSUE	SK	SS	UPT
P1	29.03.2019	FOR REVIEW	SK	SS	UPT
<b>REV</b>	<b>DATE</b>	<b>PURPOSE</b>	<b>PREPARED</b>	<b>REVIEWED</b>	<b>APPROVED</b>

	<b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b>	PC183-PNCV-SECVI-203	0	
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3.0	TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS	PC-183-TS-0805
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	<b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b>	PC183-PNCV-SECVI-203	0	
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## 1. INTRODUCTION

Talcher Fertilizers Ltd. (TFL), herein after also referred to as “OWNER”, a joint venture company of four major Public Sector Units – M/s GAIL (India) Limited (GAIL), M/s Rastriya Chemicals & Fertilizers Ltd. (RCF), M/s Coal India Ltd. (CIL) and M/s Fertilizers Corporation of India Ltd. (FCIL) has decided to build a world class based fertilizer complex. The fertilizer complex is to be built at Talcher, Angul District, Odisha (India) and will consist of Coal Gasification Plant, Ammonia Plant and Urea Plant along with Offsite and Utility Plants.

Projects & Development India Ltd. (PDIL) being Project Management Consultant (PMC) of M/s TFL intends to engage services and invite quotations from eligible and competent contractors on Item rate basis for Renovation works for Barrack Buildings along with construction of New Quarter Guard Building, and allied works.

Renovation works and Construction works will include all civil works, electrical works and provision of EPABX (Electronic Private Automatic Branch Exchange) and LAN (Local Area Network) for all the buildings, interior & exterior development works, horticulture and landscaping, approach pathway/ paths/paver blocks roads, surface drainage system, boundary wall, gate, water supply and sewerage system, rain water harvesting etc including detail design, supply of materials, tools and tackles, equipment, machineries, construction supervision etc .

## 2. SITE INFORMATION

The proposed project is located within the premises of coal based Ammonia-Urea complex of FCI Limited, Talcher Unit.

Talcher Unit is located at Vikrampur in Angul district of Odisha on the Cuttack –Sambalpur National Highway NH-42. NH-42 is passing at about 8 km from the site. The nearest railway station is Talcher at about 7 km from the site. Nearest airport, Bhubaneswar is 150 km, 3 hours journey by road/ rail. Nearest port is Paradip, 200 km by rail/road.

## 3. GENERAL SPECIFICATIONS

- 3.1. The scope of work under this includes Supply of materials, Construction/ Renovation works, providing necessary engineering supervision through qualified and technical personnel, skilled and unskilled labor, etc. and mobilization of all relevant and adequate plants, tools and tackles, equipment, machineries, etc., to carry out all civil and structural works for successful completion of the proposed plant.
- 3.2. In the event of conflict between the requirements of two or more clauses of the specifications/ Documents, the more stringent requirement as per the interpretation of the Owner/ Consultant shall prevail.

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- 3.3. The Contractor shall inspect and examine the site and its surrounding and shall satisfy himself before submitting his bid as to the nature of the ground and subsoil, the form and nature of the site, the quantum and the nature of work and material necessary for successful completion of the works and the means of access to site and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect his Tender. Under no circumstances, extra payment consequent on any misunderstandings or otherwise on the part of the Contractor shall be allowed.
- 3.4. The Contractor shall have to take all safety precaution to protect all the existing equipment, structures, facilities and buildings etc. from damage. In case, any damage occurs due to the activities of the Contractor on account of negligence, ignorance, accidental or any other reasons whatsoever, the damage shall be made good by the Contractor at his own cost to the satisfaction of the Owner / Consultant. The Contractor shall have to take also all necessary safety measure, at his own cost, to avoid any harm/ injury to his workers and staff and facilities of the existing plant.
- 3.5. The work to be performed under the Scope of Work consists of providing all labor, materials except if indicated in Schedule of Rates, supervision, scaffolding, construction equipment, tools, tackles and plants, supplies, transportation, all incidental items though not indicated or specified, but reasonably implied or necessary for successful completion of the work including Contractor's supervision strictly in accordance with the "Good for Construction" Drawings to be supplied progressively by the Contractor and approved by the Owner/PMC and, "Technical Specifications" and "Schedule of Rates" of this Tender on Item Rate basis.
- 3.6. Sampling & testing of material & equipment shall be done as per relevant clauses of BIS & shall not be paid extra. The contractor shall preferably establish a laboratory at site for all relevant site tests as per BIS requirements.
- 3.7. The nature of work shall generally involve as per the following works:
- i. Dismantling and/or demolishing of existing plain cement concrete and reinforced cement concrete, brick masonry work below and above ground level, structural steel, floors, plastering, and any sort of roofing works including disposal of unserviceable materials to Municipal approved dumping ground or as directed by EIC.
  - ii. Earth work concerning micro grading, top soil removal, filling and/or mass excavation (if any), excavation for foundation, floor & pits etc.
  - iii. Dewatering, as required to carry out proper excavation work by bailing or pumping out water, which may accumulate in the excavation pit/working area from any cause/ source whatsoever
  - iv. Repair and renovation works of all civil, electrical, plumbing, sanitary, drainage works etc.



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- v. Excavation in trenches for foundations, back-filling around completed structures and plinth filling with available excavated/ imported selected good earth/sand, cohesive non-swelling soil and sand as specified. The above work shall have to be carried out both below and above ground level.
  - vi. Disposal of excavated surplus earth/ materials, malba, building rubbish etc
  - vii. Concreting including reinforcements and formwork,
  - viii. Fabrication and erection of structural steel/ miscellaneous steel, inserts, anchor bolts etc
  - ix. Construction of reinforced cement concrete columns, slabs, beams, trenches and drains with covers, drainage of building and surrounding periphery, concrete trenches for piping cables, staircase, brick masonry, damp proofing, anti-termite treatment, ventilation, concrete paving, pathways, any sort of water proofing/ water proof treatment works on roof,
  - x. Any sort of anticorrosive painting and/ or lining on PCC, trenches, etc. and erection of miscellaneous items and finishes such as plastering, whitewashing, painting, flooring,
  - xi. Providing steel/ aluminum/wooden doors, windows and ventilators, glass & glazing, gates, drains, rain water pipes etc.
  - xii. Construction of Toilets along with associated plumbing and sanitary fittings.
  - xiii. Construction of rain water harvesting system
  - xiv. The scope of work shall also include any other item of work required to complete the work in all respects as per the specifications, drawings and instructions of Engineering-charge whether specifically mentioned or not in the tender documents.
- 3.8. The scope of work also includes preparation of fabrication Drawings for structural steel works on the basis of the design drawings and Bar Bending Schedule for the reinforcements. Fabrication drawing and Bar bending Schedule shall be the sole Contractor's responsibility and to be verified at their end.
- 3.9. All the civil & structural works shall be carried out strictly in accordance with the "Technical Specifications, Preamble to schedule of rates and "Schedule of Rates enclosed with this document.

#### 4. DETAILED SCOPE OF CIVIL WORKS:

The complete civil and structural Steel works including detail design, supply of materials and construction/erection etc. as mentioned above and following sections consists of mainly but not limited to the following:

	<b>RENOVATION WORKS FOR</b>	PC183-PNCV-SECVI-203	0	
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The scope of works consists of mainly but not limited to the followings.

#### **4.1 Renovation works for existing Barracks buildings**

It is intended that after renovation, the existing barracks buildings shall accommodate approx.100 personnel. The Barracks buildings will comprise of six numbers of existing buildings as shown in the tender drawing attached as Annexure. Two buildings are double storied and remaining four buildings are single storey. (Layout attached as Annexure)

Boundary wall with entrance/exit gate (of length around 450 m and height 2.5-3.0 m including concertina barbed wire including straight as well as spirals of dia 600mm at 150 m spacing) is planned to be constructed around Barracks Complex.

Paver blocks or RCC pavement shall be provided wherever required inside the complex for pathways etc.

#### **4.2 Renovation works for existing four quarters of D-TYPE Bungalows and MCC room** (Layout attached as Annexure)

#### **4.3 Construction of Quarter Guard Building.** (Tentative layout attached as Annexure)

##### **4.3.1 Quarter Guard building and construction 4 no. Shops (barber, mochi, dry cleaning/ironing etc)**

The Quarter Guard building is specialized building having provisions of a RCC walled room. Other parts of the building will be standard RCC framed structure with brick work. The whole complex will be having three layers fencing (third layer having electrified/Power fencing) as per the norms of CISF.

Tentative Plan and layout has been attached as Annexure.

#### **4.4 Construction of foundation for two no. 2 MVA Transformer & its room having approx. size of 11 x 5.5 x 5.5(H) m**

#### **4.5 Construction of MCC rooms of approx. size (10 x 6) meters and (15 x 6) meters near Vikrampur Guest House and Barrack buildings**

#### **4.6 Construction of Rain Water harvesting system.**

In this system, rainwater falling on roofs of houses and other buildings is collected through a system PVC pipes etc and stored in tanks suitably located underground for recharging ground water aquifers by constructing recharge pits.

Recharge pits may be of any shape and size and are generally constructed 2 to 4 m wide and 5 to 8 m deep which are backfilled with boulders, gravels, and coarse sand in graded form boulders at the bottom, gravels in between and coarse sand at the top so that the silt content that will come with runoff will be deposited on the top of the coarse sand layer and can easily be removed.

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This description above is indicative to the bidders and design of recharge pits may change as per requirement and IS Code 15797.

**4.7 Engagement of the services of Architect Planner for renovation of existing buildings and the detail design for construction of new buildings as per the scope, tentative layout plans, TS and SOR.**

Broad responsibilities of Architect planner are described below:

- a) Submission of master planning with drawings/sketches showing all architectural features and finishing items such as doors, windows, cupboards, grills, gates, electrical wiring and fixtures, making provisions for LAN and EPABX system, plumbing, sanitary fixtures/details, painting schedule, false ceiling/wall paneling, etc. for approval from PMC/Owner prior to initiating the work.
- b) Submission of Detail Design, analysis in STAAD Pro and development of Construction drawings of the above buildings, jobs etc by Qualified & experienced structural Engineers for review and approval by PMC/Owner.
- c) Submission of all construction drawings (in AutoCad as well as PDF) along with calculation report (in excel, word document and STAAD file) for review and approval by PMC/Owner.
- d) Incorporation of all comments provided by the Owner/PMC and getting approval.
- e) Quarter Guard Building shall be designed for one additional story for future expansion.
- f) Obtaining statutory approvals if required.
- g) Implementation plan for Horticulture around the building
- h) Address issues/inquiries related to space utilization, cost and finishes etc
- i) Update existing features of old buildings with respect to latest architectural trends.
- j) Any other requirement related to the architectural need of buildings/outdoor etc.

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- k) Other allied jobs for successful completion of work.

## 5. DETAIL DESCRIPTION OF CIVIL WORKS

### 5.1 Demolition and dismantling works:

- a. Demolishing plain cement concrete under floor
- b. Dismantling old plaster or skirting, raking out joints and cleaning the surface for plaster
- c. Dismantling of existing tiles in floor and wall laid in cement mortar
- d. Dismantling of existing G.I. water supply pipes with all fittings / fixtures / clamps
- e. Dismantling of C.I. pipes (waste water & soil water) with fittings/fixtures and clamps including traps
- f. Dismantling C.I. or asbestos rain water pipe with fittings and clamps
- g. Dismantling doors, windows and clerestory windows (steel or wood) shutter including chowkhats, architraves, holdfasts etc.
- h. Demolishing brick work manually/ by mechanical means
- i. Demolishing water proofing in terracing
- j. Dismantling steel work manually/ by mechanical means in built up sections without dismembering
- k. Dismantling aluminum/ Gypsum partitions, doors, windows, fixed glazing and false ceiling

### 5.2 Dewatering of water logged areas if required

### 5.3 Earth work in excavations

- a. Excavating trenches of required width for pipes, cables,
- b. Earth work in excavation for foundations, drains etc

### 5.4 Backfilling with available excavated good earth or from outside sources

### 5.5 Plain Cement Concrete & RCC works

### 5.6 Constructions of RCC works

### 5.7 Supplying, providing and laying Steel reinforcement (Hot rolled deformed TMT bars) for R.C.C. work

### 5.8 Construction of Brick/masonry works

### 5.9 All major finishing items such as painting, replacement of fixture & fittings, etc.

### 5.10 12 mm thick cement plaster 1:4 (1 cement: 4 fine sand)

### 5.11 6mm thick cement plaster to ceiling of mix 1:3 (1cement: 3 fine sand).

### 5.12 Inner and outer Walls painting with Plastic Emulsion Paint of approved brand and manufacture to give an even shade :

### 5.13 Providing and applying plaster of Paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete

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- 5.14 Melamine polishing on wood work on old and new work (one or more coat)
- 5.15 Repairs to plaster in wall ( inner and outer)
- 5.16 Renewing glass panes, with putty and nails wherever necessary including racking out the old putty
- 5.17 Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws
- 5.18 Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc
- 5.19 Providing and fixing special quality bright finished brass cupboard or ward robe locks with four levers of approved quality including necessary screws
- 5.20 Providing and fixing bright finished brass handles with screws
- 5.21 Taking out existing wooden door shutter, repair by cutting, painting etc. and refixing of repaired door shutters to existing door frames, including replacement of hinges with screws etc. as required
- 5.22 Providing and fixing brass curtain rods of wall thickness 1.25 mm with two brass brackets fixed with brass screws and wooden plugs etc. wherever necessary
- 5.23 Providing and laying flooring/Tiles of standard quality
- 5.24 Vitrified tile flooring inside whole building
- 5.25 Kota Stone flooring on the front corridor
- 5.26 1st quality ceramic glazed tiles inside kitchen and washroom.
- 5.27 False ceiling and wall paneling wherever required
- 5.28 Sanitary Installations
- 5.29 Replacement of all water supply and drainage pipe including all fittings and construction of Septic tank with sock pit for whole building
- 5.30 Replacement of all fixture and fittings, floor and wall tiles in toilets
- 5.31 Internal & external Termite Treatment of all the Barracks buildings.
- 5.32 Providing wooden doors, windows and ventilators as described in SOR
- 5.33 Water Proofing Treatment in terrace and toilets
- 5.34 Provide Paving and paver blocks at required Areas.
- 5.35 Miscellaneous works like:
- 5.36 Treatment of existing masonry:
- 5.37 Carriage of material/building rubbish by mechanical transport including loading, unloading, and stacking with TFL plant premises
- 5.38 Structural steel work
- 5.39 Providing corrugated G.S. sheet roofing
- 5.40 Providing and fixing in wall lining



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- 5.41** Providing and fixing in position false ceiling and wall paneling for required area as per directions of EIC.
- 5.42** Woodwork with all necessary fittings in wardrobes, doors and kitchen/mess etc
- 5.43** Replacement of all water supply & drainage pipes
- 5.44** Providing roof top water tank
- 5.45** Installations of all water pipeline from tank to all the bath room/Toilets, basins and drinking water supply provision to all the barracks buildings.
- 5.46** Construction of foundation(two no.) for 2 MVA Transformer& its room having approx. size of 11 x 5.5 x 5.5(H) m,
- 5.47** Internal roads-pathways/pavement made up of paver blocks (5 m wide & approx. 500 m length)
- 5.48** Construction of peripheral drains and septic tanks/soak pit
- 5.49** Boundary wall and Fencing with Entrance Gate,
- 5.50** Horticulture, tree/shrub cutting, land development, etc.
- 5.51** Detail design works shall include submission of following :
- Submission of Detail Design, analysis in STAAD Pro and development of Construction drawings of the above buildings, jobs etc by Qualified & experienced structural Engineers for review and approval by PMC/Owner.
  - Submission of all construction drawings (in AutoCad as well as PDF) along with calculation (in excel and STAAD file) for review and approval by PMC/Owner.
  - Incorporation of all comments provided by the Owner/PMC for approval.
  - Buildings shall be designed for one additional story for future expansion.
  - Supply of all required materials and construction of the Quarter Guard Complex including electrical work as a whole with all necessary fixtures.
  - All equipment and machinery required for the construction are required to be arranged by the vendor.
  - Cutting and trimming of trees as required.
  - Obtaining statutory approvals if required.
  - Landscaping and horticulture works
  - Other allied jobs for successful completion of work.

## **6.0 SCOPE OF INSTRUMENTATION WORKS (EPABX AND LAN NETWORKING)**

Broad Scope of work for EPABX (Electronic Private Automatic Branch Exchange) and LAN (Local Area Network) is as follows but not limited to the following:

- Supply of FRP cable trays, PVC conduit pipes and PVC socket boxes.

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- b) Installation/erection of Cable trays inside the false ceiling using suitable stud nut and fitting accessories
- c) Installation / laying of (concealed) of PVC conduit Pipes (from 100mm to 25mm sizes) to different Socket Boxes in each room (location of Each PVC terminal socket box shall be as per the requirement of Engineer in charge).
- d) Fabrication of supports, Installation of the same on supports / wall / ground by welding / clamping / grouting as per requirement. Any other material if required shall be in contractor's scope.
- e) Grouting material (cement, concrete, sand etc.) / welding material / clamping material/Junctionbox, reducer/expander coupling etc shall be in contractor's scope no extra claim is allowable for these items. Cutting and modification of existing support if required. Necessary skilled & unskilled manpower, supervision, tools & tackles, transporting vehicle, consumables will be in contractor's scope. The job shall be carried out as per specification and direction of Engineer-in-charge.
- f) Bidder to note that whole PVC conduit piping shall be concealed inside the wall, suitable location of the PVC socket box shall be identified nearer to the desk for both Telephone as well as LAN.
- g) Bidder to note that FRP cable Trays shall be laid inside the false ceiling, PVC conduit pipe from individual rooms shall be entered to Tray inside the false ceiling only.
- h) Bidder to note that separate LAN & Cable trays shall be laid with separate conduit pipe branches to EAC room, there must not be any common conduit pipe/tray for LAN or EPABX.
- i) Server Rooms & EPABX rooms are marked in the Tender drawings. Bidder to note that the activities/items listed in SOR are for bidding purpose only, any mandatory extra work/activity/items required to complete the job satisfactorily shall be considered by the bidder and no extra claim will be allowed.

## 7.0 SCOPE OF ELECTRICAL WORKS

In addition to the electrical scope as mentioned in above clauses, kindly refer **Electrical Technical Specifications** attached with this Tender, for detailed scope of work for electrical works.

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## 8.0 MATERIAL OF CONSTRUCTIONS

- i. CONCRETE – Design mix M7.5, M10, M15, M20, M25 grade design mix concrete as specified in SOR.
- ii. CEMENT: - OPC 43 grade / OPC 53 grade cement shall be used in all works for foundations, Sub-structure & Super-structure.
- iii. FOR REINFORCEMENT STEEL –

The reinforcement shall be of hot rolled, cold twisted, weldable high yield deformed (Fe500D) rebar having Characteristic yield strength 500N/mm<sup>2</sup>, in accordance with table I of IS:1786. Binding wire used for tying the reinforcement shall conform to IS: 280 unless specifically mentioned herein or in engineering drawings.

All materials shall be procured in accordance with the SOR items or **Vendor list** attached with this Tender. The Contractor shall get the material sample approved as per the approved Vendor list before procurement. In case any item is not listed in the Vendor list or if the listed vendor is not available for particular items, then the Contractor shall take approval of Owner/PMC for that item before initializing procurement.

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## 1.0 GENERAL

- 1.1 Specifications of materials and workmanship shall be as described in the Central Public Works Department Specifications Vol. I to VI (latest) include latest amendments, unless otherwise specified. These CPWD Specifications shall be deemed to form part of this contract. The **CONTRACTOR** shall procure and maintain copies of the latest CPWD Specifications at site for reference.
- 1.2 These technical Specifications shall be supplementary to the specifications contained in the CPWD specifications, wherever at variance, these Particular Specifications shall take precedence over the provisions in the CPWD Specifications.
- 1.3 Site clearing - Site clearing means the cutting of trees, bushes, shrubs etc. and the pulling out of roots and stumps to effect a general cleaning of the site area. All these materials shall be removed from the site area at the **CONTRACTOR's** expenses and responsibility and shall be disposed off as directed by **Engineer-in-Charge**. Trees, bushes, roots, stumps and other materials shall not be disposed off by burning within the site boundaries unless the **Engineer-in-Charge** permits.

## 2.0 REFERENCE CODES & STANDARDS

- 2.1 Wherever reference of BIS Specifications/ or BIS Codes of Practice are made in the Specifications/ Schedule of Rates or Preambles, reference shall be to the latest edition of BIS (Bureau of Indian Standards).

BIS - 109	Ready mixed paint, brushing, priming, plaster to Indian Standard colour No. 631 & 361 white and off-white.
BIS - 248	Sodium bisulphite, technical (sodium metabisulphite).
BIS - 383	Coarse & Fine aggregates from natural sources for concrete.
BIS - 419	Putty, for use on window frames.
BIS - 427	Distemper, dry, colour as required.
BIS - 432	Mild Steel & Medium tensile steel bars.
BIS - 456	Code of Practice for Plain and Reinforced Concrete.
BIS - 515	Natural and Manufactured aggregates for use in mass concrete
BIS - 730	Hook bolts for corrugated sheet roofing
BIS - 800	Code of Practice for General Construction in Steel
BIS - 814	Covered electrodes for manual metal arc welding of carbon and carbon manganese steel.
BIS - 815	Classification coding of covered electrodes for metal arc welding of structural steels.
BIS - 816	Metal Arc Welding for General Construction of Mild Steel.



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BIS - 817	Code of practice for training and testing of metal arc welders.
BIS - 883	Code of practice for structural timber in building.
BIS - 1038	Steel doors, windows and ventilators
BIS - 1079	Hot rolled carbon steel sheets & strips
BIS - 1081	Code of practice for fixing and glazing of metal (steel & aluminium) doors, windows and ventilators.
BIS - 1161	Steel tubes for structural purposes.
BIS - 1285	Wrought aluminium & aluminium alloy extruded round tube and hollow sections
BIS - 1361	Steel windows for Industrial Buildings.
BIS - 1363	Hexagon head bolts, screws & nuts of product grade C : Part - I Hexagon head bolts ( size range M5 to M64)
BIS - 1367	Technical supply conditions for threaded steel fasteners
BIS - 1566	Hard - Drawn steel wire fabric for concrete reinforcement.
BIS - 1786	High strength deformed steel bars & wires for concrete reinforcement.
BIS - 2062	Steel for general structural purposes.
BIS - 2116	Sand for masonry mortars.
BIS - 2212	Code of practice for brickwork.
BIS - 2386	Methods of test for aggregates.
BIS - 2553	Safety glass: Part-I General purpose.
BIS - 2835	Flat transparent sheet glass
BIS - 3007	Code of practice for laying of asbestos cement sheets.
BIS - 4021	Timber door, window and ventilator frames
BIS - 4923	Hollow Steel sections for structural use.
BIS - 4925	Concrete batching and mixing plant.
BIS - 5410	Cement Paint
BIS - 6477	Dimensions for wrought aluminium & aluminium alloys, extruded hollow sections.
BIS - 7318	Fusion welding of steel.
BIS - 10262	Recommended guidelines for concrete mix design
IS - 14871	Products in Fibre Reinforced Cement – Long Corrugated or Asymmetrical Section Sheets and Fittings for Roofing and Cladding

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- Specification

### 3.0 EARTHWORK

#### 3.1 EXCAVATION

- 3.1.1 Excavation shall be carried out in soil of any nature and consistency, in the presence of water or in the dry, met on the site to the lines, levels and contours shown on the detailed drawings and **CONTRACTOR** shall remove all excavated materials to soil heaps on site or transport for use in filling on the site or stack them for reuse as directed by the **Engineer-in-Charge**.
- 3.1.2 Surface dressing shall be carried out on the entire area occupied by the buildings including plinth protection as directed without any extra cost. The depths of excavation shown on the drawings are the depths after surface dressing.
- 3.1.3 The site around all buildings and structures to a width of 3 metres beyond the edge of plinth protection, ramps, steps, etc. shall be dressed and sloped away from the buildings.
- 3.1.4 Black cotton soil, and other expansive or unsuitable soils excavated shall not be used for filling in foundations, and plinths of buildings or in other structures including manholes, septic tanks etc. and shall be disposed off within the contract area marked on the drawings, as directed, leveled and neatly dressed.
- 3.1.5 In case of trenches exceeding 2 metres depth or where soil is soft or slushy, the sides of trenches shall be protected by timbering and shoring. The **CONTRACTOR** shall be responsible to take all necessary steps to prevent the sides of trenches from caving in or collapsing. The extent and type of timbering and shoring shall be as directed by the **Engineer-in-Charge**.
- 3.1.6 Where the excavation is to be carried out below the foundation level of adjacent structure, the precautions to be taken such as under pinning, shoring and strutting etc. shall be determined by **Engineer-in-Charge**. No excavation shall be done unless such precautionary measures are carried out as per directions of **Engineer-in-Charge**.
- 3.1.7 Specification for Earth work shall also apply to excavation in rock in general. The excavation in rock shall be done such that extra excavation beyond the required width and depth as shown in drawings is not made. If the excavation done in depth greater than required / ordered. The **CONTRACTOR** shall fill the extra excavation with concrete of mix 1:5:10 as the foundation concrete at his own cost.
- 3.1.8 **CONTRACTOR** shall make all necessary arrangements for dewatering / defiling as required to carry out proper excavation work by bailing or pumping out water, which may accumulate in the excavation pit from any cause/ source whatsoever.
- 3.1.9 **CONTRACTOR** shall provide suitable draining arrangements at his own cost to prevent surface water entering the foundation pits from any source.



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- 3.1.10 The **CONTRACTOR** is forbidden to commence the construction of structures or to carry out concreting before **Engineer-in-Charge** has inspected, accepted and permitted the excavation bottom.
- 3.1.11 Excavation in disintegrated rock means rock or Boulders including brickbats which may be quarried or split with crow bars. This will also include laterite and hard conglomerate.
- 3.1.12 Excavations in hard rock - meant excavation made in hard rock to be done manually, or by blasting using only explosives and / or pneumatic hammers. In case of blasting, control blasting should be adopted depending on site conditions. For using explosives **CONTRACTOR** shall follow all provisions of Indian Explosives Act / Rules 1983, corrected / revised up to date.
- 3.1.13 In case of hard rock excavation to be carried out using explosives the, **CONTRACTOR** shall obtain the written approval in advance.
- 3.1.14 The measurements for excavations shall be restricted and limited to minimum excavation line as per drawing for payment purposes.
- 3.1.15 Adequate protective measures shall be taken to see that the excavation does not affect or damage adjoining structures. The **CONTRACTOR** shall take all measures required for ensuring stability of the excavation and safety of property and people in the vicinity. The **CONTRACTOR** shall erect and maintain during progress of work, temporary fences around dangerous excavations at no extra cost.
- 3.1.16 Excavation in ordinary soil means excavation in ordinary hard soil including stiff heavy clay, hard shale, or compact murum, or any material, which can be removed by the ordinary application of spades, shovels, picks and pick axes. This shall also include removal of isolated boulders each having a volume not more than 0.50m<sup>3</sup>.
- 3.1.17 Excavation in soft rock includes limestone, sandstone, laterite, hard conglomerates, etc. or other rock which can be quarried or split with crowbars or wedges. This shall also include excavation of tarred pavements, masonry work and rock boulders each having a volume of not more than 0.25m<sup>3</sup>.
- 3.1.18 Excavation in hard rock includes any rock bound in ledges or masses in its original form or cement concrete for which in the opinion of the **Engineer-in-Charge**, requires the use of compressed air, equipment, sledge hammer and blasting or non-explosive materials viz. Acconex manufactured by A.C.C. Ltd. Specifications and instructions for use shall be as per manufacturer.
- 3.1.19 In case of any difficulty concerning the interpretation of type of soil as mentioned above, the Engineer-in-Charge shall decide whether the excavation in a particular material is in ordinary soil, soft rock or hard rock and his decision in this matter shall be final and binding on the **CONTRACTOR** and without appeal.

**3.2 FILLING**



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- 3.2.1 Back filling of excavations in trenches, foundations and elsewhere shall consist of one of the following materials approved by **Engineer-in-Charge**.
- Soil
  - Sand
  - Moorum
  - Hard-core
  - Stone/gravel
- All back filling material shall be approved by the **Engineer-in-Charge**.
- 3.2.2 Soil filling - Soil material shall be free from rubbish, roots, hard lumps and any other foreign organic material. Filling shall be done in regular horizontal layers each not exceeding 20 Cm. depth.
- 3.2.3 Back filling around completed foundations, structures, trenches and in plinth shall be done to the lines and levels shown on the drawings.
- 3.2.4 Back filling around pipes in the trench shall be done after hydro testing is done.
- 3.2.5 Back filling around liquid retaining structures shall be done only after leakage testing is completed and approval of **Engineer-in-Charge** is obtained.
- 3.2.6 Sand used for filling under foundation concrete, around foundation and in plinth etc. shall be fine/ coarse, strong, clean, free from dust, organic and deleterious matter. The sand filling under foundation shall be rammed with Mech. compactor. Sand material shall be approved by **Engineer-in-Charge**.
- 3.2.7 Moorum for filling, where ordered, shall be obtained from approved pits and quarries which contain siliceous material and natural mixture of clay. Moorum shall not contain any admixture of ordinary earth. Size of moorum shall vary from dust to 10 mm.
- 3.2.8 Hard-core shall be of broken stone of 90 mm to 10 mm size suitable for providing a dense and compact sub grade. Stones shall be sound, free from flakes, dust and other impurities. Hard core filling shall be spread and leveled in layers, 15 cm thick, watered and well compacted with ramming or with mechanical / hand compacts including hand packing wherever required.
- 3.2.9 If any selected fill material is required to be borrowed, **CONTRACTOR** shall make arrangements and procure such material from outside borrow pits. The material of source shall be subject to prior approval of **Engineer-in-Charge**. **CONTRACTOR** shall make necessary access roads to borrow areas and maintain the same, if such access roads do not exist, at no extra cost.
- 3.2.10 Plinth filling shall be carried out with approved material as described earlier, in layers not exceeding 150mm, watered and compacted with mechanical compaction machines. **Engineer-in-Charge** may however permit manual compaction by hand





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tampers in case he is satisfied that mechanical compaction is not possible. When filling reaches the finished level, the surface shall be flooded with water, unless otherwise directed, for at least 24 hours, allowed to dry and then the surface again compacted as specified above to avoid settlements at later stage. The finished level of the filling shall be trimmed to the level specified. Compacted surface shall have at least 95% of laboratory maximum dry density. A minimum of one test per 500 sq. meters of compacted area shall be done.

3.2.11 Whenever the fill material (earth or soil) is purchased, **CONTRACTOR** shall get the approval of Engineer-in-Charge. The CONTRACTOR shall arrange to determine the following properties of the soil and shall get the approval of **Engineer-in-Charge**.

Clay content : 15% to 20%

Laboratory dry density : Not less than 1600 kg/m<sup>3</sup>

Plasticity Index : Not more than 20.

3.2.12 The fill shall be compacted using a vibrating compactor of not less than 1.5 tonne. The fill shall be thoroughly compacted in layers as directed but not more than 200 mm thick. Adequate water shall be used for compaction and the density after compaction shall be not less than maximum dry density obtained in test of BIS: 2720 Part-8. Compacted surface shall have at least 95% of laboratory maximum dry density. A minimum of one test per 500 sq. meters of compacted area shall be done.

3.2.13 The Gravel fill shall be non plastic granular material, well graded, strong, with maximum particle size of 50 mm, with not more than 15% passing a 4.75 mm BIS sieve, free of all debris, vegetable matter and chemical impurities.

3.2.14 All clods, lumps etc. shall be broken before compaction.

3.2.15 In case of grading/banking successive layers of filling shall not be placed, until the layer below has been thoroughly compacted to satisfy the requirements laid down in this specification.

Prior to rolling, the moisture content of material shall be brought to within +/-2% of the optimum moisture content as described in BIS 2720 Part-7. The moisture content shall preferably be on the wet side for potentially expansive soil.

After adjusting the moisture content as described, the layers shall be thoroughly compacted by means approved by Engineer-in-Charge, till the specified maximum laboratory dry density is obtained.

General, fill shall be placed in layers not exceeding 300 mm thickness and shall be thoroughly compacted to achieve a compaction of at least 90% of laboratory maximum dry density up to a depth of 600 mm below finished grade. Final fill of 600 mm thickness shall consist of preferably natural material in, as dug condition except that stones larger than 100 mm shall be removed. It shall be placed in layers not exceeding 150 mm thickness and compacted to achieve of at least 95%



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of laboratory maximum dry density. Each layer shall be tested in field for density and accepted by Engineer-in-Charge, subject to achieving the required density before laying the next layer. A minimum of one test per 500 sq meters for each layer shall be conducted.

If the layer fails to meet the required density, it shall be reworked or the material shall be replaced and method of construction altered as directed by Engineer-in-Charge to obtain the required density.

The filling shall be finished in conformity with the alignment, levels, cross-section and dimensions as shown in the drawing.

Extra material shall be removed and disposed off as directed by the **Engineer-in-Charge**.

#### **4.0 PLAIN AND REINFORCED CONCRETE WORK**

This specifications deals with cement concrete, plain or reinforced, for general use, and covers the requirements for concrete materials, their storage, grading, mix design, strength & quality requirements, pouring at all levels, reinforcements, protection, curing, form work, finishing, painting, admixtures, inserts and other miscellaneous works.

#### **4.1 MATERIALS**

4.1.1 Cement: Any of the following cements may be used as required.

BIS - 269 Ordinary Portland cement, 33 grade

BIS - 8041 Rapid hardening Portland cement

BIS - 455 Portland slag cement

BIS - 8112 43 Grade ordinary Portland cement

BIS - 12330 Sulphate resistant ordinary Portland cement

BIS - 12269 53 Grade ordinary port land cement

BIS - 6909 Specifications for super Sulphate cement

4.1.2 Water: Water used for mixing and curing concrete and mortar shall conform to the requirements as laid down in BIS: 456. Sea water shall not be used for concrete work.

4.1.3 Aggregates: Coarse and fine aggregates for cement concrete plain and reinforced shall conform to the requirements of BIS 383 and / or BIS 515. Before using, the aggregates shall be tested as per BIS: 2386.

Coarse aggregate: Coarse aggregate for all cement concrete work shall be broken or crushed hard stone, black trap stone obtained from approved Quarries or gravel.

Sand: Fine aggregate for concrete work shall be coarse sand from approved sources. Grading of coarse sand shall be within grading zones I, II or III laid down in



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BIS: 383, table 4. If required the aggregates (both fine and coarse) shall have to be thoroughly washed and graded as per direction of **Engineer-in-Charge**.

#### 4.2 MIXING

All cement concrete plain or reinforced shall be machine mixed. Mixing by hand may be employed where quantity of concrete involved is small, with the specific prior permission of the **Engineer-in-Charge**. 10% extra cement shall be added in case of hand mixing as stipulated in BIS-456.

For large and medium project sites the concrete shall be sourced from ready- mixed concrete plants or from on site or off site batching and mixing plants (BIS 4926)

#### 4.3 WATER CEMENT RATIO

Once a mix, including its water-cement ratio, has been determined and specified for use by the **Engineer-in-Charge**, that water cement ratio shall be maintained.

#### 4.4 LAYING

Concreting shall be commenced only after the **Engineer-in-Charge** has inspected and passed the sub-base / base or the centering, shuttering and reinforcement. Concrete in slab beams, columns, footings etc. shall be laid gently in layers not exceeding 15 cm and shall be properly consolidated by means of approved mechanical vibrators.

#### 4.5 CURING

a. After the concrete has begun to harden, it shall be protected with moist gunny bags, sand or any other material approved by the **Engineer-in-Charge** against quick drying. After 24 hours of laying concrete, the surface shall be cured by flooding with water or by covering with wet absorbent materials for 7 days as per the direction of **Engineer-in-Charge**.

b. Approved curing compounds may be used in lieu of moist curing with the permission of the **Engineer-in-Charge**. Such compounds shall be applied to all exposed surfaces of the concrete as soon as possible after the concrete has set. No extra payment shall be made for the same.

#### 4.6 GRADES OF CONCRETE

4.6.1 Grades of cement concrete shall be as given below:

	Grade Specified	Characteristic compressive strength at 28 days ( N/mm <sup>2</sup> )
i.	M 7.5	7.5 ( 75 Kg/cm <sup>2</sup> )
ii.	M 10	10 ( 100 Kg/cm <sup>2</sup> )

iii.	M 15	15 (150 Kg/cm <sup>2</sup> )
iv.	M 20	20 (200 Kg/cm <sup>2</sup> )
v.	M 25	25 (250 Kg/cm <sup>2</sup> )
vi.	M 30	30 (300 Kg/cm <sup>2</sup> )

4.6.2 Grades lower than M 20 shall not be used in reinforced concrete.

4.6.3 M 7.5 grades of concrete may be used for lean concrete bases & M 10 for simple foundation of masonry walls.

4.6.4 A sieve analysis test of aggregates shall be carried out as and when the source of supply is changed without extra charge not withstanding the mandatory test required to be carried out as per CPWD specification.

4.6.5 All test in support of mix design shall be maintained as a part of records of the contract. Test cubes for mix design shall be prepared by the CONTRACTOR under his own arrangements and at his costs, but under the supervision of the **Engineer-in-Charge**.

#### 4.7 **NOMINAL MIX CONCRETE**

4.7.1 All concrete work (P.C.C / R.C.C.) shall be with nominal mix concrete unless specified otherwise. The proportions of materials used for concrete of grades M5, M 7.5, M10, M15 and M20 shall be as per following Table.

#### **Proportions for Nominal Mix of Concrete**

Grade of Concrete	Total Quantity of Dry Aggregate by Mass per 50 Kg of Cement (as sum of Fine and coarse aggregates), in Kg, Max.	Proportion of Fine Aggregate to coarse aggregate ( by Mass)	Quantity of water per 50 Kg of cement Maximum in liters.
M 5	800	Generally 1:2 subject to an upper limit of 1 : 1.5 and a lower limit of 1 : 2.5	60
M 7.5	625	-do-	45
M 10	480	-do-	34
M 15	330	-do-	32
M 20	250	-do-	30

Notes:



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1. The proportions of the fine aggregates should be adjusted from upper limit to lower limit progressively as the grading of the fine aggregates become finer and the maximum size of coarse aggregate becomes larger. Graded coarse aggregate as per BIS: 383 may be used.
  2. This Table envisages batching by weight. Volume batching when done, the nominal mixes would roughly be 1:3:6, 1:2:4 and 1:1.5:3 for M10, M15 and M20 respectively.
  3. For under water concreting the quantity of coarse aggregate, either by volume or mass, shall be between 1.5 to 2 times that of fine aggregates.
- 4.7.2 The cement content of the mix specified for any nominal mix shall be proportionately increased if the quantity of water in a mix has to be increased to overcome the difficulties of placement and compaction, so that water - cement ratio is not exceeded. In case of vibrated concrete, the limits specified, above may suitably be reduced to avoid segregation.
- 4.7.3 If the nominal mix concrete made in accordance with the proportion given for a particular grade does not yield the specified strength, such concrete shall be classified as belonging to appropriate lower grade. However, if the strength results of test are higher than those specified for the grade in the nominal mix of concrete it shall not be placed in a higher grade.
- 4.8 **DESIGN MIX CONCRETE**
- 4.8.1 Design mix shall be allowed for major works where it is contemplated to be used by installing weigh batch mixing plant as per BIS 4925. At the time of tendering, the **CONTRACTOR**, after taking into account the type of aggregates, plant and method of laying he intends to use, shall allow in his tender for the design mix i.e., aggregate/cement and water/cement ratios which he considers will achieve the strength requirements specified, and workability for concrete to be properly finished.
- 4.8.2 Before commencement of concreting, **CONTRACTOR** shall carry out preliminary tests for design mix on trial mixes proposed by him in design of mix to satisfy the **Engineer-in-Charge** that the characteristic strength is obtained. In this regard, **CONTRACTOR** may consult govt. approved/reputed institute to get design mix done as per BIS 10262 at his own cost. The concrete mix to be actually used shall be approved by the **Engineer-in-Charge**.
- 4.8.3 Notwithstanding the above, the following shall be the maximum combined weight of coarse and fine aggregate per 50 kg of cement.

	<u>Grade of Concrete</u>	<u>Maximum weight of fine &amp; coarse aggregates together per 50 kg of cement (for nominal mix only)</u>
i.	M - 10	480 kg
ii.	M - 15	350 kg



iii.	M - 20	250 kg
------	--------	--------

4.8.4 The workability of concrete produced shall be adequate, so that the concrete can be properly placed and compacted. The slump shall be as per BIS 456.

4.8.5 The minimum consumption of the cement irrespective of design mix shall not be less than the following:

M 7.5 (1:4:8)	170 kg/cu m
M 10 (1:3:6)	220 kg/cu m
M 15	300 kg/cu m
M 20	350 kg/cu m
M 25	400 kg/cu m

#### 4.9 TESTING OF CONCRETE

4.9.1 Testing of concrete, sampling and acceptance criteria shall be in accordance with BIS 456.

4.9.2 A slump test shall be taken at each mixer at least once in every fifty batches mixed. Any batch for which a slump test is being made shall not be transferred to the place of laying until the slump test has been completed. Any batch which gives a slump in excess of that described at the time of preliminary tests shall be rejected and removed from the site.

4.9.3 At least six cubes shall be taken for every 30 cu. metres of concrete or part thereof deposited in the work on any day. Three cubes shall be tested for 28 days strength.

4.9.4 If a test for particular work does not meet the specified requirements, the **Engineer-in-Charge**, in his absolute discretion may accept the work at a correspondingly reduced rate provided the average strength at 28 days is not less than 85% of the specified strength.

4.9.5 If the results are poorer than 85% of the specified strength, the **Engineer-in-Charge** may order further testing of any kind as may be deemed necessary in his opinion, including load tests. The load tests shall be carried on the portion of the structure involving concrete represented by the unsatisfactory works test and such other adjoining elements of a building as the **Engineer-in-Charge** may decide. If the results of the load tests are not satisfactory, the CONTRACTOR shall at his own cost undertake remedial measures including dismantling and reconstruction according to the directions and to the satisfaction of the **Engineer-in-Charge**. If the load test is successful, the **Engineer-in-Charge** may exercise his judgment before accepting or rejecting the work and shall still have the power to apply a reduction in rate as herein-stated before, in case the work in question is accepted.

#### 4.10 PROPORTIONING



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Mixes of cement concrete shall be as ordered. Where the concrete is specified by grade, it shall be prepared by mixing cement, sand and coarse aggregate by weight as per mix design. In case the concrete is specified as volumetric mix, then dry volume batching shall be done, making proper allowances for dampness in aggregates and bulking in sand. Equivalent volume batching for concrete specified by grade may however be allowed by the **Engineer-in-Charge** at his discretion.

#### 4.11 PRE CAST CONCRETE

The specifications for pre cast concrete will be similar as for the cast in situ concrete. All pre cast work shall be carried out in a yard made for the purpose. This yard shall be dry, properly leveled and having a hard and even surface. If the ground is to be used as a soft former of the units, shall be paved with concrete or masonry and provided with a layer of plaster (1:2 proportion) with smooth neat cement finish or a layer of MS sheeting. The casting shall be over suitable vibrating tables or by using form vibrators as per directions of **Engineer-in-Charge**.

The yard, lifting equipment, curing tank, finished material storage space etc. shall be designed such that the units are not lifted from the mould before 7 (seven) days of curing and can be removed for erection after 28 (Twenty Eight) days of curing. The moulds shall preferably be of steel or of timber lined with G.I. sheet metal. The yard shall preferably be fenced.

Lifting hooks, wherever necessary or as directed by **Engineer-in-Charge** shall be embedded in correct position of the units to facilitate erection, even though they may not be shown on the drgs. and shall be burnt off and finished after erection.

Pre cast concrete units, when ready shall be transported to site by suitable means approved by **Engineer-in-Charge**. Care shall be taken to ensure that no damage occurs during transportation. All adjustments, leveling and plumbing shall be done as per the instructions of the **Engineer-in-Charge**. The CONTRACTOR shall render all help with instruments, materials and staff to the **Engineer-in-Charge** for checking the proper erection of the pre cast units.

After erection and alignment the joints shall be filled with grout or concrete as directed by **Engineer-in-Charge**. If shuttering has to be used for supporting the pre cast unit they shall not be removed until the joints has attained sufficient strength and in no case before 14 (fourteen) days. The joint between pre cast roof planks shall be pointed with 1:2 (1 cement : 2 sand) mortar where called for in the drgs.

#### 4.12 PROTECTION OF CONCRETE

All concrete shall be protected from damage by rain or by workmen, equipment, overload or any other causes. All edges, corners and projections of concrete members likely to be damaged, shall be protected by means of wooden cover fillets.

#### 4.13 CONSTRUCTION JOINTS

Construction joints shall be made only where shown on the drawings or as approved by the **Engineer-in-Charge**. The procedure given in clause 13.4 of BIS: 456 shall be followed for general guidance.



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#### 4.14 **SEPARATION JOINT**

Separation Joint shall be obtained by using an approved alkathene sheet struck on the surface against which concrete shall be placed. Adequate care should be taken to cause no damage to the sheet.

#### 4.15 **DAMP PROOF COURSES**

Damp proof course shall consist of cement concrete of specified proportions and thickness. Surface of brick or stone masonry shall be leveled and prepared before laying the cement concrete.

#### 4.16 **SAMPLING OF CONCRETE**

Sampling & strength Test of concrete, Acceptance criteria and Inspection & Testing of Structure: This shall be as per the requirements laid down in clause Nos: 14, 15 & 16 of BIS: 456.

### 5.0 **STEEL REINFORCEMENT**

5.1 Steel reinforcement shall comprise

- i. Mild steel bars conforming to BIS : 432 Part-I.
- ii. Cold twisted bars conforming to BIS: 1786
- iii. CRS bars
- iv. TMT bars
- v. Hard drawn steel wire fabric conforming to BIS: 1566

5.2 All joints in reinforcement shall be lapped adequately to develop the full strength of the reinforcement as per provision of BIS: 456 or as per instruction of **Engineer-in-Charge**.

As and when required, welded laps shall be provided as specified by **Engineer-in-Charge**. Following procedure shall be followed for welding of Tor steel reinforcement bars.

1. Welding of Tor steel reinforcement bars shall be taken up only after specific approval by **Engineer-in-Charge**.
2. Lap welding with longitudinal beads shall only be adopted.
3. Welding shall be carried in accordance with BIS 2751 & 9417. Only qualified welders shall be permitted to carry out such welding.



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4. For cold twisted reinforcement, welding operations shall be controlled to prevent a supply of large amount of heat, larger than can be dissipated. The extreme non-twisted end portion shall be cut off before welding. Electrodes with rutile coating should be used.
5. Welding procedure shall be approved by **Engineer-in-Charge** and tests shall be made to prove the soundness of the welded connection
6. Stripper at closer spacing shall be provided in the lap welded joints as directed by **Engineer-in-Charge**.
- 5.3 M.S. round bars shall be hooked at ends as specified. Ribbed Tor-Steel shall be bent at right angles at ends as indicated or directed.

## 6.0 FORM WORK

- 6.1 The shuttering or form work shall conform to the shape, lines and dimensions as shown on the drawings and be so constructed as to remain sufficiently rigid during placing and compacting of the concrete and shall be sufficiently tight to prevent loss of liquid from the concrete. The surface that becomes exposed on the removal of forms shall be examined by **Engineer-in-Charge** or his authorized representative before any defects are made good. Work that has sagged or bulged out, or contains honey combing, shall be rejected. All shuttering shall be plywood or steel shuttering.
- 6.2 The **CONTRACTOR** shall be responsible for sufficiency and adequacy of all form work. Centering and form work shall be designed & detailed in accordance with BIS 14687 and approved by the **Engineer-in-Charge**, before placing of reinforcement and concreting.

## 6.3 STRIPPING TIME

Forms shall not be struck until the concrete has reached a strength at least twice the stress to which the concrete may be subjected at the time of removal of form work. The strength referred to shall be that of concrete using the same cement and aggregates, with the same proportions and cured under conditions of temperature and moisture similar to those existing on the work. Where possible, the form work shall be left longer as it would assist the curing.

Note 1 - In normal circumstances and where ordinary Portland Cement is used, forms may generally be removed after the expiry of the following periods:

- |  |   |
|--|---|
| a. Walls, columns and vertical faces of all structural members | 24 to 48 hours as may be decided by the <b>Engineer-in-Charge</b> |
| b. Slabs (props left under)                                    | 3 days  |
| c. Beam soffits (Props left under)                             | 7 days  |
| d. Removal of props under slabs                                |   |



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1. Spanning up to 4.5 m 7 days
2. Spanning over 4.5 m 14 days
- e. Removal of props under beams and arches :
  1. Spanning up to 6 m 14 days
  2. Spanning over 6m 21 days

For other types of cements, the stripping time recommended for ordinary Portland Cement may be suitably modified.

Note 2 - The number of props left under, their sizes and disposition shall be such as to be able to safely carry the full dead load of the slab, beam or arch as the case may be together with any live load likely to occur during curing or further construction.

## 7.0 BRICK WORK

This specification covers the construction of brick masonry in foundations, arches, walls, etc. at all elevations. The provision of BIS: 2212 shall be complied with unless permitted otherwise.

### 7.1 Bricks

All bricks shall conform to minimum class 7.5 as designated in CPWD Specifications unless specified otherwise.

### 7.2 Mortar

7.2.1 Cement and water shall conform to the requirements laid down for cement concrete work.

7.2.2 Sand for masonry mortar shall be coarse sand conforming to BIS: 2116. Maximum quantities of clay, fine dust shall not be more than 5% by weight. Organic impurities shall not exceed the limits laid down in BIS: 2116.

7.2.3 Mix of mortar for building brick work shall be as specified in the item of work.

7.2.4 Mixing of mortar shall be done in a mechanical mixer. When quantity involved is small, hand mixing may be permitted by the **Engineer-in-Charge**. Any mortar remaining unused for more than 30 minutes after mixing shall be rejected.

### 7.3 Brick Masonry

Brick work shall be built in English bond, unless otherwise specified. The thickness of joints shall be 10 mm  $\pm$  3 mm. Thickness of joints shall be kept uniform. In case of foundations and manholes etc. Joints up to 15 mm may be accepted.

### 7.4 Half Brick Masonry





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All courses shall be laid with stretchers. Reinforcement comprising 2 Nos.6 mm dia MS bars shall be provided over the top of the first course and thereafter at every third course.

7.5 Fixtures

All iron fixtures, pipe spouts, hold fasts of doors and windows, which are required to be built into the wall shall be embedded in cement concrete blocks 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) of size indicated in the item.

7.6 Curing

Brick work shall be protected from rain by suitable covering when the mortar is green. Masonry work shall be kept constantly moist on all faces for a minimum period of seven days.

7.7 Cement Concrete Block

Cement concrete block shall be machined made in the proportion of such that mix shall not be leaner than one cement to Twelve combined aggregates ( by volume ) but having minimum strength of M 7.5. Combined aggregate shall be graded as near as possible to BIS : 383. The fineness modules of combined aggregate shall be between 3.6 and 4. The concrete block shall be properly cured as per BIS-456. The surface of conc. block shall have even face without any honeycomb and free from cracks.

7.7.1 Mortar

Cement and water shall conform to the requirements laid down for cement concrete work.

7.7.2 Sand for concrete block masonry mortar's shall be coarse sand generally conforming to BIS: 2116. Maximum quantities of clay, fine dust, shall not be more than 5% by weight. Organic impurities shall not exceed the limits laid down in BIS: 2116.

7.7.3 Mix of mortar for building concrete block shall be as specified in the item of work.

7.7.4 Mixing of the mortar shall be done in a mechanical mixer. When quantity involved is small hand mixing may be permitted by **Engineer-in-Charge**. Any mortar remaining unused for more than 30 minutes after mixing shall be rejected.

7.8 Concrete Block Masonry

The thickness of joints shall be 10 mm +/- 3mm. Thickness of joints shall be kept uniform. In case of foundation and manholes etc. joints up to 15 mm may be accepted.

7.9 Half Concrete Block



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All courses shall be laid with stretchers. Reinforcement comprising 2 nos. 6 mm dia MS bars shall be provided over the top of the first course and thereafter at every fourth course.

7.10 Fixtures

All iron fixtures, pipes spouts, hold fasts of doors and windows which are required to be built into the wall shall be embedded in cement concrete blocks 1:2:4 mix (1 cement :2 coarse sand :4 graded stone aggregate. 20 mm nominal size) of size indicated in the item.

7.11 Curing

Concrete block masonry shall be protected from rain by suitable covering when mortar is green. Masonry work shall be kept constantly moist on all faces for a minimum period of seven days.

**8.0 WOOD WORK**

All materials workmanship for wood work shall conform to BIS : 883, it shall be good quality well seasoned second class Teak / Sal wood as approved by **Engineer-in-Charge**. The wood work shall conform to BIS: 4021.

**9.0 STRUCTURAL STEEL WORK**

This specification covers the technical requirements for the preparation of shop drawings, supply, fabrication, protective coating, painting and erection of all structural steel rolled sections, built up sections, plates and miscellaneous steel required for the completion of the work.

9.1 Steel

All structural steel used in construction within the purview of this contract shall, comply with one of the following Bureau of Indian Standard Specifications, whichever, is appropriate or as specified.

BIS – 2062 Hot rolled sections and plates

BIS – 1079 Cold formed light gauge sections

BIS – 1161 Tubular sections

BIS – 4923 Hollow sections (rectangular or square)

9.2 Smithy Works

All smithy work shall be accurately made as shown on the drawings and shall be clean and sound. The metal shall not be burnt or injured in any way.



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### 9.3 Fabrication

Fabrication of steel structure shall be carried out in conformity with the best modern practices and with due regard to speed with economy in fabrication and erection and

shall conform to BIS-800. All members shall be so fabricated as to assemble the members accurately on site and erect them in correct positions. Before dispatch to site the components shall be assembled at shop and any defect found rectified. All members shall be free from kink, twist, buckle, bend, open joints etc. and shall be rectified before erecting in position. Failure in this respect will subject the defective members to rejection.

### 9.4 Fabrication Drawings

9.4.1 Fabrication and erection drawings shall be prepared by the **CONTRACTOR** on the basis of design issued to the **CONTRACTOR** in stages. These drawings shall be prepared by the **CONTRACTOR** or by an agency approved by the **Engineer-in-Charge**.

9.4.2 Fabrication drawings shall be thoroughly checked, stamped "checked" and signed by the **CONTRACTOR's** own responsible Engineer irrespective of the fact that such drawings are prepared by the **CONTRACTOR** or an approved agency, to ensure accuracy and correctness of the drawings. Unchecked or unsigned drawing shall not be submitted to **Engineer-in-Charge** for approval.

9.4.3 Fabrication drawings duly checked by the **CONTRACTOR** shall be submitted to the **Engineer-in-Charge** for checking & approval within 30 days from receipt of design drawings.

9.4.4 The approval accorded by **Engineer-in-Charge** on fabrication drawings shall not relieve the **CONTRACTOR** of the responsibility of fabricating and erecting safe and technically sound steel structures as per design drawings.

9.4.5 Fabrication drawings shall be drawn to a suitable scale large enough to convey the information clearly and shall include the following:

- Reference to design drawing number (along with revision number) based on which fabrication drawing has been prepared.
- Structural layout plans, elevations, & sections with distinct erections, & sections with distinct erection marking of all members.
- Framing plans, member sizes, orientations.
- Fabrication detail of each and every member.
- Details of Shop / field joints, connections and splices.
- Location, type and size of welds and bolts.
- Shape and size of edge preparation for welding.



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➤ Bill of material including bolts for connections.

9.4.6 The **CONTRACTOR** shall however ensure accuracy of the following and shall be solely responsible for the same.

- i. Provision for erection and erection clearance.
- ii. Marking of members.
- iii. Cut length of members.
- iv. Matching of joints and holes.
- v. Provision kept in the members for other interconnected members.
- vi. Bill of materials.

9.4.7 Connections, splices and other details where not shown on the design drawings shall be suitably designed and shown on the fabrication drawings based on good Engineering practice, developing full member strength.

9.4.8 The **CONTRACTOR** shall incorporate all the revisions in his fabrication drawings resulting from revision in design drawings during the course of execution of work at no extra cost.

9.4.9 The **CONTRACTOR** shall supply three (3) prints of each fabrication drawing submitted for checking to **Engineer-in-Charge**. After approval of fabrication drawings **CONTRACTOR** shall supply six (6) prints and two (2) reproducible of each approved fabrication drawing to **Engineer-in-Charge**. The rates quoted by the **CONTRACTOR** shall include the same.

## 9.5 Welding

Welding shall be adopted in most of the cases for fabrication of steel structure. Welding work shall be carried out as shown in relevant drawings as per BIS-816 or as required and approved by the **Engineer-in-Charge**. Welding of joints shall be so arranged that the resulting tensile and compressive stresses produced by each part of weld tend to balance each other.

The step back method of welding shall be adopted for continuous runs. Members which offer greater resistance to compression shall be welded first. The work shall be securely held in position by means of tack weld, clamps or jig before commencing of welding work so as to prevent relative movement due to distortion or other cause. All welds with blow holes, slag-intrusion and other defects must be removed from each run before another run is super imposed and also from the final run. Any defects in the work shall be rectified by the **CONTRACTOR** at his own expense. Bends, twists or distortion caused in any member due to faulty workmanship and method adopted during welding or in transit will be rejected and will have to be replaced / rectified by the **CONTRACTOR** at his own expense. According to the size of electrodes used, the **CONTRACTOR** is expected to adjust the current rating in the welding generators.



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- 9.6 The **Engineer-in-Charge** reserves the right to have test done at any time for any welding and the cost of the test shall be borne by the **CONTRACTOR**.
- 9.7 Wherever continuous plates are used in built up member such as girders, columns, etc. the continuity of such plates shall be first ensured by full strength butt joints before welding such plates with the main member to form part of the built-up member.
- 9.8 All connection / joints made in shop shall wherever possible be welded connections and connections / joints made at site shall be bolted connections / site welded connections, continuous welding shall be done for all box members even if it is not required from design point of view.
- 9.9 Electrodes
- Electrodes used for welding shall comply with BIS-814 or BIS - 815 or any specification provided to the **CONTRACTOR** from time to time. No electrodes remaining in open containers for more than 72 hours shall be used.
- 9.10 No welder shall be employed to carry out welding in any position except those who are fully qualified to weld in that position as per BIS -7318, part-1 qualifying tests for metal arc welders. Welders employed shall be required both before commencing work and at intervals during the progress of work to make test pieces as laid down in BIS - 817 and 7318, part-1 for the purpose of grading of welders and according to the said grading, welders will be employed on jobs. Welders are to be got approved by **Engineer-in-Charge** before engaging on work.
- 9.11 MS Black/High Strength Bolts and Nuts
- M.S.Black or high strength bolts, nuts and washers etc. shall be as per BIS-800, BIS-1363 and BIS-1367. Manufacturer's test certificate shall be made available to the **Engineer-in-Charge** or his representative, when called for. For bolted joints, shanks and threaded bolts are to be used to ensure that threaded length do not encroach within the thickness of connected members of dimension beyond the following limit:-
- 1.5 mm for connected members of thickness below 12 mm and
  - 2.5 mm for connected member of thickness 12 mm and above and that adequate shearing and bearing values required as per design are achieved.
- 9.12 Every portion work shall have its erection mark or number stenciled on the member for guidance in erection and bears all necessary marks of erections as directed by the Engineer-in-Charge.
- 9.13 No part of the work is to be oiled, painted (except contact surfaces) packed, bundled, crated or dispatched until it has been finally inspected and approved by the **Engineer-in-Charge** or his authorized representative. The whole steel work before being dispatched from the **CONTRACTOR's** shop shall be dry and after being thoroughly cleaned from dust, mills scale, rust etc., and shall be given two coats of primer and one coat of final paint as per painting specification attached in this enquiry. Unless otherwise specified, all surfaces inaccessible after welding shall be given two coats of





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primer and two coats of paints as per painting specification Annexure attached in this enquiry.

9.14 The **Engineer-in-Charge** or his authorized representative shall have free access at all reasonable time to all places where the work is being carried out, and shall be provided by the **CONTRACTOR** at his own expenses all necessary facilities for inspection during fabrication and erection. The **Engineer-in-Charge** or his authorized representative shall be at liberty to reject the work in whole or in part if the workmanship or materials do not conform to the terms of the specifications mentioned herein. The **CONTRACTOR** shall remove, replace or, alter any part of the work as ordered by the **Engineer-in-Charge** or his authorized representative.

9.15 Erection and Setting of Steel Structure

The erection of steel work shall be in accordance with Bureau of Indian Standard Specifications Nos. BIS-800 and BIS - 816.

9.16 The **CONTRACTOR** shall be responsible for the suitability, safety and capabilities of all plant and equipment used for erection.


9.17 Prior to starting erection of fabricated structure, defects if any shall be rectified. The **CONTRACTOR** shall give to the **Engineer-in-Charge** not less than 24 hours notice of his intention to set out or give levels for any part of works, in order that arrangements may be made for checking. The **CONTRACTOR** shall provide all necessary arrangements and assistance which the **Engineer-in-Charge** may require for checking the setting out.

9.18 The **CONTRACTOR** shall erect the structural steel members in position, to dimension, and levels, as in relevant drawings and shall take care to see that component parts are not interchanged. Girders, stanchions etc., must rest fairly on their beds and will not be taken as erected until completely plumbed, aligned leveled, bolted or welded and strengthened, in every respect. The camber, if any, is to be maintained as shown in relevant drawings.

9.19 Particular care should be taken to ensure free expansion and contraction wherever provided in the relevant design / drawings or so directed on site.

9.20 While erecting, the holes in different component parts of structure should be made concentric with the use of drifts before any service bolts are fitted. No drifting shall be allowed except for bringing together several parts forming a member but the drifts must not be driven with such force as to disturb or damage the metal above the holes. Hammering of bolts to make holes concentric shall in no case be allowed. No nuts should be allowed to become loose and no unfilled bolt holes are to be left in any part of the structure unless otherwise specified in the relevant drawings. Welding should be adopted wherever specified in the drawings. Wooden rams or mallets shall be used in forcing members to position, in order to protect metal from injury or shocks, chipped edges shall be finished off smooth and all concave surface rounded off.

9.21 All erection tools and plants viz. derricks, cranes etc. will have to be provided by the **CONTRACTOR** as required in the erection work. All erection devices must be

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removed after the work is over, in such a way that no damage is done to the erected structures. Any damages, in this respect must be rectified by the **CONTRACTOR** at his own cost.

9.22 The maximum tolerance for line and level of the steel work shall be  $\pm 3.0$  mm on any part of the structure. The structure shall not be out of plumb more than 3.5 mm on each 10 M. Section of height and not more than 7.0 mm per 30 metre section. These tolerances shall apply to all parts of the structure unless mentioned in the drawings issued for erection purposes.

9.23 Match Marking & Stamping

- i. All materials shall be match marked to facilitate erection.
- ii. All pieces shall be stamped on at least two sides with erection marks as per fabrication drawings to facilitate identification on receipt and assembly.

**10.0 PAINTING ON STRUCTURAL STEEL**

The following specification shall be used for painting of structural steel work.


10.1 **Scope**

This specification covers the technical requirements for shop and site application of paint and protective coatings and includes; the surface preparation, priming, application, testing and quality assurance for protective coatings of structural steelwork, plate work, handrails and associated metal surfaces, which will be exposed to atmospheric for industrial plants.

**10.2 Definitions**

- C.S - Carbon steel and low chrome (1-1/4 Cr through 9 Cr) alloys
- S.S - Stainless steel, such as 304,316, 321, 347,
- Non-ferrous - copper, aluminium and their alloys.
- High Alloy - Monel, Inconel, Incoloy, Alloy 20, Hastelloy, etc.
- DF - Dry Film thickness, the thickness of the dried or cured paint or coating film.

**10.3 Safety Regulations**

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Protective coatings and their application shall comply with all national, state, and local codes and regulations on surface preparation, coating application, storage, handling, safety, and environmental recommendations.

Sand or other materials producing silica dust shall NOT be used for any open-air blasting operations.

#### 10.4 Material Safety Data Sheets

The latest issue of the coating manufacturer's product datasheet, application instructions, and material safety data Sheets shall be available prior to starting the work and shall be complied with during all preparation and painting / coating operations.

#### 10.5 Materials

All paints and paint materials shall be obtained from the company's approved manufacturer's list. All materials shall be supplied in the manufacturer's containers, durably and legibly marked as follows.

Specification number

Colour reference number

Method of application

Batch number

Date of Manufacture

Shelf life expiry date

Manufacturer's name or recognised trade mark.

#### 10.6 CODE AND STANDARDS:


Without prejudice to the provision of Clause 1.1 above and the detailed specifications of the contract, the following codes & standards shall be followed. Wherever reference to any code is made, it shall correspond to the latest edition of the code.

#### 10.7 Indian Standards:

IS-5: 1994 Colors for ready mixed paints and enamels.

IS-2379: 1990 Color codes for identification of pipe lines.

IS-2629: 1985 Recommended practice for hot-dip galvanizing on iron and steel.

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IS-2633: 1986 Methods for testing uniformity of coating of zinc-coated articles.

IS-8629: 1977 Code of practice for protection of iron and steel structures from atmospheric corrosion.

IS: 110 Specification for Ready Mixed Paint, Brushing, Grey Filler, for Enamels, for Over Primers

IS: 101 Methods of test for ready mixed paints & enamels.

### 10.8 Other Standards:

10.8.1 Swedish Standard: SIS-05 5900-1967 / ISO-8501-1-1988

(Surface preparations standards for Painting Steel Surface).

This standard contains photographs of the various standards on four different degrees of rusted steel and as such is preferable for inspection purpose by the Engineer-in-charge.

10.8.2 DIN: 53151 Standards for Adhesion test.

**10.9** The paint manufacturer's, instructions shall be followed as far as practicable at all times. Particular attention shall be paid to the following:

- a. Instructions for storage to avoid exposure as well as extremes of temperature.
- b. Surface preparation prior to painting.
- c. Mixing and thinning.
- d. Application of paints and the recommended limit on time intervals between coats.

### 10.10 Surface Preparation

10.10.1 Safety

All work in adjacent areas, which may negatively affect the quality of blast cleaning, and/or impose safety hazards, must be completed or stopped before the blasting operation starts.

10.10.2 Pre-Cleaning

Prior to surface preparation all weld spatter shall be removed from the surface, all sharp edges ground down and all surfaces cleaned free of contaminants including chalked paint, dust, grease, oil, chemicals and salt. All shop primed surfaces shall be water washed by means of suitable solvent, by steam cleaning, with an alkaline



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cleaning agent if necessary or by high-pressure water, to remove contaminants prior to top-coating.

#### 10.10.3 Surface decontamination

Surface decontamination shall be performed prior to paint application when uncoated surface is exposed to a corrosive environment or existing paint work is to be repaired. Existing coatings shall be removed by abrasive blast cleaning, and then high pressure potable water shall be used to clean steel surfaces. Prior to application of coatings, the surface shall be chemically checked for the presence of contaminants. A surface contamination analysis test kit shall be used to measure the levels of chlorides, iron salts and pH in accordance with the kit manufacturer's recommendations.

Swabs taken from the steel surface, using cotton wool test swabs soaked in distilled water shall not be less than one swab for every 25m<sup>2</sup> of surface area to be painted.

Maximum allowable contaminant levels and pH range is as follows:

Sodium chloride, less than 50 microgram / cm<sup>2</sup>;

Soluble iron salts, less than 7 microgram / cm<sup>2</sup>; and

pH between 6 – 8

If the results of the contamination test fall outside the acceptable limits, then the wash water process shall be repeated over the entire surface to be painted, until the contaminant test is within the specified levels.

#### 10.10.4 Abrasive blasting

All C.S materials shall be abrasive blast cleaned in accordance with relevant IS Codes. To reduce the possibility of contaminating S.S., blasting is not usually specified. However, for coatings which require a blast-cleaned surface for proper adhesion, S.S. may be blast cleaned using clean aluminium oxide or garnet abrasives (Free from any chloride or Iron / Steel contamination). When hand or power tool cleaning is required on S.S., only S.S. wire-brushes (including 410 S.S.) which have not been previously used on C.S. surfaces may be used.

The surface profile of steel surfaces after blasting shall be of preparation grade Sa 2-1/2 of Swedish Standards SIS-05-5900 (Latest Revision) or better according to ISO 8501-1 and shall be measured using the replica tape method or the comparator method.





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The roughness (profile) of blast-cleaned surfaces shall be Medium (G) according to

ISO 8503-2: 1988 (appendix 1) unless otherwise specified. Medium defines a surface profile with a maximum peak-to-valley height of 60-100 microns, and G indicates that the surface profile is obtained by grit blasting. For the evaluation of surface roughness Comparator G shall be used.

Abrasive blast cleaning shall NOT be performed when the ambient or the substrate temperatures are less than 3 Degree Celsius above the dew point temperature. The relative humidity should preferably be below 50% during cold weather and shall never be higher than 60% in any case.

Abrasive blast cleaning shall be performed with a clean, sharp grade of abrasive. Grain size shall be suitable for producing the specified roughness. Abrasives shall be free from oil, grease, moisture and salts, and shall contain no more than 50ppm chloride. The use of silica sand, copper slag and other potentially silica containing materials shall not be allowed.

The blasting compressor shall be capable of maintaining a minimum air pressure of 7 kPa at the nozzle to obtain the acceptable surface cleanliness and profile.

The blast cleaning air compressor shall be equipped with adequately sized and properly maintained oil and water separators. The air supply shall be checked to ensure no oil and water contamination at the beginning of each work shift.

Blast cleaning abrasive shall be stored in a clean, dry environment at all times. Recycling of used abrasive is prohibited.

After blast cleaning, the surfaces shall be cleaned by washing with clean water (Pressure 7kg/cm<sup>2</sup> using suitable nozzles. During washing broom corn brushes shall be used to remove foreign matter.

Assessment of the blast cleaned surfaces shall be carried out in accordance with reference code.

Blast cleaned surfaces which show evidence of rust bloom or that have been left uncoated overnight shall be re-cleaned to the specified degree of cleanliness prior to coating.

All grit and dust shall be removed after blasting and before coating application. Removal shall be by a combination of blowing clean with compressed air, followed by a thorough vacuum cleaning with an industrial grade, heavy duty vacuum cleaner.

All cleaned surfaces shall have protection from atmospheric corrosion as per IS8629:1977



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**10.11 Painting system to be used is indicated below:**

Epoxy Painting:

10.11.1 All the surfaces must be abrasive blasted and 1 coat of primer, 2 coats of intermediate and 1 coat of finish paint applied in the fabrication shop before the same are shifted to site for erection. All the members must be suitably match marked for facilitating proper assembly.

After erection is over all surfaces shall be washed up as follows:

Washing with clean water (pressure 7 kg/cm<sup>2</sup>) using suitable nozzles. During washing broom corn brushes shall be used to remove foreign matters.

Solvent washing if required to remove traces of oil grease etc.

After washing the surface as indicated above, the surfaces shall be suitably touched up to the extent required so that all the damages to the primed surfaces caused during erection are done up.

The surfaces affected by welding and / or gas cutting during erection shall also be suitably touched up. Before touch up is taken up surfaces shall be prepared by mechanical means such as grinding, power brushing etc. to achieve surface finish to ST-3. After touch up work is over as indicated above, all the surfaces shall be given one coat of finish paint to the required specification.

10.11.2 The following points must be observed for painting work:

1. Primer and paint shall be compatible to each other and should be from the same manufacturer.
2. The recommendation of the paint manufacturer regarding mixing, matching and application must be followed meticulously.
3. Technical representative of paint manufacturer should be available at site as and when required by **Engineer-in-Charge** for their expert advice as well as to ensure that the painting work is executed as per the instruction of paint manufactures.
4. Paints and primers shall be supplied at site in original container with factory seal otherwise such paints and primers shall not be allowed to be used. Mode of application i.e. by spray, brush or roller shall be strictly as per recommendation of paint manufacturer.
5. Painting materials must be used before the expiry date indicated on the containers.



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6. Number of coats and DFT per coat must be strictly followed as indicated above. If the desired DFT is not achieved for primer, intermediate and finish paints in two coats (each), **CONTRACTOR** shall be required to apply extra coat (s) to achieve the desired DFT without any extra cost to **Engineer-in-Charge**.
  7. Color shade for each coat of primer and finish paint must be different to identify the coats without any ambiguity.
  8. Shade for the final finish coat shall be decided by **Engineer-in-Charge** at site.
  9. All painting materials must be accompanied by manufacturers test certificates. However, Engineer-in-Charge has any doubt regarding quality of materials, he shall have the right to direct CONTRACTOR to get the doubtful material tested or and provided (by CONTRACTOR) testing agencies for which no extra payment shall be made to the CONTRACTOR and the charges shall deemed to be covered in the unit rates quoted for fabrication and erection of structural work.
  10. DFT for paint shall be measured at least 20 points and mean DFT shall not vary by more than 10% than specified in DFT.
  11. Reliable and calibrated Instrument for measurement of DFT shall be arranged and provided by **CONTRACTOR** at his cost.
  12. Thickness of each coat shall also be checked regularly to ensure uniformity in DFT.
- 10.11.3 Abrasive blasting and painting works, being a specialized job must be carried out through the approved agencies only.

#### 10.11.4 PAINTING ON STEEL STRUCTURES

##### On Major Structural Steel Structures:

SL.NO	DESCRIPTION	GENERIC COATING SYSTEM
1.	<b>SURFACE PREPARATION</b>	Blast clean to SA 2.5
2.	<b>PRIMER</b>	One coat of ethyl silicate zinc rich with solvent. Thickness 75 micron per coat
3.	<b>INTERMEDIATE</b>	Two coat of two pack high build aliphatic amine cured epoxy coating Thickness 100 micron per coat.

4.	<b>FINISH COAT</b>	One coat of two pack amine cured epoxy / Acrylic aliphatic polyurethane. Thickness 50 micron per coat
5.	<b>Total DFT</b>	325 Micron

**On Minor Structural Steel Sections/Structures/boundary wall, fencing etc:**

Painting on Structural Steel on minor structures shall be with synthetic enamel paint of approved brand and manufacture to give an even shade: Two or more coats on new work after necessary primer coat.

**11.0 MS GALVANIZED GRATINGS**

MS Galvanized gratings shall be made out of M.S.flats and Tor steel round bars of approved pattern and thickness. All joints are welded together to form a perfect mesh.

The details of gratings shall be as per specification.

**12.0 ALUMINIUM GRATING**

12.1 Aluminium grating shall be made out of aluminium flats of approved pattern and thickness. All joints welded / reverted together to form a perfect mesh including necessary steel fasteners as required.

**13.0 STEEL / ALUMINIUM DOORS, WINDOWS AND VENTILATORS**

13.1 The Steel doors, windows, ventilators and sashes shall be of the size and type as shown on the drawings and/or of the approved make conforming to BIS-1361 and BIS-1038 Fixing and glazing shall be done as per BIS-1081 and as per manufacturers instructions. The putty of approved make such as special gold size or equivalent conforming to BIS-419 shall be used.

13.2 Aluminium doors, windows and ventilators shall be manufactured from wrought aluminium and aluminium alloy extruded round tube and / or hollow rectangular / square sections conforming to BIS: 1285 & BIS : 6477 or equivalent as approved by **Engineer-in-Charge**.

**14.0 NON-ASBESTOS HIGH IMPACT POLYPROPYLENE REINFORCED CEMENT CORRUGATED SHEETS FOR ROOFING AND CLADDING**

All non asbestos high impact polypropylene reinforced cement 6mm thick corrugated sheets shall be of the specified approved quality and shall be in accordance with IS-14871 and fixing accessories such as J-bolts, L-bolts, roofs washers, etc. shall conform to BIS-730. Laying and fixing of sheets used as covering for roofs and wall shall conform to BIS-3007 part-I. Holes for receiving the fixing accessories in the



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crown of corrugation must be drilled and not punched and diameter should be 3 mm greater than the diameter of the bolts to be used. Bolts and screws should be 8 mm or more in dia. and the nuts of the hook bolts, crank bolts should bear a gal vanished iron limpet washers. The screw or bolts should be tightened sufficiently only to seat the bitumen washer over the corrugations so that the natural movement in the substructure of the roof may not damage sheeting. It is essential that the bolt holes are made water tight by the use of bitumen washers in conjunction with suitable G.I.washer. These form essential accessories to good fixing work. A cracked sheet should never be used.

**15.0 FLOORING AND PAVING**

**15.1 Sub Base of floor**

15.1.1 The area to be paved shall be divided into suitable panels. Form work shall be provided. The boarding / battens shall be fixed in position with their toe at proper level, giving slope where required. Alternatively base concrete may be deposited in the whole area at a stretch.

15.1.2 Before placing the base concrete the sub-base shall be properly wetted and rammed. The concrete of the specified mix shall then be deposited between the forms where provided, thoroughly tamped and the surface finished level with the top edge of the forms. The surface of base concrete shall be spreader uniformly. The surface shall be finished rough to provide adequate bond for the topping. Two or three hours after concrete has been laid the surface shall be brushed with wire brush to remove any scum or Latinate and swept clean so that coarse aggregate is exposed.

**15.2 Cement Concrete Floor Finish**

15.2.1 The surface of base concrete shall be thoroughly cleaned by scrubbing with coir or steel wire brush. Before laying the toping, the surface shall be soaked with water at least for 12 hours and surplus water mopped up immediately before the toping is laid.

15.2.2 The forms shall be fixed over the base concrete dividing into suitable panels. Where glass dividing strips are provided, thickness of glass dividing strips shall be 4 or as indicated. Before placing the concrete toping, neat cement slurry at the rate of 2 kg/sq.m shall be then thoroughly brushed into the base concrete just ahead of the finish. The toping shall then be laid, thoroughly compacted by using screed board/plate vibrator. The surface floated with a wooden float to a fair and even surface shall be left for some time till moisture disappears from it. Junctions with skirting / dado or wall surfaces shall be rounded off using cement mortar 1:2 curing shall be carried out for a minimum of 7 days.

**16.0 PLASTERING**

16.1 Sand for plastering: shall be 50% fine sand and 50% coarse sand from approved sources.





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- 16.2 Preparation of surface shall be done as per CPWD specifications.
- 16.3 Cement mortar shall be of the mix as indicated in the items and shall be mixed as specified in the CPWD specifications.
- 16.4 Joints in walls etc. shall be raked to a depth of 12 mm, brushed clean with wire brushes dusted and thoroughly washed before starting the plaster work.
- 16.5 The surface shall be thoroughly washed with water cleaned and kept wet to saturation point before plastering is commenced.
- 16.6 Cement mortar as indicated, shall be firmly applied to the masonry walls in a uniform layer to the thickness specified and will be pressed into the joints. On concrete surfaces rendering shall be dashed to the roughened surface to ensure adequate bond. The surface shall be finished even and smooth. Hectoring wherever required shall be done as per directions of **Engineer-in-Charge**. Nothing extra shall be paid on this account.
- 16.7 All plaster work shall be cured for at least 7 days.
- 16.8 Integral water proofing compound shall be mixed with cement in the proportion recommended by the manufacturer. Care shall be taken to ensure that the water proofing material gets well and integrally mixed with cement. All other operations are the same as for general plaster work.
- 16.9 For sand face plaster undercoat of cement plaster 1:4 (1 cement : 4 sand) of thickness not less than 12 mm shall be applied similar to one coat plaster work. Before the under coat hardens the surface shall be scared to provide for the top coat. The top coat also of cement mortar 1:4 shall be applied to a thickness not less than 8 mm and brought to an even surface with a wooden float. The surface shall then be tapped gently with a wooden float lined with cork to retain a coarse surface texture, care being taken that the tapping is even and uniform.
- 17.0 **WHITE & COLOUR WASHING AND CEMENT PAINTING**
- 17.1 White Washing
- 17.1.1 Where white wash is indicated, 3 coats of white wash shall be applied. The surface shall present a smooth and uniform finish.
- 17.1.2 White wash shall be prepared from lime slaked at site and mixed and stirred with 5 litres of water for one kg. of unsalted lime to make a thin cream. The cream shall be screened through a clean, coarse cloth and suitable adhesive such as DDL or equivalent as per manufacturer specification. About 1.3 kg of sodium chloride in hot water shall also be added for every 10 kg. of lime for making the coat hard and rule resistant. Indigo shall also be mixed @ 3 gm/Kg of lime. Each, coat shall be allowed to dry before next coat is applied. When dry, the wash should show no sign of cracking. One coat consists of application with brushes in horizontal stroke followed by vertical stroke.



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17.2 Colour Washing

17.2.1 Where colour wash is indicated, one coat of white wash and two coats of colour of tints approved by the **Engineer-in-Charge** shall be applied. Dadoes and skirting shall not be white washed, colour washed or distempered or painted.

17.2.2 Only Colour stainer of approved brand not affected by lime, shall be added to colour wash. Indigo (Neel) shall, however, not be added in colour wash.

17.2.3 The colour wash shall be applied as described for white wash. After the surface has been prepared the first primary coat shall be of white wash. Minimum two coats of colour wash shall then be applied. The entire surface shall present a smooth and uniform finish of even tint or shade.

17.3 Distempering

17.3.1 Where distempering is indicated, two coats of distemper oil emulsion or dry distemper over a priming coat as specified in the item shall be applied. Each coat of distemper shall be approved by the **Engineer-in-Charge** before next coat is applied.

17.3.2 Distemper oil emulsion shall be as per BIS: 248 of approved brand and manufacture. The distemper shall be diluted with water or a prescribed thinner in the proportion of 4 parts of paste by weight to one part of cold water or in the proportion specified by the manufacturer, which shall be invariably followed.

17.3.3 The surface to be distempered shall be cleaned of dust, dirt, chalking and other foreign matter. All cracks, holes and surface defects shall be repaired with gypsum to give a smooth surface, and papered and wiped clean. The surface shall then be rubbed down again with sand paper and made smooth. The surface thus prepared shall be given a coat of alkali resistant, priming paint conforming to BIS: 109 or any other primer as specified by the manufacturer and allowed to dry at least for 48 hours.

17.3.4 Dry distemper shall be of approved make and shade conforming to BIS 427 and shall be prepared as per manufacturer's specification. The surface to be distempered shall be cleaned of dust, dirt, chalking and other foreign matter. All cracks, holes and surface defects shall be repaired with gypsum to give a smooth surface, and papered and wiped clean. The surface shall then be rubbed down again with sand paper and made smooth. The surface thus prepared shall be given a coat of alkali resistant, priming paint conforming to BIS: 109 or any other primer as specified by the manufacturer and allowed to dry at least for 48 hours.

17.3.5 After the primer coat has dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub cut the priming coat and then dusted off. Prepared distemper shall then be applied with brushes in horizontal strokes followed immediately by vertical ones which together constitute one coat.

17.3.6 Subsequent coats shall be applied in the same way, with time intervals of at least 24



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hours between consecutive coats.

17.3.7 A uniform finished surface without patches, brush marks, or distemper drops shall be obtained.

17.4 Cement Painting

17.4.1 Cement paint: Cement paint shall comply with BIS: 5410 specification for cement paint, of colour as required.

17.4.2 Where shown on drawings for external surfaces of sand faced plaster, or any other surface, two coats of cement paint shall be applied of tint and shade as approved by the **Engineer-in-Charge**.

17.4.3 The surfaces shall be prepared as specified for white washing. Before applying cement paint the surface shall be thoroughly wetted to control surface suction. The surface shall be moist but not dripping wet, when the paint is applied. Not less than 24 hours shall be allowed between the two coats. In hot weather the first coat shall be slightly moistened before applying the second coat.

17.4.4 On external plastered surfaces, sand faced or plain plastered and concrete surfaces, cement paint shall be vigorously scrubbed on to work the paint into the voids and provide a continuous paint film free from pin holes and other openings. Curing shall be done between the coats and for at least 2 days following the final coat.

**18.0 GLAZING**

18.1 Sheet glass glazing of doors, windows etc. shall be of selected quality glass conforming to BIS: 2835. Toughened splinter proof industrial safety glass shall conform to BIS: 2553. No cracked chipped or disfigured glass shall be accepted Glass shall be in one piece for each pan.

18.2 Glazing shall be fixed with timber or steel / aluminium beading as called for. Glass shall be back puttied and fixed with beading for a water tight and rattle free installation. Sizes of timber/ steel / aluminium beading shall be as directed.



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**19.0 QUALITY ASSURANCE PLAN**

SL No	MATERIAL/ OPERATION	NAME OF TEST	FIELD/ LAB.	TEST PROCEDURE	FREQUENCY OF CHECKING	EXTENT OF CHECKING	REFERENCE DOCUMENT
1.	Earthwork in excavation	Lines, levels & depth	Field	Measurement	As per decision of site engr.	100%	Specn.& approved drg.
2.	<b>Concrete work</b> a) Course aggregate	i) % of soft or deleterious materials  ii) Particle size distribution	Lab.  Lab/Field	As per IS 2386 Part IX,1963  As per IS 2386 (Pt.I)	Once for each source/supply & shall be repeated in case source is changed  -do-	-do-  -do-	Specn.& IS 2386 (Pt.IX) & IS-383  IS 383, Specn.
	b)Fine aggregate	i) Silt content  ii)Particle size distribution	Lab  Lab./Field	Appendix -D of CPWD Specn.Vol.I  IS 383	-do-  -do-	-do-  -do-	CPWD Specn.  Specn. & IS 383
	c) Cement	i) Physical properties  ii) Chemical properties	Lab  -do-	As per IS 269 & 4031  As per IS 4032	-do-  -do-	-do-  -do-	IS 269,1489,4031 & test certificate  IS 4032 & test certificate
	d) Reinforcing bars						
	i) Deformed bars	Physical properties & dimensions	Field /Lab	As per IS 1139	-do-	-do-	IS 1139& test certificate
	ii) Cold twisted bars	-do-	-do-	As per IS 1786	-do-	-do-	IS 1786& test certificate
	iii) Hard Drawn Steel Wire Fabric	-do-	-do-	As per IS 1566	-do-	-do-	IS 1566& test certificate
	iv) TMT bars	-do-	-do-	As per IS 1786	-do-	-do-	IS 1786& test certificate
	v)	Physical	Field	As per IS 456	ALL	-do-	IS 456 &



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	Placement, laps, hooks, spacers etc.						approved drawings
	e) Water	Chemical test	-do-	As per IS 3025-64	Single Test	-do-	IS 3025-1964
	f) Tests for concrete	i) Slump test	Field	As per IS 1199	For each batch of concreting	-do-	CPWD Specn. & IS 1199
		ii) Cube test at 7/28 days	Field/L ab.	As per IS 516	No. of cubes to be decided as per given in IS 456/ Specn.	-do-	IS 456, IS 516
	g) Shuttering /Formwork Checking of levels, unevenness, joints, cleanliness, oiling etc.	Physical	Field	Measurement	All	-do-	As per drawing, CPWD specifications & instruction of E.I.C
<b>3.</b>	<b>Brick Work/Hollow Concrete Block work</b>						
	a) Brick/Hollow Concrete Block work	Physical properties & crushing strength	Field/L ab.	As specified in Specn & IS 1077	Once for each source	100%	Specn. / IS 1077
	b) Mortar	Uniformity in mix	Field	As specified in IS 2250	As & when required	-do-	IS 2250
<b>4.</b>	<b>Steel works using tubular, angles, plates, channels etc.</b>						
	i) Structural steel & plates	Dimension, manufacturers, Specn. test certificates	Lab.	IS:226 & 2062	Once for each source/supply	100%	IS Codes & test certificates
	ii) Welding electrodes	-do-	-do-	IS:814 & 815	-do-	-do-	-do-
	iii) Welding	Quality of weld, weld reinforcement, contour etc.	Field	Visual	As per discretion of site engr.	-do-	IS: 823
	iv) Painting on steel works (synthetic enamel paint over 3 coats red oxide coat zinc primer)	Cleaning off rust dirt, grease etc. of coats.	-do-	IS:123 1962	-do-	-do-	IS Code, Relevant Specn.
<b>5.</b>	Providing & laying water proofing on	Thickness, slope etc.	-do-	As per Specn. & IS 2115	-do-	-do-	-do-





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	roof						
<b>6.</b>	<b>Flooring</b>						
	i) Cement concrete floor	Physical	Field	As per IS 1443	All	-do-	IS 1443
	i) Glazed tiles	Physical	Field	As per IS 13630	All	-do-	IS 13630 & Manufacturer's certificate
7.	Pre-coated G.I sheet roofing laying & fixing.	Physical	-do-	As per IS 277 & 513	Once for each source/supply	-do-	IS code, spec. & Manufacturer's certificate
8.	Gypsum board false ceiling/ Prima board Armstrong false ceiling	Physical	-do-	IS 2095 & 2542	All	-do-	IS code, specn. & Manufacturer's certificate
<b>9.</b>	<b>Doors/windows/ventilators</b>						
	i) Glazing	Physical	-do-	IS 1081 & 2835	All	-do-	IS code, specn. & Manufacturer's certificate
	ii) Flush door shutters	Physical	-do-	IS 2095 & 2542	All	-do-	IS code, specn. & Manufacturer's certificate
	iii) Aluminium	Physical	-do-	IS 1948 & 1949	All	-do-	IS code, specn. & Manufacturer's certificate
	iv) Steel	Physical	-do-	IS 1038	All	-do-	IS code, specn. & Manufacturer's certificate
10	Plastering	Physical	-do-	As per specn.	All	-do-	Specn.
11	White washing, snowmen, distemper	Physical	-do-	IS 712, 428 & 5410	All	-do-	IS code & specn.
<b>12</b>	<b>Toiletries &amp; sanitary fixtures</b>						
	IWC, EWC, Urinals, washbasins, G.I pipes &	Physical	-do-	IS 771, 775, 774, 1239, 2065, 781, 1729,	All	-do-	IS code, specn. & Manufacturer's

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fittings, C.I pipes & stoneware pipes etc.			1726,,651,4127 etc.			certificate
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Note: Parameters/guidelines fixed for the quality control in accordance with the contract document, IS Codes/Technical Specification etc. are just the synopsis of the whole constructional activities in a bid to visualise the total involvement at a glance. Mere compliance of the QAP does not relieve the contractor from overall responsibility to render best quality of work in conformity with all the relevant documents and the best engineering practices. In order to minimise the size of QAP, only salient/important features have been taken into account and other small/minor involvement will be dealt with individually as per the provision of contract.



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**TECHNICAL SPECIFICATION**  
**FOR**  
**ELECTRICAL WORKS (SUPPLY & ERECTION)**  
**FOR**  
**RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH**  
**CONSTRUCTION OF NEW QUARTER GUARD BUILDING**  
**AND ALLIED WORKS**  
**AT**  
**TALCHER FERTILISER LIMITED, TALCHER, ODISHA**

REV.	REV. DATE	EFF. DATE	PURPOSE	PREPD.	REVWD.	APPD.
0	04.03.2021	04.03.2021	ISSUED FOR TENDER	RK	SKB	SKB

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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### LIST OF ATTACHMENTS


ATTACHMENT NUMBER	DESCRIPTION
PC183-7411-0985D	Single Line Diagram 415 V Main Power Distribution Board MPDB)
PC183-7411-0985E	Single Line Diagram (11 kV ICOG Breaker Panel )
PC183-7411-0985G	Single Line Diagram (Power Distribution Board-1)
PC13-7411-0985H	Single Line Diagram (Power Distribution Board-2)
PC183-1215	Typical Single Line Diagram (Lighting Sub Distribution Board)
PC183-1216	Typical Single Line Diagram (Sub Distribution Board – Switch-socket/AC)
PC183-1216A	Typical Single Line Diagram (Sub Distribution Board)
PC183-1217	Typical Single Line Diagram (Sub Distribution Board – Switch-socket/AC)
PC183-1218	Typical Single Line Diagram (Sub Distribution Board – Switch-socket/AC)
PC183-1219	Typical Single Line Diagram (Sub Distribution Board)
ES: 8043	Engineering Standard - Power Transformers
ES: 8060	Engineering Standard - Medium Voltage Switch Boards
ES: 8061	Engineering Standard - High Voltage Switch Boards
ES: 8080	Engineering Standard - Sheet Steel Distribution Boards
ES-8083	Engineering Standard - Lighting Sub Distribution Boards
ES: 8160	Engineering Standard - Cables
ES: 8140	Engineering Standard - Battery Charger
ES: 8142	Engineering Standard - Battery
PDS:E 113	Foundation Details of 11/0.433kV Transformers
PDS:E 116	Sump Pit for Transformer Oil
PDS: E 601	General Notes on Earthing and Lightning Protection
PDS: E 603	Arrangement of connections of Earth Conductors
PDS: E 604	Typical Details of connections in Earth Pit
PDS: E 605	Earth pit details
PDS: E 610	3.8 M G.I. Electrode for Earthing
PDS: E 611	GI / Al Accessories for Earth Pit
PDS: E 615	G.I. Earth Bus
PDS: E 617	Typical Arrangement for Neutral and Equipment Earthing



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**SECTION – 1.0**

**GENERAL SPECIFICATION**

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## 1.0 SCOPE

- 1.1 The scope covers technical requirement of Supply, Installation, Testing and Commissioning, delivery FOR site in well packed condition of the electrical equipments and accessories specified herein required for electrical works for renovation Barrack Buildings Along With Construction Of New Quarter Guard Building, D-Type Bungalows And Allied Works for TFL, Talcher, Odisha.
- 1.2 The scope shall include broadly include but not limited to supply, installation, testing & commissioning of following:
- 415 V Switchboards (MPDB, PDB-1, PDB-2)
  - Transformers
  - 11 kV ICOG Breaker Panels
  - 110 V DC System complete with Battery Charger, Battery Bank and DC Distribution Board.
  - HT Power Cables
  - LT Power cables, LT Control cables
  - Earthing Cables
  - Lighting Sub Distribution Board
  - Single Phase Socket Distribution Board
  - Sub Power Distribution Board for AC
  - LED lighting fixtures
  - 6A/16A switch socket, Air conditioner points, TV Socket
  - Ceiling Fans, Exhaust Fans, Wall mounted Fans
  - Room switch board
  - Earthing & Lightning protection system
  - Junction Boxes
  - Circuit/Point/exposed wiring to light points, power points & AC points
  - Surface/Concealed Conduit wiring
- 1.3 Any other items not specified but required for the safe operation of the system are also included in vendor's scope of work.
- 1.4 Incoming power supply shall be tapped from the Existing 11 kV Switchboard at 132 kV Switchyard Substation and terminated to 415 V Main Power Distribution Board MPDB through 11/0.433 kV Transformers in New Substation at Vikrampur Guest House.
- For CISF Barracks, Guard Room & Shops power shall be tapped from 415 V Main Power Distribution Board MPDB at Vikrampur Guest House and terminated to Power Distribution Board PDB-1 which shall be installed in the New PDB room at CISF Barrack premises.
- Further distribution to individual loads of CISF Barracks, Guard Room and Shops shall be realized through LSDBs, SPDBs-Socket/AC etc. Refer overall SLD of MPDB-3, Typical SLD for LSDB and Typical SLD for SPDBs-Socket/AC for detailed understanding of the power distribution.
- 1.5 For 4 Nos. D-Type bungalows, incoming power supply shall be tapped from 415 V Main Power Distribution Board MPDB at Vikrampur Guest House and terminated to Power Distribution

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Board PDB-2 which shall be installed in the existing PDB room at Bungalow premises. From this Power Distribution Board PDB\_2 individual cables shall be laid underground in GI pipes and terminated in the Meter Distribution Board of each bungalow as per direction of Engineer-in-charge. Further distribution shall be from Meter Distribution Board to Pre-wired Distribution Board of individual bungalow and to various electrical points.

- 1.6 The scope of work shall also include digging of earth and refilling for directly buried cables in cable protection GI Pipes, earth strips, earth pits, civil works such as making earth pit inspection chambers with covers, grouting of equipment base plate, channels, supports and foundation bolts, chipping of concrete or in brick work for earth strips, pipes or other minor chipping for foundation preparation, if required, cutting holes in walls for sealing of cable entries and making good the same after installation of the equipment and levelling, and other minor similar jobs as per directions of Owner / Engineer-in-Charge.
- 1.7 Quantities indicated in the Schedule of Rates (SOR) are approximate and these may increase or decrease or some items may even be deleted at the time of actual execution.
- 1.8 All civil work (like cutting, chipping, grouting, making opening in floor / wall etc. for equipment foundation and cabling work) pertaining to electrical equipment are in the scope of work of the contractor.
- 1.9 The contractor shall obtain the necessary clearance from local supply authority and electrical inspector of Odisha as applicable, for complete electrical installation. Wherever service connections are to be obtained from the local supply company, the contractor shall process the application and obtain the power supply. All necessary drawings, calculations, test certificates and record of site tests etc. as required by the Inspector shall be furnished. Any modification/rectification as required by Electrical Inspector shall be carried out free of cost by the contractor. All fees payable to the Supply Company and Electrical Inspector for such service connections shall be paid by the owner.
- 1.10 This specification shall be read in conjunction with all referred standards, associated drawings, specification sheets, PDS and Schedule of Rates (SOR) for Electrical Supply & Erection Works for Renovation work for Barrack Buildings alongwith Construction of New Quarter Guard Building, D-Type Bungalows and Allied Works (Doc. No. PC183- SECVII-SOR-EE-203).
- 1.11 Bidder shall prepare all Lighting, Earthing, Underground Cable Route & Cable Layout, Conduit Layout, Wiring Diagrams etc. for Substation, Barrack Buildings alongwith Construction of New Quarter Guard Building, D-Type Bungalows and Allied Works as well as sizing calculation, Single Line Diagram with Metering & Protection, Interconnection diagram, Earthing & Lightning system design, Cable Schedule etc. and shall submit to Owner/PMC for their approval. Based upon approved Drawing & Document, the Quantities indicated in the Schedule of Rates (SOR) shall be finalised and executed accordingly.
- 1.12 In case of any discrepancies between Technical Specification and SOR in respect of description of equipment / work, the details indicated in the SOR shall prevail.
- 1.13 This being a renovation job, Bidder must visit the site to understand the nature of job and collect the necessary details from site. Bidder shall also develop the layout based on the details provided and submit for approval during detail engg.
- 1.14 The contractor shall have valid Electrical licence. The contractor must have PF & ESI codes covering all persons hired by him for carrying out the job. He shall engage suitably skilled / licensed workmen of various categories for execution of work supervised by supervisors / engineer of appropriate qualification and experience to ensure suitable quality of work.
- 1.15 The contractor shall observe safety rules and take all necessary safety precautions to carry out the internal electrification work.

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1.16 In case of contradiction / conflict among documents or with statutory requirement, Contractor shall refer to Owner for clarification. However, most stringent specification shall be followed with Owner's approval. Owner decision shall be considered as final.

## 2.0 OPERATING REQUIREMENTS

2.1 All equipment and accessories shall be suitable for trouble free and continuous service at their rated capacity in the specified ambient and system conditions.

## 3.0 REFERENCE STANDARDS

3.1 All electrical equipment and installation shall comply with the requirements laid down in the latest issue of relevant Indian Standard Specifications and statutory acts / rules / regulations. In the absence of IS for any particular equipment or in case of imported equipment, relevant IEC Standards shall be applicable. All Specifications, publications mean the latest edition.

3.2 The equipment and installation shall also comply with the provisions of latest issue of Indian Electricity Rules. Contractor shall obtain approvals of Statutory Authorities for equipment and complete installation and shall make, wherever necessary, suitable modification in the equipment, installation to comply with the above.

3.3 Wherever any requirement, laid down in this standard, differs from that in Indian Standard Specification, the requirement specified herein shall prevail.

## 4.0 SERVICE CONDITIONS

The equipment shall be designed for the following site conditions: -

- Maximum ambient temperature - 46 °C
- Minimum ambient temperature - 1 °C
- Design reference temperature - 50 °C
- Relative humidity - 100%
- Altitude above sea level - <1000 mtr


## 5.0 INSTRUCTION TO THE BIDDER

5.1 This specification covers complete electrifications of Barrack Buildings alongwith Construction of New Quarter Guard Building, D-Type Bungalows and Allied Works with 11 kV ICOG Breaker Panel, Transformer, 110 V DC System complete with Battery Charger, Battery Bank and DC Distribution Board, HT Cables, LT cables & wires, LSDBs, , SPDBs for switch socket/AC, Room switch boards, surface/recess conduits, MCB boxes, LED lighting fixtures, wall & ceiling Fan, 6A & 16A switch socket etc as specified in technical specification, SOR, and attachments enclosed with it.

5.2 Complete work shall be carried out conforming to the provisions of Indian Electricity Act and relevant Indian standard Specifications (ISS). Wherever these regulations are supplemented by the State Electricity Dept., Electricity Undertakings / Boards, the installation shall also comply with these requirements. Wherever the specifications given in this NIT differs from those of the statutory regulations, these specifications shall be followed.

5.3 Contractor shall submit the sample of the electrical equipments / items for the approval of Engineer-in-charge before procurement of any of the electrical equipments / items.

5.4 Bidder shall submit various Layout drawings as per Annexure-I 'Drawings and Documents Schedule' for owner's approval before proceeding with the installation works. Approval of drawings / documents does not relieve the contractor of his responsibilities to meet the intents of specifications. Cutting chases / groove, wherever required, and making good is deemed to be included in the contractor's quoted rates.

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- 5.5 Location of Transformers, Main Power Distribution Board (MPDB), PDB-1 , PDB-2, Lighting Sub Distribution Boards, DC System, Single Phase Socket / AC Distribution Board, light fittings, fans, cable routes, conduit routes, earth pits etc. shall be marked at site by the contractor and approval of Engineer-in-charge shall be obtained before proceeding with the installation work.
- 5.6 On completion of works, wiring diagram for complete installation and various Layout drawings as per Drawings and Documents Schedule shall be prepared by the contractor and 4 copies of the same shall be supplied to the owner (M/s TFL) for their record.
- 5.7 Rated Power, Voltage and frequency of supply of current consuming devices and materials used in installation shall be suitable for the power and frequency of the supply to which these are to be connected.
- 5.8 Power wiring shall be kept separate and distinct from light wiring, from the level of circuits, i.e., beyond the branch distribution boards. Conduits for light/power wiring shall be separate.
- 5.9 Loads of CISF Barracks, Guard Room & Shops and D-Type Bungalow and Vikrampur Guest House shall be distributed in such a way that balancing of 3-ph circuit shall be done.
- 5.10 All circuits shall be indicated and numbered in wiring diagram and all points shall be given the same number as the circuit to which they are electrically connected. Distribution boards shall also be marked to indicate the circuit number controlled by them.
- 5.11 "Loop in" system of wiring shall invariably be followed throughout the installation. Where it is absolutely necessary, junction boxes of approved make may be used as permitted by Engineer-in-charge.
- 5.12 In wiring, no joints in wiring will be permitted anywhere, except in switch box or point outlets, where jointing of wires will be allowed with use of suitable connector. Soldered or taped joints are not permitted for jointing under any circumstances.
- 5.13 The wiring throughout the installation shall be such that there is no break in the neutral wire except in the form of linked switchgear.
- 5.14 Surface wiring, wherever applicable shall run as far as possible along the walls and ceiling, so as to be easily accessible for inspection.
- 5.15 In recessed conduit system, routes of conduit will be planned, so that various inspection boxes provided don't present a shabby look. Such boxes can be provided 5 mm above plaster level, and they can be covered with Plaster of Paris with marking of junction boxes.
- 5.16 Installation of conduits for wiring generally will not be taken in floor slabs.
- 5.17 Socket outlets along with switch shall be modular type for either 6A 3 pin or 16/6 Amp 6 pin configuration. The third pin shall be connected to earth through protective (loop earthing) conductor. 2 pin or 5 pin socket outlets will not be provided.
- 5.18 Sockets for the power outlets of rating above 2KW like for window/split AC etc, shall be of industrial type with associated plug top and controlling MCB.
- 5.19 Canopy shall be provided for all outdoor equipments.

## **6.0 POWER SUPPLY DISTRIBUTION**

- 6.1 Incoming power supply shall be tapped from the Existing 11 kV Switchboard at 132 kV Switchyard Substation and terminated to 415 V Main Power Distribution Board MPDB through 11/0.433 kV Transformers in New Substation at Vikrampur Guest House.

For CISF Barracks, Guard Room & Shops power shall be tapped from 415 V Main Power Distribution Board MPDB at Vikrampur Guest House and terminated to Power Distribution Board PDB-1 which shall be installed in the New PDB room at CISF Barrack premises.



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Further distribution to individual loads of CISF Barracks, Guard Room and Shops shall be realized through LSDBs, SPDBs-Socket/AC etc. Refer overall SLD of MPDB-3, Typical SLD for LSDB and Typical SLD for SPDBs-Socket/AC for detailed understanding of the power distribution.

- 6.2 For 4 Nos. D-Type bungalows incoming power supply shall be tapped from 415 V Main Power Distribution Board MPDB at Vikrampur Guest House and terminated to Power Distribution Board PDB-2 which shall be installed in the existing PDB room at Bungalow premises. From this Power Distribution Board PDB-2 individual cables shall be laid underground in GI pipes and terminated in the Meter Distribution Board of each bungalow as per direction of Engineer-in-charge. Further distribution shall be from Meter Distribution Board to Pre-wired Distribution Board of individual bungalow and to various electrical points.

## 7.0 SYSTEM OF WIRING


- 7.1 Wiring shall be FRLS PVC insulated (Sheathed /Unsheathed) stranded copper conductor cable in approved PVC conduit wiring as per approved drawings. Wiring is to be terminated in sunken cast iron or pressed steel terminal boxes for mounting modular type fittings like switches, sockets and regulators, etc. complete with modular base, cover plate etc. Cable for lighting and power circuit shall run separately.

## 8.0 POINT WIRING

- 8.1 Installation is to be carried out on point wiring basis, the supply of following shall be deemed to be included in wiring works.
- a) Conduit/channel as the case may be, accessories for the same and wiring cables between the switch box and the point outlet, loop protective earthing of each fan/light fixture.
  - b) 650/1100V FRLS PVC insulated copper conductor single core lighting wires of size 1.5/2.5/4/6 sq. mm as specified for conduit wiring, and PVC insulated 1.5 sq.mm. copper conductor earth wire.
  - c) All fixing accessories such as clips, screws, Phil plug, rawl plug etc. as required.
  - d) GI or PVC switch boxes for control switches, regulators, sockets etc, recessed or surface type, and phenolic laminated sheet covers over the same.
  - e) Outlet boxes, junction boxes, pull boxes etc. provided with switchboards for loose wires/ conduit terminations.
  - f) Control switch or MCB, as specified.
  - g) PVC concealed conduit as specified with all relevant accessories and junction / inspection boxes.
  - h) Ceiling rose or connector (in case of ceiling / exhaust fan points).
  - i) Connections to ceiling rose, connector, socket outlet, lamp holder, switch etc.
  - j) Bushed conduit or porcelain tubing where wiring cables pass through wall etc.
  - k) Back plate (in case of suspended light fixtures).
  - l) Wiring of each lighting fitting / receptacle unit / ceiling fan / bell point / exhaust fan, etc. shall be considered as one point.

## 9.0 CONCEALED CONDUIT WIRING

- 9.1 Supply, routing and laying of PVC conduit of minimum size 20mm in walls/ceiling, from lighting panels up to fittings, receptacles/ inspection/ junction boxes etc. shall be in the contractor's scope.


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- 9.2 The Contractor shall closely coordinate his work with that of the Civil Contractor. The contractor shall prepare detailed shop drawing and submit for the approval to the owner well before commencing the work. The shop drawings shall show setting out details for all components such as conduits and cable routes indicating the number and size of wires in each section of conduit.
- 9.3 The layout of conduits shall be such that any condensation or sweating inside the conduit is drained out. Suitable precaution shall be taken to prevent entry of insects inside the conduit. No cable or wire shall be installed until the inside of conduit has been cleaned.
- 9.4 Suitable junction / inspection boxes according to requirements shall be provided to permit periodical inspection and to facilitate replacement of wires, when required. The boxes shall be mounted flush with the wall or ceiling. Junction boxes with minimum 75 mm depth shall be used in roof slabs and depth of boxes in other places shall be as per IS: 2667.
- 9.5 Wherever a straight run of conduit exceeds 6 mts. additional pull boxes or junction box shall be provided. However, the entire assembly shall be so assembled in order to facilitate renewal wiring etc. in the future. Pull boxes shall not be located in a conspicuous manner. Number and location of pull boxes shall be clearly indicated on shop drawings and shall be got approved by the owner / Engineer-in-charge before commencing the work.
- 9.6 The chases in the wall shall be neatly made and with ample dimensions to permit the conduit to be fixed in the manner desired.
- 9.7 All the cuttings and chasings in the brick work / RCC work / Block work shall be carried out using electrically operated Hilti or Fishcher make casing tool. Further all the drillings and cuttings in the RCC work shall be carried out using core cutting machine. The rate shall include all these and no separate rates towards the same shall be paid to the contractor.
- 9.8 Fixing of standard bends of elbows shall be avoided as far as practicable and all curves maintained by bending the conduit pipe itself with a long radius which will permit easy drawing in of conductors. All threaded joints of conduit pipes shall be treated with some approved preservative compound to secure protection against rust. Open conduit ends shall be properly protected to prevent the ingress of dirt and rubbish.
- 9.9 Provisions shall be made at expansion joints, where they occur in the building structure. PVC pipe with coupling to be installed to prevent damage to structure / conduits and finishes. Continuity through all such joints shall be maintained.
- 9.10 All conduits shall be kept clear of other services, except where intentionally earthed or bonded. Conduits shall be fixed to prevent contact with same at the following minimum spacing.
- a) 150 mm away from hot water services.
- b) 50 mm away from all other services.

## 10.0 CONDUIT CAPACITY

- 10.1 Maximum number of PVC insulated cables conforming to IS: 694 that can be drawn in one conduit shall be as follows:

Nominal Cross Sectional Area of Conductor in sq. mm	Size of Conduit							
	20 mm		25 mm		32 mm		38 mm	
	S	B	S	B	S	B	S	B
1.5	5	4	10	8	18	12	-	-
2.5	5	3	8	6	12	10	-	-
4	3	2	6	3	10	8	-	-
6	2	-	5	4	8	7	-	-

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10	2	-	4	3	6	5	8	6
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Note:

1. The above table shows the maximum capacity of conduits for a simultaneous drawing of cables.
2. The columns headed 'S' applies to runs of conduit which have distance not exceeding 4.25 m between draw in boxes and which do not deflect from the straight by an angle of more than 15°. The columns headed 'B' apply to runs of conduit which deflect from the straight by an angle of more than 15°.
3. Conduit sizes are the nominal external diameters.

## 11.0 MATERIALS

- 11.1 The cable shall be of XLPE insulated and of approved make / grade ISI marked. All materials for fittings / accessories, cable etc. to be incorporated in this work shall strictly comply with latest appropriate Indian Standards. If Indian standards have not been issued relevant current British Standards may be used. Aluminium link clips of width 6 mm to 8 mm shall be acceptable without any price adjustment.
- 11.2 The rates for point wiring (power / light) are with the provision of stranded copper conductor of solid drawn copper conductor.

## 12.0 CONNECTORS

- 12.1 Connectors of appropriate rating shall be provided inside the box for fan and utility fittings. The wiring shall be done in such a way that wires from connectors to the fan are not visible. In situations where ceiling rose is proposed for fan and tube light fittings, the connector need not be provided.

## 13.0 LIGHTING WIRES


- 13.1 The wires for wiring in lighting system shall be 650 / 1100 V, PVC insulated, unarmoured with stranded copper conductors, unless otherwise specified. The wires shall conform to IS: 694.
- 13.2 The minimum area of conductors shall be 1.5 sq. mm for light point/fan point/exhaust fan point/call bell point and 4 sq. mm for light/power plug.
- 13.3 The PVC insulation shall be coloured red, yellow, blue for R, Y, B phase and black for neutral.

## 14.0 MOUNTING STRUCTURES

Switch sockets, cable trays, Distribution Boards etc shall be mounted / supported on suitable structure fabricated out of standard sections of mild steel, i.e. channels, angels, flats etc conforming to IS: 2062.

## 15.0 EARTHING & LIGHTNING PROTECTION

- 15.1 Complete earthing installation shall be done as per IS: 3043 and lightning protection shall be as per IS/IEC 62305 along with its latest amendments.
- 15.2 Earthing & lightning protection shall also conform with the requirements of National building code.
- 15.3 Separate Earthing rings/grid for Earthing & Lightning protection shall be provided around the Admin. Building as well as Vikrampur Guest House. Minimum size of main grid shall be 50mmX6mm.
- 15.4 Earthing grid/ring shall comprise of buried GI earth strips and GI pipes/electrodes. All these earth electrodes shall be inter-connected.
- 15.5 Individual electrical equipment shall be earthed by GI strip. Earth buses shall be provided for earthing groups of electrical/non-electrical equipment to earthing grid/rings.

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- 15.6 All equipment rated above 250V shall have two external earth connections and those rated up to 250V shall have one external earth connection.
- 15.7 All GI conductors shall meet the galvanizing requirement as per IS.
- 15.8 Surplus soil shall be carried away to distance exceeding 50 m and the site left clean and tidy.
- 15.9 Pipes carrying gas / water etc. shall not be used as means of earthing on installation.
- 15.10 Portion of earth wire between earth electrode and Meter Distribution Board shall be enclosed in 15 mm bore galvanized pipe light grade. The rate against respective item of earthing of shall be deemed to include the cost of the aforesaid pipe.

**16.0 TESTS & INSPECTION**

- 16.1 All equipment shall be routine tested as per relevant standards in presence of owner representative at manufacturer's works before despatch. In addition, the equipment shall be inspected at site for final acceptance.
- 16.2 Electrical installation work shall be subjected to inspection by owner/ his authorised representative, statutory bodies like Electrical Inspector. The contractor shall carry out without extra cost to owner rectifications / modifications desired by the above authorities to make the installation conforming to I.E. Rules etc.
- 16.3 The owner may reject any portion of the work considered defective or of poor workmanship and the contractor shall make good these defects without extra cost to owner.
- 16.4 Guarantee / Warrantee Certificate for all electrical equipments / appliances / components shall be handed over to the owner / Engineer-in-charge.
- 16.5 All equipment shall be routine tested as per relevant standards in presence of owner representative at manufacturer's works before despatch. In addition, the equipment shall be inspected at site for final acceptance.
- 16.6 The following tests as specified in IS-732, code of practice for electric wiring and fittings in building shall be complied with before the complete installation is taken over. The contractor shall carry out the tests in the presence of Engineer-in-charge. Electrical wiring test sheet shall be signed both by the contractor's representative and the Engineer-in-charge. All testing equipment shall be arranged by contractor without any extra cost.
- a) Insulation resistance shall be measured by 500 volts megger. The insulation resistance in mega ohm of the installation shall not be less than 50 divided by the number of points on the circuit and the resistance of the whole installation shall not exceed one ohm and resistance including earth mass as 5 ohm.
- b) Testing Polarity of Switches
- A test shall be made to verify that all non linked single pole switches have been fitted in the same conductor throughout and that such conductor has been connected to another or phase conductor or to the non-earthed conductor of the supply.

**17.0 ERECTION, TESTING & COMMISSIONING**

- 17.1 The contractor shall undertake erection of all equipment in accordance with good engineering practices in conformity with statutory regulations and Code of Practice and to the entire satisfaction of the owner.
- 17.2 Contractor shall prepare SLD of the entire distribution system and Power/ Lighting Distribution Boards, various layout drawings (e.g. point layout, conduit layout etc.) and submit to the owner for approval. Contractor shall also supply 'as built drawings' for complete installation.
- 17.3 The contractor shall arrange all the necessary erection tools, tackles, testing and measuring instruments and shall supply erection materials and consumables.

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17.4 The contractor shall clear the site after commissioning of the equipments / system and obtain the Site Clearance Certificate from owner's Engineer-in-charge.

### 18.0 MAKE OF COMPONENTS

18.1 Make of equipment / components shall be as per Annexure-II. Make of equipment / components not indicated shall be subject to owner's approval.

### 19.0 PAINTING

19.1 The equipment surface to be painted shall be pre-treated to remove all dust, scale and foreign adhering matter by suitable treatment.

19.2 All metal surfaces shall be painted with two coats of suitable anti-rust paint followed by two coats of anticorrosive epoxy paints.

19.3 All paints shall be carefully selected to withstand tropical heat and extremes of weather. The paint shall not scale off, crinkle or be removed by abrasion due to normal handling.

19.4 Unless otherwise specified, the finishing shade shall be light gray having No.631 as per IS-5.

### 20.0 DRAWINGS AND DOCUMENTS

20.1 The bidder shall supply the drawings and documents as per Annexure-I 'Drawings & Documents Schedule'.

20.2 All drawings and documents shall have the following descriptions written boldly:

- Name of Client.
- Name of Consultant i.e. PDIL.
- Enquiry / Order Number with Project/Plant name.
- Equipment Code No. and Description.

20.3 The Contractor shall be responsible for preparation and submission of two sets of drawings viz.  
(1) "AS BUILT" (2) Material Reconciliation and Deviation Statement

20.4 The vendor may furnish a Bill of Materials covered in their offer. However, this shall be treated for information only and shall not absolve them from his obligation to supply the required items and quantities for making the plant complete as per intent of the specification.

20.5 Drawings and documents shall be submitted as per Annexure-I

### 21.0 CO-ORDINATION WITH OTHERS

21.1 The contractor shall co-ordinate with owner's other contractors / agencies as required.

### 22.0 HANDING OVER TO OWNER

22.1 The contractor shall hand over the complete installation as a whole. Minor works not specified or mentioned in the scope or SOR but required to complete the job as a whole will have to be done by the contractor without extra cost. Any equipment / installation shall not be deemed as handed over to Owner until the same is complete in all respect and is accepted in writing by the Owner / Engineer-in-charge.

### 23.0 SPARE PARTS


23.1 Commissioning spares as required shall be supplied without any extra cost to the owner.

23.2 Spares mentioned in respective Engineering Standard shall not be supplied.

23.3 All spare parts shall be identical to the parts used in the offered electrical equipment.

### 24.0 SCHEDULE




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24.1 Bidder shall furnish bar chart for complete scope of their works.

**25.0 DEVIATIONS**


25.1 Clause-wise deviations, if any, from this specification shall be clearly indicated in the offer with reasoning.

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**ANNEXURE-I**

**DRAWINGS AND DOCUMENTS SCHEDULE**

Sl. No.	Description	With bid Y/N	For approval	For Information	Final / Approved / As built
1.	Specification Sheets, duly completed	N	Y	--	Y
2.	Technical Particulars, duly filled in	N	Y	--	Y
3.	SLD	N	Y	--	Y
4.	Feeder Details of Switchboards (11 kV ICOG Breaker Panel, 415V Switchboard, PDB, LSDB, SPDB, DCDB)	N	Y	--	Y
5.	Calculation for Bus-bar sizing for Switchboards.	N	Y	--	Y
6.	Power Layout / Cable route Layout	N	--	Y	Y
7.	Conduit Layout	N	--	Y	Y
8.	Point Layout	N	--	Y	Y
9.	Earthing & Lightning protection Layout	N	--	Y	Y
10.	Lighting Layout	N	--	Y	Y
11.	Dimensional & GA drawing for complete 415V MPDB,LSDB,SPDB etc.	N	Y	--	Y
12.	Schematic / wiring and terminal arrangement Diagram for 415V Switchboard, PDB, LSDB, SPDB, DCDB etc.	N	Y	--	Y
13.	Characteristics curves for the charger and all other static and control devices, relays etc	N	Y	--	Y
14.	Foundation Drawings of 415V Switchboard, PDB etc.	N	Y	--	Y
15.	Dimensional drawing for complete Transformer, Marshalling Box, disconnecting chamber, terminal chambers etc.	N	Y	--	Y
16.	Schematic and Wiring Diagram for Transformer	N	Y	--	Y
17.	Terminal arrangement drawing for Transformer	N	Y	--	Y
18.	Cable schedule	N	--	Y	Y
19.	Interconnection & Terminal wiring diagram	N	--	Y	Y
20.	Bill of Materials (as built)	N	--	Y	Y
21.	Installation, Operation &	N	--	Y	Y


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	Maintenance Manual				
22.	Illustrative and Descriptive Literature/ Catalogue	N	--	Y	Y
23.	Installation, Termination and Jointing Instructions	N	--	--	Y
24.	Illustrative and descriptive catalogues indicating general arrangement, light distribution, light absorption and utilisation factors, full load currents, power factors and power requirement for each type of fixture including control gear losses.	N	--	Y	Y
25.	Sketch showing mounting arrangement of Lighting Fixtures with dimensions.	N	--	Y	Y
26.	Catalogue of brought out items	N	--	Y	Y
27.	List of spares with identification marks	N	Y	--	Y
28.	Type Test Certificates of similar equipment a) Transformers b) Switchboards c) Circuit Breaker d) MCCB e) MCB f) Hose proof fixtures g) Cables h) Switch Socket & Plug	N	--	--	Y
29.	Routine Test Certificates	N	--	--	Y
30.	Guarantee/Warrantee Certificates	N	--	--	Y

**Note:**


1. 4 hard copies & 1 soft copy shall be supplied for approval/information.
2. 8 hard copies & 2 soft copies in CD/Pen Drive shall be submitted as final documents. These shall be made in sets and supplied in fine plastic coated folder.

**Y – Yes, N – No**

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**ANNEXURE-II**  
**MAKE OF EQUIPMENTS / COMPONENTS**

Sl. No.	ITEM	MAKE
1.	Transformer	Alstom Limited ( Areva T & D)
		Crompton Greaves Ltd
		Emco Limited
		Bharat Bijlee Ltd
		Kirloskar Electric Company Ltd.
		Voltamp Transformers Ltd.
2.	ICOG Panel (11 kV)	Asea Brown Boveri Ltd
		Siemens Ltd
		Schneider Electric
		BHEL (Electrical Machines Divn.)
3.	Current Transformers (11kV)	Anant Powertech
		Asea Brown Boveri Ltd.
		Kalpa Electrical Private Limited
		Mehru Electricals (Formerly Automatic Electric Limited)
		Perfect Sales Corporation
		Silkans
		Kappa
Pragati		
4.	Potential Transformers (11kV)	Anant Powertech
		Asea Brown Boveri Ltd.
		Kalpa Electrical Private Limited
		Mehru Electricals (Formerly Automatic Electric Limited)
		Perfect Sales Corporation
5.	415 V Switchboard	Alstom Limited (Areva T&D)
		C&S Electric Ltd.
		GE Power Controls India Pvt. Ltd.
		Intrelec
		Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
		Schneider Electric
6.	Medium Voltage ACB	GE Power Controls India Pvt. Ltd.
		Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
		ABB
		Schneider Electric
7.	MV Current Transformer	Alstom Limited (Areva T&D)
		Indcoil Transformers Pvt. Ltd.
		Kappa Electricals
		Mehru Electricals (Formerly Automatic Electric Ltd.)
		Perfect Sales Corporation
Siemens Ltd.		


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Sl. No.	ITEM	MAKE
8.	MV Potential Transformer	Alstom Limited (Areva T&D)
		Indcoil Transformers Pvt. Ltd.
		Kalpa Electrical Pvt. Ltd.
		Kappa Electricals
		Larsen & Toubro Ltd. (El. Products Divn.)
		Mehru Electricals (Formerly Automatic Electric Ltd.)
		Perfect Sales Corporation
		Siemens Ltd.
9.	Low Voltage Industrial Switches / Isolators	Asea Brown Boveri Ltd.
		GE Power Controls India Pvt. Ltd.
		Havells India Ltd.
		Kaycee Industries Ltd.
		Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
		Schneider Electric
10.	Microprocessor / Numerical Relays	Alstom Limited (Areva T&D) - MICOM
		Asea Brown Boveri Ltd.
		Siemens Ltd. - Sirotec
		Schneider Electric - MICOM
		GE
11.	Meters	Alstom Limited (Areva T&D)
		IMP Power Ltd.
		Rishabh Instruments Pvt. Ltd.
		Schneider Electric
		Secure meter
		Larsen & Toubro Ltd.
12.	Wall Mounting Type Distribution Board	Controls & Switchgear Co. Ltd.
		Elecmeh Corporation
		Globe Electrical Industries
		Havells India Ltd.
		Indo Asian Fusegear Ltd.
		Intrelec
		Legrand India Ltd.
		Standard Electricals Limited
13.	MCCB	Crompton Greaves Ltd
		GE power controls india pvt. Ltd.
		ABB
		Larsen & Toubro Ltd.(El. Products Divn)
		Siemens Ltd.
14.	MCB/ ELCB/RCBO	GE Power Controls India Pvt. Ltd.
		Havells India Ltd.
		Indo Asian Fusegear Ltd.
		Legrand India Ltd.




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Sl. No.	ITEM	MAKE
		S&S Power Switchgear Ltd.
		Siemens Ltd.
		Standard Electricals Limited
		ABB
		Schneider Electric
15.	Fuse	Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
		Alstom Power
16.	Contactator	Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
		ABB India Limited
		Schneider Electric
17.	Timers	ABB India Limited
		Alstom Power
		Alstom Limited (Areva T&D)
		Bhartia Cutler Hammer
		Siemens Ltd.
18.	Control Transformer	AEP
		Alstom Power
		Indcoil
		Kappa Electricals
		Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
19.	Push Buttons	Alstom Power
		Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
		Tecnik
20.	Control Switches	Alstom Power
		Kaycee
		Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
21.	Signal Lamps	Alstom Power
		Binoy
		Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
22.	Terminal Blocks	Connectwell
		Elmex

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Sl. No.	ITEM	MAKE
		Larsen & Toubro Ltd. (El. Products Divn.) Siemens Ltd.
23.	HT Power Cable	Cable Corpn. of India Limited Ravin Cables Ltd. KEC International Ltd. (Formerly RPG Cables Limited) KEI Industries Ltd. NICCO Corporation Ltd. Torrent Cables Ltd. Universal Cables Ltd. APAR Industries Ltd. (Unit: Uniflex cable)
24.	LT Power Cable	Ravin Cables Ltd. KEC International Ltd. (Formerly RPG Cables Limited) KEI Industries Ltd. NICCO Corporation Ltd. Torrent Cables Ltd. Universal Cables Ltd. APAR Industries Ltd. (Unit: Uniflex cable)
25.	Control Cable	Ravin Cables Ltd. KEC International Ltd. (Formerly RPG Cables Limited) KEI Industries Ltd. NICCO Corporation Ltd. Torrent Cables Ltd. Universal Cables Ltd. APAR Industries Ltd. (Unit: Uniflex cable)
26.	Earthing Cable	Finolex Cables Ltd. NETCO cable Industries (Pvt.) Ltd. KEI Industries Ltd. NICCO Corporation Ltd. TC Communication Pvt.Ltd. Universal Cables Ltd.
27.	Copper Wires-650/1100 Volts (Flexible Cable)	Anchor Electricals Pvt. Ltd. Finolex Cables Ltd. Havells India Ltd. NICCO Corporation Ltd. Plaza Cable Industries Ltd. Polycab Wires & Cables TC Communication Pvt. Ltd.
28.	Telephone Wire & TV Cables	Cord Cable Industries Ltd. Delton Cables Ltd. Finolex Cables Ltd.


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Sl. No.	ITEM	MAKE
		NICCO corporation Ltd RPG Telecom Ltd. TC Communication Pvt. Ltd.
29.	Industrial Cable Gland	Baliga Lighting Equipments Limited Comet Brass Products Comet Industries Dowell's Electricals Electromac Industries FCG Flameproof Control Gears Pvt. Ltd. Gland-Mech. Industries Power Engg. Co. Quality & Precision Indl. Equipment S J Metal Industries (Jainson)
30.	Cable Lugs	Dowell's Electricals Forward Engg. Industries KSE Electrical Pvt. Ltd. Power Engg. Co. S J Metal Industries (Jainson) Usha Martin Industries Ltd. (Isma Divn.)
31.	PVC Conduit Pipes	A.K.G. Finolex Industries Ltd. Kalinga Cables & Conduit Co. Plaza Cable Industries Ltd. Polypack Prakash Industries Ltd.
32.	Ceiling Fan	Bajaj Electrical Ltd. Crompton Greaves Ltd. Havells India Ltd Usha
33.	Exhaust Fan	Bajaj Electrical Ltd. Crompton Greaves Ltd. Usha Havells India Ltd
34.	Modular Switch/Socket	Anchor Electricals Pvt. Ltd. Crabtree SSK Clipsal
35.	Lighting Fittings & Accessories / LED Lamp	Bajaj Electrical Ltd. Crompton Greaves Ltd. Havells India Ltd. Philips India Ltd. Wipro Lighting
36.	Electric Call Bell	Anchor Electricals Pvt. Ltd.

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Sl. No.	ITEM	MAKE
		MDS
37.	Earthing & Lighting Protection Material	Anand Electric Trading Co. Bharti Exports Controls & Switchgear Co. Ltd. Indmark Formtech Pvt. Ltd. Jamna Metal Company Jayant Metal Mfg Co. Mahavir Industrial Corporation Metalite Industries Metropolitan Industries Premier Power Products (Calcutta) Pvt. Ltd. Rukmini Electricals & Components Pvt. Ltd. Sadhana Engineering Corporation Sai Galvanisers & Fabricators Pvt. Ltd. Stealite Engg. Co.
38.	GI Pipes	Bharti Exports Indian Tube Co. (Tata Div. Of Tubes & Pipes) Jindal Pipes Ltd. Meghjyot Enterprises Rukmini Electricals & Components Pvt. Ltd. Steelcraft
39.	Lighting Poles	Bharti Exports Metalite Industries Premier Power Products (Calcutta) Pvt. Ltd. Sadhana Engineering Corporation Surya Roshni Ltd.
40.	Battery Charger	Amco Power Systems Limited Chloride Power Systems and Solutions Ltd. (formerly CALDYNE) Chhabi Electricals Pvt. Ltd. HBL Nife Power Systems Ltd. Universal Industrial Products
41	Battery (Ni-Cd)	AMCO Power Systems Ltd. HBL Nife Power Systems Ltd. Fuji Electric Systems Co. Ltd. Hitachi Limited


NOTE: Items not covered above shall be subject to Owner/ Consultant's approval.

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**SECTION – 2.0**

**EQUIPMENT SPECIFICATION**



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## 1.0 GENERAL

- 1.1 Equipment to be supplied by the contractor shall conform to relevant Indian Standards, Engineering Standards, Specification Sheets & Drawings enclosed.
- 1.2 Equipment shall also comply with the requirement of Statutory Acts, Rules & Regulations.
- 1.3 Make of the equipment / components shall be as specified elsewhere in this specification. Make of the equipment / components not indicated shall be subject to owner/ consultant's approval.
- 1.4 Drawings & Documents for various equipments as indicated in respective Engineering Standards shall be furnished. For other equipments, GA drawings & descriptive catalogues shall be furnished.
- 1.5 The electrical equipment and their installation shall also comply with the requirement of

## 2.0 EQUIPMENT SPECIFICATIONS

### 2.1 HV SWITCHBOARD


- 2.1.1 11 kV ICOG shall be manufactured and supplied by the OEM (Original equipment Manufacturer) of the Circuit Breaker. Design & manufacturing of ICOG by channel partner, franchise or sub-vendor of the OEM shall not be acceptable.
- 2.1.2 There shall be three positions for Breaker/Contactor trolley: - Service, Test and Isolate. In service position, the power connections shall be made; but in test and isolate mode, the power connection of bus bars shall be automatically removed.  
  
Breaker duty cycle shall be O-0.3sec-CO-3min-CO.  
  
Separate CT shall be provided for differential/REF protection. LV circuit breaker shall be 4 Pole type.
- 2.1.3 Suitable shutter arrangement shall be provided to protect the person from accidental contact with live bus in trolley chamber.  
  
11 kV Breaker with Integral Earthing switch system shall be with proper interlocks.
- 2.1.4 The degree of protection shall be IP 4X for HV switchboards and IP 52 for LV Switchboard up to 1600A rating and IP-4X for LV switchboards above 1600A rating.
- 2.1.5 LOTO locking system to be provided for safety purpose while taking clearance for maintenance work. For this necessary Hasps and locks shall be provided in the switchboards.
- 2.1.6 11 kV Switchboard shall conform to IS/IEC 62271-200, IAC-A FLR-50KA/40KA 1 Sec, PM, LSC 2B which means that the switchgear panels shall be four side internal arc tested, shall have metal partitions and shall confirm to loss of service continuity. LV switchboard shall conform to IEC 60947. All 3 compartments (Busbars, Circuit breaker & Cable compartment) shall be tested for Internal arc for the said rating.
- 2.1.7 Tripping and closing coils shall be of continuous rating type.
- 2.1.8 The busbars and connection shall be made of high conductivity aluminium. All busbars shall have Raychem sleeving.
- 2.1.9 Provisions shall be made to manually close/trip circuit breakers on loss of control voltage.
- 2.1.10 Protective relays shall be mounted on the front of the switchgear panel.
- 2.1.11 Suitable DC power shall be provided for closing, tripping and indication of circuit breaker feeder from DCDB. DC voltage shall be 110V DC and AC auxiliary supply voltage shall be 240V AC.
- 2.1.12 PT shall be draw out type. 4 pole MCB shall be provided on LV side of PT.

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- 2.1.13 11KV Breaker shall be with Integral Earthing switch system with proper interlocks.
- 2.1.14 Supervision of installation, testing and commissioning including testing of Relays of all switchboards shall be done through OEM only.
- 2.1.15 Inspection window shall be provided for HV termination in the switchboard for carrying out thermography, provided internal arc test certificates for this design is available with the bidder.
- 2.1.16 For detailed specification refer Engineering Standard of High Voltage Switchboards (ES: 8061).

## 2.2 DISTRIBUTION TRANSFORMER

- 2.2.1 The transformer shall be double wound, copper conductor, Dyn11 type. Transformer shall have 11 KV primary windings. Transformer shall also conform to the specification sheet (attached in this specification). Transformer shall have energy efficiency of Level 2.
- 2.2.2 The transformers shall have 'OFF' load tap changers.
- 2.2.3 Make of the all bought out items such as Buchholz relay, Oil Temperature Indicator, Winding Temperature Indicator, Magnetic Oil Level Gauge, Bushings etc. shall be indicated by the bidder and shall be subject to the owner / consultant for approval.
- 2.2.4 Current rating of bushings shall be at least 1.5 times the full load current subject to a minimum of 400A.
- 2.2.5 Neutral bushing shall be of same voltage grade as that of phase.
- 2.2.6 Bushing and support insulators shall be suitable for highly polluted area with creepage distance of 31mm / kV.
- 2.2.7 Fittings and additional fittings as mentioned in Engineering Standard (ES: 8043) and Specification Sheet shall be provided.
- 2.2.8 Transformer cable boxes shall be dust, vermin and weather proof type with IP-55 degree of protection.
- 2.2.9 HV & LV Cable Terminal Box enclosure shall have provision for Earthing at two distinct points.
- 2.2.10 All gaskets joints for transformer body Earthing shall be provided with continuity conductor (GI / Al strip) to electrically connect the transformer body.
- 2.2.11 Top & Bottom Oil sampling valve shall be provided in each transformer.
- 2.2.12 Conservator shall be Air cell type.
- 2.2.13 Oil level Glass gauge shall be provided on conservator.
- 2.2.14 Bus Bar (if used) shall be of tinned copper.
- 2.2.15 Magnetic Oil Level Gauge with alarm and trip contacts shall be provided in each transformer.
- 2.2.16 Radiator Vacuum withstand capacity shall be designed as per Cl. No. 6.2.1 of ES: 8043.
- 2.2.17 The marshalling box shall also consist of following:
- a) 240V AC Space heater with thermostat.
  - b) Door switch operated lighting fixture suitable for 240V AC.
  - c) The box shall have a lockable door.
  - d) The complete drawing of the marshalling box wiring diagram shall be provided inside the marshalling box on SS plate.
  - e) Isolation switch for 240V, 50Hz shall be
- 2.2.18 Main transformer, conservator, piping, radiators, marshalling box, cable boxes, supports etc.

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shall have uniform shade of painting.


- 2.2.19 Arrangement of marshalling box shall be such that its front face is always being visible from front side.
- 2.2.20 Analog OTI / WTI against dial type for all transformers shall be provided.
- 2.2.21 Bidder to provide CT for WTI which shall be installed in tank.
- 2.2.22 Stand-by Earth Fault CT 5P10 for all transformers shall be provided in transformer neutral by the bidder.
- 2.2.23 Equalizer pipe and PRV Vent shall be provided for the transformer.
- 2.2.24 Cable box / tank top cover shall be provided with slope / canopy. Cable box shall be suitable for termination of XLPE insulated cable through heat shrinkable Raychem kit.
- 2.2.25 High grade Cold Roll Grain Oriented sheet steel shall be used for transformer core.
- 2.2.26 Proper supporting arrangement shall be provided for LV & HV cable terminal box.
- 2.2.27 Aluminium foil wound transformer shall not be acceptable.
- 2.2.28 For detailed specification refer Engineering Standard of Power Transformers (ES: 8043).

### 2.3 **EMERGENCY STOP PUSH BUTTON STATION**


- 2.3.1 Emergency Stop push button station shall also conform to the Specification Sheet.
- 2.3.2 The enclosure shall be of Die cast Aluminum alloy and shall be of weatherproof construction. Rain hood fabricated out of 14 SWG Aluminum sheet shall be provided as an additional protection. The enclosure shall be suitable for mounting on wall or on steel structure. 4 Nos. holes suitable for 12 mm bolts shall be provided outside the enclosure for fixing the control stations.
- 2.3.3 All the components shall be mounted on a base plate inside the enclosure. No wiring shall be carried out on the front cover.
- 2.3.4 Each control station shall be provided with minimum 2 mm thick stainless steel nameplates indicating the code number and description of the equipment controlled by it. Similar labels shall be provided for all indication lamps, push buttons, control switches. The nameplate and label shall be fixed with screws only.
- 2.3.5 The enclosure shall be provided with two external earthing terminals with studs of 8 mm. dia. and shall be marked with earthing symbol.
- 2.3.6 LCS shall be painted with epoxy paint to shade 631 as per IS: 5.

### 2.4 **415V MAIN POWER DISTRIBUTION BOARD (MPDB) / POWER DISTRIBUTION BOARD (PDB-1 & PDB-2) / DCDB**

- 2.4.1 Distribution boards shall conform to the specification sheet, feeder details, Engineering standard for sheet steel distribution board (ES: 8060), SLD and specifications mentioned herein.
- 2.4.2 The required details of the MPDB, such as feeder/circuit rating, instruments and meters, protections, reference schematic drawings etc. are indicated in the feeder details. Numbers and ratings of feeders, indicated in the feeder details, are tentative and may increase or decrease. Actual numbers and ratings of the feeders will be indicated at the time of order/drawing approval.
- 2.4.3 Rated short circuit breaking capacity for 415V MPDB shall be minimum 50 KA for 1 sec.
- 2.4.4 The incoming circuit breaker feeders shall be in single tier formation.
- 2.4.5 ACB shall be provided with electrically draw out features.


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- 2.4.6 The draw out modules shall be standardized and it shall be possible to interchange any module with a module of same size. The components to control the equipment like switch, starter, fuse, auxiliary relay etc. shall be wired as a unit on the individual module. Safety shutter shall be provided to prevent direct access to live parts when the chassis is removed.
- 2.4.7 The entire draw out construction should be designed for safe operation during placement or removal of chassis. An earthing arrangement shall be provided which will make contact first before the power contacts are made and break last.
- 2.4.8 The door shall be interlocked so that it cannot be opened unless the isolating switch on that module is OFF. However, it shall be provided with interlock defeat mechanism for intentional opening when on line for testing and inspection purpose.
- 2.4.9 LOTO locking system to be provided for safety purpose while taking clearance for maintenance work. For this necessary Hasps and locks shall be provided in the switchboards.
- 2.4.10 Control switches for breaker control shall be provided in each breaker cubicle. Circuit breaker shall be interlocked to prevent withdrawal of a closed breaker or insertion of a closed breaker. Each breaker shall be provided with anti pumping device.
- 2.4.11 Provisions shall be made to manually close/trip circuit breakers on loss of control voltage.
- 2.4.12 The offered switchboard shall be suitable for extension in either direction, for this ends of bus bars shall be suitably drilled and panels at extreme end shall have openings, which shall be covered with plates screwed to the panel.
- 2.4.13 There shall be three positions for Breaker/Contactor trolley: - Service, Test and Isolate. In service position, the power connections shall be made; but in test and isolate mode, the power connection of bus bars shall be automatically removed.
- 2.4.14 Suitable shutter arrangement shall be provided to protect the person from accidental contact with live bus in trolley chamber.
- 2.4.15 FRP supports shall be used for bus bars with adequate clearances and creepage distance to prevent flash over due to effect of dust moisture.
- 2.4.16 Protective relays for incoming and outgoing feeders shall be microprocessor based numerical type.
- 2.4.17 Auto-changeover scheme shall be through Numerical relays only.
- 2.4.18 Every enclosure door that provides access to live parts operating at 240 V AC and above shall be mechanically interlocked with a circuit interrupting device on the supply side such that when the door is open, the equipment is de-energised.
- 2.4.19 The design, manufacture and testing of MPDB shall be in conformity with all applicable Indian Standards, Codes, Regulatory requirements and details indicated in the above SS/ES/FD.
- 2.4.20 Main power distribution board shall be totally type tested panel as per IEC 61439.
- 2.4.21 The required details of the MPDBs, such as feeder/circuit rating, instruments and meters, protections, reference schematic drawings etc. are indicated in the feeder details. Numbers and ratings of feeders, indicated in the feeder details, are tentative and may increase or decrease. Actual numbers and ratings of the feeders will be indicated at the time of order/drawing approval.
- 2.4.22 Technical Particulars shall be filled by the bidder and submitted for Approval after order in line with ITB / P.O. requirement before commencement of manufacturing.
- 2.4.23 The make of components to be used in the MPDB shall be as specified in this specification. The make of the components, not specified, shall be indicated by the bidder and the same shall be subject to TFL/PDIL approval.

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- 2.4.24 Meters as indicated in the feeder details for each feeder shall be provided. However, whereas ammeter and voltmeter shall be provided separately, all other meters shall be part of the multifunction meter.
- 2.4.25 Power for space heater bus shall be tapped from the main bus of the MPDB through suitably rated double pole MCB instead of the provision specified at clause no. 5.17.1 of ES: 8060.
- 2.4.26 Suitable DC power shall be provided for closing, tripping and indication of circuit breaker feeder from DCDB. DC voltage shall be 110V DC and AC auxiliary supply voltage shall be 240V AC.
- 2.4.27 Various schematic diagrams attached are suggestive. Vendor shall consider all other components/wiring as required for proper and safe operation of the scheme. Where no scheme is attached for any type of feeder, vendor shall develop the scheme as per his own standard which shall be subject to owner's approval.
- 2.4.28 The switch boards shall be complete with terminal blocks, rolled aluminium heavy duty double compression type cable glands and crimping lugs suitable for the cable types and sizes indicated in feeder details. The number and sizes of cables may change at the time of drawing approval and the same shall be provided as required without any cost/time implications.
- 2.4.29 Removable gland plates shall be of 6 mm minimum thickness for incomers and 3 mm thickness elsewhere.
- 2.4.30 The main bus bars shall have heat shrinkable insulated sleeves suitable for rated voltage and shall be made of high conductivity aluminium alloy. At joints of these bus bars removable shrouds shall be provided.
- 2.4.31 Bus bars shall be of uniform cross section and supported on non-hygroscopic FRP insulators with adequate clearances and creepage distance to prevent flash over due to effect of dust/moisture.
- 2.4.32 A continuous earth bus shall be provided at the bottom in the switchboard for grounding.
- 2.4.33 Busbar clearances shall conform to relevant Indian Standard/IEC for equipment voltages up to and including 500V AC
- 2.4.34 The current rating of the neutral shall be half that of the phase bus bars. Removable neutral links shall be provided on feeders to permit isolation of the neutral bus bar.
- 2.4.35 Control transformer shall be provided for each bus section of the MPDB having contactor control feeders and each transformer shall be sized for the entire switchboard. Switchboard having two bus sections and coupled by bus tie shall have manual changeover switch for the control transformers. The control transformer shall have at least 10% spare capacity.
- 2.4.36 The hot spot temperature of bus bars, including joints, at design temperature shall not exceed 950C under normal operating conditions. However, for silver plated joints the allowable maximum temperature shall be 1150C.
- 2.4.37 The current rating as specified in specification sheets for switchboard its components are in panel rating. The vendor shall apply suitable de rating to arrive the nominal rating.
- 2.4.38 All bus bars shall be insulated with PVC heat shrinkable sleeves of 1100V grade. Red, yellow and blue colour shall be used for phase bus bars and black colour shall be used for neutral bus bars.
- 2.4.39 Minimum clearance between live parts, between live parts/neutral to earth shall be 19mm.
- 2.4.40 Adequate means shall be provided to prevent shorting of power and/ or control terminals due to accidental dropping of maintenance tools etc.
- 2.4.41 All identical equipments and corresponding parts shall be fully interchangeable.




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- 2.4.42 Metal sheets shall be provided between two adjacent vertical panels running up to the full useful height of the switchboard.
- 2.4.43 All doors and movable parts shall be earthed using flexible copper connections, to the fixed frame of the switchboard. Provision shall be made to connect the earthing bus bar to the plant earthing grid at two ends. Minimum 4 nos, 10mm dia bolts with nuts shall be provided on the earth bus for termination of fourth core of cable per vertical panel.
- 2.4.44 Nameplates for feeder compartments shall be in two parts, one part shall have necessary details pertaining to the compartments number of vertical panel of the switchboard. The other parts shall be removable and shall contain all details regarding the feeder numbers for drives/equipment controlled by the particular module as per approved drgs, also Danger name plate shall be provided at the front and rear of each panel.
- 2.4.45 The incoming / outgoing cable termination shall be staggered for each circuit and barriers of sheet steel or insulating material shall be provided between terminations of two circuits such that maintenance on one circuit could be carried out while the other circuit is live. Suitable clamping arrangements shall be provided for cables and cable termination. Terminal blocks shall not be used for supporting the cables.
- 2.4.46 All terminals except wiping/sliding type control terminals shall be shrouded with plastic covers to prevent accidental contact.
- 2.4.47 The earth connection shall make before the main power / control contacts make and break after the power /control contacts are disconnected. Earthing connection through a plug and socket connection shall not be acceptable. Also the earth connections must remain connected when breaker connected in 'Test' position.
- 2.4.48 Sheet steel barrier shall be provided between individual compartments and cable alley. This barrier shall be provided with opening for power and control connections and it shall be possible to safely carryout maintenance work on cable connections to any one circuit in the cable alley with the bus bars and the adjacent circuits live. Maintenance and connection of cables to any modules shall be possible without having to takeout the modules from its position from the panel.
- 2.4.49 One No. breaker handling trolley for each rating of breaker shall be provided.
- 2.4.50 Wherever any requirement, laid down in this specification/specification sheet/feeder details, differs from that in Engineering Standard (ES:8060), the requirements specified in this specification/specification sheet/feeder details shall prevail.


## 2.5 Cables

- 2.5.1 Cables shall conform to Engineering Standard ES-8160 and enclosed Specification Sheets.
- 2.5.2 All HT power cables shall be with stranded aluminium with XLPE insulation, PVC inner sheathed, armoured, PVC outer sheathed FRLS type and construction as per IS: 7098 (Part 2) and as specified in the specification Sheet (attached in this specification)
- 2.5.3 All LT power cables shall be with stranded aluminium / copper conductor with XLPE insulation, PVC inner sheathed, armoured, PVC outer sheathed FRLS type and construction as per IS: 7098 (Part 1) and as specified in the specification Sheet (attached in this specification).
- 2.5.4 All control cables shall be stranded copper conductor with XLPE insulation, PVC inner sheathed, armoured, PVC outer sheathed FRLS type and construction as per IS: 7098 (Part 1) and as specified in the specification Sheet (attached in this specification).
- 2.5.5 All control cables cores shall be identified with numerical core numbers printed on core instead of colours.
- 2.5.6 All cables shall be armoured and shall have extruded inner and outer sheath. Cables shall be in continuous lengths without any joints.




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- 2.5.7 Preferred drum length shall be indicated by bidder which shall be subject to approval by Owner/PDIL. Bidder shall indicate maximum drum length for each size and type of cables.
- 2.5.8 Various sizes of cables and their quantities shall be as indicated in the SOR. The quantities indicated are tentative and may increase or decrease. Some sizes may be even deleted. Exact requirement shall be indicated at the time of order. Bidder shall confirm that there shall be no variation of unit rate on this account.
- 2.5.9 Technical Particulars shall be filled by bidder and submitted for approval after order in line with PO requirement before commencement of manufacturing. Separate sheet shall be furnished for different grade cables.
- 2.5.10 The cut ends of cable shall be sealed by means of non-hygroscopic sealing material.
- 2.5.11 Following information shall be embossed on outer sheath throughout the length of cable at regular interval:
- i) Cable size & no of cores
  - ii) Voltage grade
  - iii) Type of insulation
  - iv) Year of Manufacture
  - v) Name of Manufacture
  - vi) Running meter
- 2.5.12 Wherever any requirement, laid down in this specification/specification sheet, differs from that in Engineering Standard (ES:8160), the requirements specified in this specification/specification sheet shall prevail.
- 2.6 Lighting Sub Distribution Board (LSDB)/ Single Phase Socket Sub Distribution Board (SPDB-Soc)/ Power Distribution Board for Air conditioners (PDB-AC) / Sub Distribution Board (SPDB)**
- 2.6.1 Power to Lighting Sub Distribution Board (LSDB), Single Phase Socket Sub Distribution Board (SPDB-Soc) and Sub Power Distribution Board for AC (SPDB-AC) shall be provided from Main Power Distribution Board (MPDB).
- 2.6.2 LSDB shall be provided to supply power to the lighting fixtures, SPDB-Soc shall be provided to supply power to 16A switch sockets and SPDB-AC shall be provided to supply power to Air-Conditioner.
- 2.6.3 Distribution Boards shall be provided with incoming and outgoing feeders as indicated SLD attached with this specification. Distribution Boards shall also conform to the specification sheet (attached in this specification).
- 2.6.4 The design and specification of the LSDB/SPDB-Soc/SPDB-AC shall conform to the requirements laid down in the specification sheet. LSDB/SPDB-Soc/SPDB-AC shall be fabricated out of 2.5 mm thick cold rolled sheet steel.
- 2.6.5 LSDB / SPDB-Soc/AC shall be of dust, vermin and weatherproof construction fabricated out of 2mm thick CRCA conforming to IP65. The enclosure shall be suitable for mounting on wall / structure. . 4nos. holes suitable for 12mm bolts shall be provided outside the enclosure for fixing the LSDB / SPDB-Soc/AC.
- 2.6.6 The cut out on the enclosure shall be lined with gaskets. The external cover shall be flushed with the main cover. Continuous neoprene gasket shall be provided to make the board completely dust and weatherproof.
- 2.6.7 The miniature circuit breakers shall be so mounted inside the enclosure that their operating knobs project outside for easy operation. The cut-out for the knobs on the enclosure shall be lined with gasket for dust proofness. For further protection against ingress of dust, the portion where the knobs have protruded out shall be provided with another external front cover, internally hinged at the top, gravity operated and with a knurled knob at the bottom. The


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external cover shall be flushed with the main cover. Continuous neoprene gasket shall be provided to make the board completely dust and weather proof.

- 2.6.8 All external hard ware of diameter less than 8mm shall be of stainless steel and those of diameter 8mm and above shall be of mild steel cadmium plated or zinc passivated.
- 2.6.9 The LSDB shall have top entry arrangement for outgoing cables and bottom entry for incoming cable provided with double compression type rolled aluminium cable glands suitable for 1.1 KV XLPE-A-FRLS PVC outer-sheathed cables. SPDB-Socket/AC shall have bottom entry arrangement for cables provided with double compression type rolled aluminium cable glands suitable for 1.1 KV XLPE-A-FRLS PVC cables.
- 2.6.10 The internal wiring shall be carried out by means of single core XLPE/PVC insulated 2.5 sq.mm stranded copper conductor cables.
- 2.6.11 Individual earth terminals shall be provided for the earth conductor of the outgoing cables beside the phase and neutral terminals.
- 2.6.12 Suitable label inscription consisting of black Perspex with engraving for the board and circuit nos. of all outgoing feeders shall be provided. The label inscription of the board shall contain description and code no. as indicated in specification sheet. The circuit nos. of outgoing feeders shall be serially indicated as 1L, 2L..... 17L, 18L, as applicable.
- 2.6.13 The LSDBs / SPDBs-Soc/ AC shall be provided with two external earthing terminals.
- 2.6.14 The board shall be complete with terminal block, cable glands, cable lugs and other accessories as required.
- 2.6.15 Three phase and neutral bus bar system of adequate size shall be provided to which all outgoing and incoming MCBs/MCCBs shall be connected.
- 2.6.16 The board shall be complete with terminal block, cable glands, cable lugs and other accessories as required.
- 2.6.17 For detailed specification refer Engineering Standard of Lighting Sun Distribution Board (ES:8083).
- 2.6.18 Wherever any requirement, laid down in this specification/specification sheet, differs from that in Engineering Standard (ES:8083), the requirements specified in this specification/specification sheet shall prevail.
- 2.7 Rectifier-cum-Battery Charger**
- 2.7.1 The Rectifier-Cum-Battery Charger shall be fully automatic using silicon controlled rectifier and shall consist of units as described below:-
- i) Main Float cum Load cum Boost charger: To supply continuous load and keep the battery in healthy state.
  - ii) Standby Float cum Load cum Boost charger: To supply continuous load & keep the battery in healthy state in case any abnormality in Main charger.
- 2.7.2 Battery Charger shall have 110 V DC system.
- 2.7.3 Transfer from float charging to boost charging and vice versa shall be automatic as per the battery charge condition.
- 2.7.4 Provision of suitable filters shall be made so that the ripple in output voltage shall not exceed 3% and 10% for float and boost charger respectively
- 2.7.5 During boost charging operation, arrangement shall be made so that DC power to load is not interrupted even if AC power fails during this operation. During Boost charge period, battery backup to load shall be arranged by a tapping from suitable point of the battery.

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- 2.7.6 The rated voltage of the the float charger for Ni-Cd shall be minimum 1.4 Volt/ Cell and final charging voltage of the boost charger shall be minimum 1.7 Volt/ Cell. The rated output voltage of the charger under 4.2 (a) above shall be adjustable by  $\pm 5\%$  of the rated value manually.
- 2.7.7 The frame work of cubicles shall be of bolted/welded construction, fabricated out of cold rolled sheet steel of not less than 2 mm thickness. The thickness of base channel shall not be less than 3 mm, suitable reinforcement, wherever necessary, shall be provided.
- 2.7.8 The output voltage of the float charger shall be monitored and in case voltage falls below 90% of the rated voltage the stand by charger shall be automatically switched 'ON' with audio-visual alarm and annunciation. Time delay features shall be incorporated to avoid spurious changeover.
- 2.7.9 Boost charging shall be achieved through the same silicon controlled rectifier (SCR) which shall regulate the charger output automatically by current control closed loop system. Provision for manual adjustment of charger output shall also be made. Charger shall maintain its output current constant at starting rate/ finishing rate of battery charging current irrespective of variation in input supply and battery condition.
- 2.7.10 Suitable dropper diodes shall be provided to reduce the voltage across the load to 105% of the rated voltage at rated load current. When power supply to the charger fails, the dropper diodes shall be by-passed automatically through contactor so that full battery output voltage is available to the load.
- 2.7.11 110V DC System shall have 2 sources with auto changeover facility in case of failure of 1 source.
- 2.7.12 DC Distribution Board with 2 Nos. of outgoing feeders for 11 kV ICOG Panel, 4 Nos. of outgoing feeders for 415 V Switchboard, 4 Nos. outgoing feeders for Panic Lights and 4 Nos. Spare feeders, shall be provided.
- 2.7.13 Substation shall be provided with redundant battery charger with 2x100% battery banks.
- 2.7.14 The battery and charger combinations shall be such as to ensure continuity of D.C. supply at load terminals without even momentary interruption.
- 2.7.15 AC Ammeter and AC Voltmeter on Charger Input; DC Ammeter, DC Voltmeter for charger output/ battery voltage and on demand type Battery Charge / Discharge Ammeter shall be provided.
- 2.8 **Battery Sets.**
- 2.8.1 These shall be Ni-Cd Battery Sets shall be rated to meet the total DC power requirement for 1 hour after complete power failure.
- 2.8.2 Battery shall be designed with minimum temperature as 5<sup>o</sup> C.
- 2.8.3 The battery shall be able to deliver rated ampere hours when discharged at the 5 hours rate of discharge to a final voltage of 1.1 V per cell for Ni-Cd battery under the ambient conditions.
- 2.8.4 Each cell shall be contained in a closed top container preferably transparent and unbreakable and shall incorporate positive plates, negative plates and separators of adequate dimensions. Lead acid battery shall be of plante plate type (positive plate).
- 2.8.5 The battery bank shall be complete with all necessary components such as lids, plugs, separators and buffers, inter-cell connectors, lead coated bolts and nuts, cell insulators etc.
- 2.8.6 The required quantity of electrolyte plus 10% extra quantity shall be supplied in suitable non-returnable containers along with the battery.
- 2.8.7 **ACCESSORIES**

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The following accessories shall be supplied with each battery bank:-

- |     |        |    |   |
|-----|--------|----|---|
| (a) | 1 Set  | -- | Battery Stand constructed out of teak wood without the use of any metal fastenings and coated with 3 coats of anti-acid paint. The stand shall be properly designed so that each cell shall be easily accessible for inspection, topping up etc. However, for Ni-Cd battery mild steel stand with alkali resistant paint may also be accepted |
| (b) | 1 Set  | -- | Inter-row, inter-tier and inter-stand connectors and takeoffs. These shall be sized suitably to have adequate current carrying capacity and mechanical strength   |
| (c) | 1 Set  | -- | Cell Insulators   |
| (d) | 1 Set  | -- | Stand Insulators  |
| (e) | 1 No.  | -- | Centre zero cell testing voltmeter scaled 3-0-3 volts   |
| (f) | 2 Nos. | -- | Syringe type Hydrometers for measuring the specific gravity of the electrolyte  |
| (g) | 2 Nos. | -- | Gravity correction thermometers, mercury-in-glass type  |
| (h) | 1 Set  | -- | Connecting bolt wrenches  |
| (i) | 1 No.  | -- | Rubber syringe for tapping cells  |
| (j) | 1 No.  | -- | Wall mounting type teak wood holder for Hydrometer and Thermometer.   |
| (k) | 1 No.  | -- | Acid/Alkali resisting funnel.   |
| (l) | 1 No.  | -- | Acid/Alkali resisting jug.  |
| (m) | 1 Pair | -- | Rubber gloves.  |
| (n) | 1 No.  | -- | Rubber Apron.   |

## 2.9 LIGHT FIXTURES

2.9.1 All lighting fixtures shall be LED type.

2.9.2 The fixtures shall be complete with all accessories including the driver, lamps and all accessories. The lighting fixtures shall also conform to the specification sheet (attached in this specification).


2.9.3 The fixtures shall be provided with cable glands and a terminal block suitable for termination of copper conductor up to 2.5 sq. mm size.

2.9.4 The fixture shall be so designed that it shall be possible to maintain or replace different accessories without difficulty, including replacement of lamps

2.9.5 Decorative type light fittings shall be provided in conference halls, meeting rooms, Senior Executive Rooms and Reception Area.

## 2.10 CEILING FANS

2.10.1 Ceiling fans shall be of 1400/1200 mm/600mm sweep suitable for operating on 240V, 1 phase, 50Hz supply and shall be complete with standard mounting accessories such as suspension rods, top and bottom caps etc. The fans shall be of approved shade and supplied with appropriate electronic speed regulators (modular type). The ceiling fans shall conform to relevant Indian standards.

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2.10.2 The minimum distance between fan blades and the ceiling should be about 0.3 meters.

2.10.3 Energy efficient fans with minimum BEE 5 star rating shall be used.

### 2.11 CEILING ROSES

2.11.1 Ceiling rose shall be of bakelite and shall comply with IS-371 specification for ceiling roses having two or three terminal plates and of outside diameter not less than 63.5 mm. The flexible cord shall be fixed to ceiling rose in such a way that no weight is carried by the clamping screws. The flexible cord shall be of 23 / 0076 dia. cord with copper conductor.

### 2.12 EXHAUST FANS

2.12.1 The exhaust fans shall be of 450/300mm sweep, domestic type, suitable for operating on 240V, 1 phase, 50 Hz supply and shall be complete with self opening louvers and standard mounting accessories such as frame etc.

2.12.2 Exhaust fans shall be fixed in wall by providing, a circular opening to suit the size of the frame, which shall be fixed by means of rag bolts embedded in the wall. The hole shall be neatly plastered to the original finish of the wall. The exhaust fan shall be connected to the exhaust fan point, which shall be wired as near to the opening as possible, by means of a flexible cord.

### 3.0 MOULDED CASE CIRCUIT BREAKERS (MCCB)

3.1.1 MCCBs shall be of 4 Pole.

3.1.2 MCCBs shall be provided with spring assisted quick make/ break, trip free mechanism.

3.1.3 MCCB shall be suitable for remote tripping operation and the tripping device shall be suitable for the specified control supply voltage.

3.1.4 MCCBs shall be provided a tripping device (Electronic release) with inverse time characteristic for over load protection and instantaneous characteristics for short circuit protection and MCCB rated above 125A shall have adjustable settings.

MCCBS shall have Earth Fault Protection

3.1.5 ON and OFF position of the operating handle of MCCB shall be displayed and the operating handle shall be mounted on the door of the compartment housing MCCB.

3.1.6 Each MCCB shall be provided with minimum 1 NO + 1 NC auxiliary contact and 1NO contact for tripping indication/alarm for owners use.

### 4.0 MINIATURE CIRCUIT BREAKERS (MCB)


4.1.1 MCBs shall have silver tungsten contact rewirable connections suitable for flush and surface mounting and shall be suitable for mounting on Din-Rail. MCB and distribution boards shall be as per approved make of list.

4.1.2 All MCBs shall be ISI marked.

4.1.3 All wiring connections required to be made with MCBs shall be carried out by providing necessary thimbles / lugs duly crimped.

4.1.4 MCBs shall be hand operated, air break, quick make, quick break type conforming to applicable standards.

a) The MCB shall be provided with overload / short-circuit protective device for protection under overload and short circuit conditions. The switch action shall be trip free to inhibit closing under fault conditions. All brass parts shall be electroplated and all steel parts cadmium plated and all contacts silver plated. The minimum breaking capacity of MCBs shall be 10 KA r.m.s at 415V / 220V AC.

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- b) Miniature circuit breakers shall be SP/DP/TP or 4P and of the current rating all as specified elsewhere or approved. Each miniature circuit breaker shall be provided with spring-washer at each cable termination. All MCBs shall be in accordance with the relevant standards.
- c) The instantaneous magnetic tripping of the MCBs shall be in accordance with the latest edition of the I.E. Regulations. The magnetic tripping of miniature circuit breaker supplying socket outlets shall be 2.7 to 4 times their rated current. The magnetic tripping of the miniature circuit breakers supplying lighting circuits shall be 7 to 10 times their rated current.

## 5.0 CAST IRON / MILD STEEL BOXES

- 5.1 The boxes having various fittings such as switches, sockets, fan regulators etc. shall be of cast iron / MS of required size and flush mounting type (Refer clause 6.52 of IS-782). Average thickness of cast iron boxes should not be less than 2.5 mm and that of MS boxes not less than 2 mm thick. The cast iron / MS boxes shall be embedded in the wall and need not be fixed to wooden plugs. The contractor may at his discretion provide galvanized screws without any extra cost.

## 6.0 ROOM SWITCH BOARD

Room Lighting Switch Board comprising of flush mounting Sheet Steel concealed metal box with Anchor (Roma) make inner plate, cover plate (white), modular switch/ socket/ switch cum electronic fan regulator with necessary hardware as specified in specification and SOR.

## 7.0 TERMINAL BOXES

- 7.1 In concealed conduit wiring, the terminal point for power / light socket outlets, switching etc. shall terminate in recessed cast iron or galvanized mild steel boxes fitted flush with wall surface. All terminal boxes shall be properly earthed and connected to earth dolly.


## 8.0 MODULAR TYPE SWITCHES / SOCKETS

- 8.1 Modular type switches and modular type sockets shall be ISI marked and shall be approved.


## 9.0 INTERLOCKED TYPE SWITCH SOCKET & PLUG

- 9.1 Interlocked type switch socket shall be of the types as specified in specification sheet.
- 9.2 These shall be complete with heavy duty air break switches, HRC fuses, sockets & plugs. These shall be fully wired and shall be complete with cable glands, lugs, terminals etc. for external connection.
- 9.3 The switch socket shall be heavy duty industrial type. The interlocking arrangement shall be such that it is not possible to insert or withdraw the plug with the switch in 'ON' position. Switch socket shall also conform to specification sheet.
- 9.4 The enclosure of switch sockets and plugs shall be dust and hose proof in weatherproof execution and of Cast Aluminium Alloy 4600, suitable for fixing on wall / structure. A rain-hood shall be offered as an additional protection. Rain hood shall be of the same material as of the main enclosure. Suitable arrangement for looping of cables from one switch socket to the other shall be provided. Necessary terminals, cable glands and lugs for looping shall be provided. Also one no. threaded plug for each switch socket shall be supplied loose.
- 9.5 The Air break switches shall be quick make, quick break rotary type and of utilization category AC-23. Switches shall be hand operated from outside the cover. The switch handle shall remain fixed to the front cover while removing the front cover.



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- 9.6 The sockets shall be provided with link type HRC fuses. The fuses shall be capable of withstanding a short circuit current of 50 KA and shall be delayed action type. These shall be mounted on a shrouded base.
- 9.7 The socket outlet shall be located in the lower part of the enclosure and shall be provided with a threaded aluminium cover attached to the body with SS chain, to protect the socket after extraction of the plug. Spring loaded automatic shutter shall not be acceptable.
- 9.8 The plugs shall be so constructed that these can be easily fitted in to the socket outlets and shall be provided with knurled knob arrangement for screwing on the body of the socket so that it can be securely fixed on the top. The plug base and cover shall be firmly secured to each other and shall be sufficiently robust in construction to withstand normal usage. The plug and socket contacts shall be self-aligning type with best electrical continuity.
- 9.9 The plug shall be provided with cable entry suitable for receiving TRS flexible heavy duty copper conductor cable of specified size. The arrangement shall be such that the conductors are relieved from strain including twisting where they are connected to the terminals and that the outer surface of the cable at the place of entry is not damaged.
- 10.0 **JUNCTION BOXES**
- 10.1 Junction boxes shall be used for looping of lighting cables in the lighting circuit of fluorescent fixtures. Junction boxes shall be made of cast aluminium having IP55 degree of protection as per IS: 2147.
- 10.2 Junction boxes shall be liberally dimensioned having minimum internal dia. of 120 mm.
- 10.3 The junction boxes shall be 4 way, dome cover type, suitable for mounting on surface or wall complete with mounting accessories, 6 nos. 16 A terminals fitted on DMC moulded terminal block with shorting links, 3 nos. cable glands suitable for 3x2.5 sq. mm<sup>2</sup> copper conductor XLPE-A-FRLS PVC cable, one no. threaded plug and two external earthing terminals.
- 10.4 Cable glands & plugs shall be of hose proof, single compression type and shall be of rolled aluminium.
- 11.0 **LIGHTING POLES, if required**
- 11.1 Lighting pole shall be steel tubular swaged type conforming to designation 410 SP-3 as per IS:2713 complete with base plate, threaded stud with nuts & washers for earthing, finial taper plug, bracket on the overhang portion for fixing of lighting fixtures bolts, nuts and screws as required shall be provided.
- 11.2 The outer & inner portions of the poles for ground installation shall have bituminous compound coating at the bottom after galvanising.
- 11.3 Zinc coating shall be done by hot dip galvanising process as per IS: 2629 and shall be min. 610 gm / sq. meter.
- 11.4 Foundation depth for 5m and 9 m pole shall be 1250mm and 1500mm respectively as per relevant IS.
- 11.5 The poles shall be subjected to min. following tests:
- Thickness of galvanising (min. 80 microns)
  - Drop test as per IS: 2713.
  - Deflection test as per IS: 2713


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### SPECIFICATION SHEET 11 kV ICOG Breaker Panel

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH		
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>		
		ORDER <input type="checkbox"/>		
		FINAL <input type="checkbox"/>		
<b>GENERAL</b>		<b>AMBIENT CONDITION</b>		
Ref. Stds. : IS <input checked="" type="checkbox"/>	IEC <input checked="" type="checkbox"/>	Temp. Max./Min./Design Ref. : 46 / 1 / 50°C		
Encl. Docs. :		Relative Humidity: 100%	Alt. above sea <1000 M	
Make :		<b>ATMOSPHERIC POLLUTION</b>		
Maker's Ref. No. :		Dusts : Coal Dust		
		Vapour : Highly Corrosive		
		<b>LOCATION</b>		
		Indoor <input checked="" type="checkbox"/>	Outdoor <input type="checkbox"/>	
		Gr. Floor <input type="checkbox"/>	1 <sup>st</sup> floor <input type="checkbox"/>	
<b>ADDL. SCOPE</b>	Incoming Bus Duct <input type="checkbox"/>	Tie Bus Duct <input type="checkbox"/>		
	Erection & Comm. <input checked="" type="checkbox"/>	Supervision of Erection & Comm. <input type="checkbox"/>		
<b>TESTS:</b>				
Routine <input checked="" type="checkbox"/> Type <input type="checkbox"/> Others <input type="checkbox"/>				
<b>BASIC DATA</b>				
	Description	11kV ICOG Panel		
<b>REFERENCE DRAWINGS</b>	Single Line Diagram			
	Feeder Details	Sh. No. -- of this specification		
	P.T. Bus Arrangement	--		
<b>SYSTEM DETAILS</b>	Rated Voltage with variation	11 kV ± 10%		
	Rated Frequency with variation	50Hz ± 5%		
	Highest System Voltage	12 kV		
	Combined V & F Variation	± 10%		
	No. of Phases & Wires	3 Phase, 3 Wire		
	Insulation Level	70 kVp/ 28kV BIL		
	Fault Level	750 MVA for 3 sec.		
Earthing Mode	Non effectively earthed through resistor			
<b>BUS BARS</b>	<b>Rating</b>	Continuous	1250A	
		Short Time for 3 sec.	40KA for 3 sec.	
	Type of Insulation	Insulating heat shrinkable Sleeved		
<b>CIRCUIT BREAKER</b>	Type	Vacuum Circuit Breaker		
	<b>Breaking Capacity</b>	Symmetrical	40 KA for 3 sec.	
		% DC Component	20% (Min.)	
	Making Capacity ( peak )	2.55 times Breaking Capacity		
	Earthing Switch	Integral type		
<b>CONTROL SUPPLY</b>	Closing & Indication	110V DC **		
	Tripping	110V DC **		
	Alarm / Signal	110V DC **		
	Space Heater	240V AC		
<b>MISC. DATA</b>	Cable Entry Top / Bottom	Bottom		
	Dummy Panel Req'd. Yes / No	As required		
	Width of Dummy Panel	--		
	No. of Dummy Panel	--		
	<b>PAINTING</b>	Type	Epoxy Based	
		Shade	631 of IS: 5	
Spares Parts Req'd. for a Period of	2 Years			


\*\* NOTE:

- 110V DC Power required for closing, tripping and indication of circuit breaker feeder shall be provided from DCDB.
- For metering, protection etc. refer SLD.
- All unfilled data shall be filled by the Contractor. Completely filled in Specification Sheet duly stamped & signed by the Contractor shall be submitted after award of order.


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**TECHNICAL PARTICULARS  
11 KV ICOG Panels**


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ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	
ORDER <input type="checkbox"/>		FINAL <input type="checkbox"/>	
<b>GENERAL</b>			
Make / Maker's Type :			
Ref. Standards			
Rated Operational Voltage with $\pm$ %			
Rated Insulation Voltage			
Rated Voltage of Aux. Circuits with $\pm$ %			
Rated Current			
Short Time Rating			
Degree of Protection of Enclosure			
Service Conditions : Indoor / Outdoor			
<b>DRAWOUT FACILITIES</b>	Circuit Breaker's		
	P.T.'s		
	Protective Relays		
	Meters		
<b>SHEET STEEL TYPE &amp; THICKNESS</b>	Base Channel		
	Others		
Material of Gaskets			
Material of External Hardware			
Operating Height : Max. / Min.			
Space Heater Rating of each Panel			
<b>PAINTING</b>	Method of Pre-treatment		
	Thickness of Paint		
	Type & Shade		
Final Temperature			
<b>PROVISIONS / FACILITIES</b>	Safety Shutters		
	Interlocks		
	Earthing Facility		
	Base Channels with Fdn. Bolts		
	Gland Plate with Glands		
	Limit of Maximum Nos. of Cables Termination Possible		
Dimensions : L X B X H / Dim. Drg. Ref. No.			
Shipping Dimensions of Largest Package			
Weight : Static / Dynamic			
Heat Dissipation			
<b>BUS - BARS</b>			
Material			
<b>SIZE</b>	HBB		
	VBB		
	Ground		
	Supporting Calculation Attached		
<b>MINIMUM CLEARANCE</b>	Between Phases		
	Between Phase & Earth		
Minimum Creepage Distance			
<b>CURRENT RATING</b>	Continuous		
	Short Time for 3 secs.		
Max. current density for bus-bars			
Temp. Rise for : Cont. Load / Short Ckt. Current			
<b>SUPPORT</b>	Material		
	Voltage Class		
	BIL		
	Arrangement : Separate/Common		
Power Frequency test Voltage for 1 Min. Duration			
Material of Bus-bar Insulation			
Material of Inter Panel / Compartment Barrier			

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Shrouding Material for Joints		
Bus Bar Phase Identification Mark		
No. & Type of Bolts per Joint		
<b>CIRCUIT BREAKERS</b>		
Make / Maker's Type		
Ref. Standards		
Type of Circuit Breaker		
Principle / Collaborator		
Rated Operating Sequence		
Rated Voltage		
Rated Frequency		
No. of Poles		
<b>CURRENT RATING</b>	Continuous in IPH6 Enclosure	
	3 second RMS	
	Momentary ( Peak )	
<b>BREAKING CURRENT</b>	Symmetrical KA	
	Asymmetrical KA	
	% D.C. Component	
Making Current ( Peak )		
Derating Factor, if any for Site Condition		
<b>LIMITATION OF CURRENT RATING FOR</b>	Motor Duty	
	Capacitor Duty	
	Transformer Switching	
	Cable Charging	
Restriking Voltage ( Peak )		
<b>INSULATION LEVEL</b>	1 Min. PF withstand Voltage	
	Impulse withstand Voltage	
No. of Breaks per Pole		
<b>TYPE AND MATERIAL OF</b>	Fixed Contact	
	Moving Contact	
	Arcing Contact	
Type of Closing Mechanism		
Type of Tripping Mechanism		
<b>ARC CONTROL DEVICE</b>	Type	
	Material of Arc Chamber	
Details of Anti – Pumping Feature		
Details of Trip Free Feature		
Total Closing Time		
Total Interrupting Time at 10%, 50%, 100% of rated		
Interrupting Capacity		
<b>SPRING CHARGING MOTOR</b>	Rating	
	Voltage	
	Insulation	
	Duty	
	Type	
Spring Charging Time		
<b>VOLTAGE / CURRENT REQD. FOR</b>	Closing	
	Tripping	
	A.C. Supply	
<b>AUXILIARY CONTACTS</b>	No. of Spare Contacts NO / NC	
	Contact Rating Ac / Dc	
	Convertible Type	
<b>INSULATING OIL</b>	Ref. Standard	
	Volume of Oil Required	
Mounting Arrangement		
Temp. Rise of Different Parts		
<b>DETAILS FOR SF<sub>6</sub></b>	SF <sub>6</sub> Gas Pressure	
	Wt. Of SF <sub>6</sub> Gas per Breaker	

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<b>DETAILS FOR SF<sub>6</sub></b>	Gas Leakage Detector Provided	
	Gas Density Monitor Provided	
<b>DETAILS FOR VCB</b>	Pressure inside the Interrupter	
	Contact Wear Indication Provided	
	Facility for Checking Loss of Vacuum Provided	
<b>RECOMMENDED TIME INTERVAL FOR</b>	Inspection of Drives	
	Inspection of Contacts	
	Quenching Devices	
	Replacement of Oil	
Dimensions : L X B X H / Dim. Drg. Ref. No.		
Type Testing Authority & Test Report Ref. No.		
Net Weight of Breaker		
<b>CURRENT TRANSFORMERS</b>		
Make / Maker's Type		
Ref. Standard		
Type of Primary Winding		
No. of Cores		
Ratio		
Rated Burden		
Accuracy Class		
ALF / ISF		
Thermal Limit		
Dynamic Limit		
Insulation Class / Material		
Basic Insulation Level		
Ref. Magnetisation Curve No.		
<b>POTENTIAL TRANSFORMERS</b>		
Make / Maker's Type		
Ref. Standard		
Winding Connection : Pri. / Sec.		
Ratio		
Rated Burden		
Accuracy Class		
Insulation Class / Material		
Basic Insulation Level		
Weight		
Dimension		
Rated Voltage Factor		
<b>SURGE DIVERTER</b>		
Type & Maker's Type		
Rated Voltage KV		
Nominal Discharge Current ( 8/20 μ sec. wave )		
Residual Voltage at Rated Discharge Current		
Power Frequency Spark Over Voltage		
1.2/50 μ sec. Spark Over Voltage		
<b>RELAYS</b>		
Application		
Make / Maker's Type :		
Ref. Standards		
Operating Principle		
Rated Voltage / Current		
Rated Burden		
Setting Range		
Type of Mounting		
Reset : Hand or Self		
Flag Indication Type		
Ref. Characteristic Curve Type		
Ref. Descriptive catalogue		

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<b>INSTRUMENTS AND METERS</b>	
Application	
Make / Maker's Type :	
Ref. Standards	
Operating Principle	
Rated Burden	
Scale Range	
Accuracy	
Size	
Type of Mounting	
<b>CONTROL SWITCHES</b>	
Application	
Make / Maker's Type :	
Ref. Standards	
Contact Rating	
Utilisation Category	
<b>PUSH BUTTON</b>	
Make / Maker's Type :	
Ref. Standards	
Contact Rating	
Utilisation Category	
<b>SIGNAL LAMPS</b>	
Make / Maker's Type :	
Ref. Standards	
Rated Voltage / Wattage	
Type of Lamp Holder	
Type of Globe	
Accessibility from Front	
<b>MOULDED CASE CIRCUIT BREAKERS</b>	
Make / Maker's Type	
Ref. Standard	
Current Rating	
Breaking Capacity	
Setting Range of Thermal Release	
Setting Range of Magnetic Release	
<b>MINIATURE CIRCUIT BREAKER</b>	
Make / Maker's Type :	
Ref. Standards	
Rated Current	
Breaking Capacity	
<b>CABLE GLANDS</b>	
Material	
Type	
<b>TERMINAL BLOCKS</b>	
Make	
Type	
Current Rating	

NOTE: Completely filled in Technical Particulars Sheet in line with NIT/PO, shall be submitted after award of order for Owner/Consultant approval, before commencement of manufacturing.




	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**SPECIFICATION SHEET**  
**11 / 0.433 KV DISTRIBUTION TRANSFORMERS**

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	
		ORDER <input type="checkbox"/>	
		FINAL <input type="checkbox"/>	
<b>GENERAL</b>			
Item No. :	Ref. Stds. : IS-1180, IS-2026, IEC-60076		
Quantity :	Encl. Docs. :		
Description : Distribution Transformers	Vendor :		
Code No. :	Vendor's Ref. No. :		
TEST TO BE WITNESSED : Routine : <input checked="" type="checkbox"/> Heat Run : <input type="checkbox"/> Impulse : <input type="checkbox"/> Others : <input type="checkbox"/>			
<b>SERVICE CONDITIONS</b>			
<b>SYSTEM DETAILS (PRI. / SEC.)</b>		<b>AMBIENT CONDITIONS</b>	
Nom. Voltage with $\pm$ % : 11KV $\pm$ 10% / 0.433KV $\pm$ 10%		Temp.- Max./Min./Design Ref. : 46 / 1 / 50°C	
Highest System Voltage : 12 / 0.457 KV		Rel. Humidity : 100 %	
Number of phases : 3 Ph / 3 W + N		Alt. above Sea < 1000M	
Rated Frequency with $\pm$ : 50 Hz $\pm$ 5%		<b>Atmospheric Pollution</b>	
Combined V & F Variation : $\pm$ 10 %		Dusts : Coal Dust	
Fault MVA : 750 MVA / 36 MVA		Vapour : Highly Corrosive	
Earthing Mode : Solidly Earthed		<b>Location</b>	
		Indoor : <input type="checkbox"/> Outdoor : <input checked="" type="checkbox"/>	
<b>AUX. POWER SUPPLY</b>			
		<b>System Data</b>	
		A.C. : 415V $\pm$ 10%, 3P & N, 50Hz $\pm$ 5%	
		D.C. : 110 V	
		<b>Instrument Contact Rating</b>	
		A.C. : 240 V, 5 Amps	
		D.C. : 110 V, 5 Amps	
<b>BASIC DATA</b>			
<b>RATING</b>		<b>TERMINAL CONFIGURATION</b>	
Rated Capacity : 2000 KVA		W	
No Load Voltage Ratio : 11 KV / 0.433 KV		X Z	
Highest Voltage for Eqpt. : 12 KV / 0.457 KV		Y	
Insulation level		Shall be provided later.	
Impulse : 75 KV / --			
Pri.-/ Sec			
Power Freq. : 28 KV / 3 KV		<b>TERMINAL CONNECTIONS</b>	
Impedance at 75 ° C: As per IS (without negative tolerance)		<b>PRI.</b>	
Vector Group : Dyn 11			
Cooling System : ONAN		Arrangement	
Motor I Start & T Start : Shall be informed later			
<b>TAP CHANGER</b>		Cable cond.	
Type of Taps			
On Load : <input type="checkbox"/> Off Ckt. : <input checked="" type="checkbox"/>		Arrangement	
Range of Taps : -5% TO +5%			
No. of Taps : 5 @ 2.5 %		Bus cond.	
<b>C.T. REQUIREMENTS</b>			
<b>Differential Protection</b>		<b>SEC.</b>	
3 nos. on Trf. : <input type="checkbox"/>		O/H bushing : <input type="checkbox"/>	
3 nos. Loose : <input type="checkbox"/>		Bus Duct : <input type="checkbox"/>	
<b>Restricted earth fault Protection</b>		Cable : <input checked="" type="checkbox"/>	
		Type : 11 KV XLPE-A-FRLS-PVC (Al) UE	
1 no. on Trf. : <input checked="" type="checkbox"/> CI.-PS		No. & Size : 1R-3CX240 mm <sup>2</sup> (Al)	
3 nos. Loose : <input checked="" type="checkbox"/>		O/H bushing : <input type="checkbox"/>	
<b>Standby earth fault Protection</b>		Bus Duct : <input type="checkbox"/>	
		Cable : <input checked="" type="checkbox"/>	
1 no. on Trf. : <input checked="" type="checkbox"/> CI.-5P10		Type : 1.1 KV XLPE-A-FRLS-PVC (Cu)	
		No. & Size : 7R-3.5Cx400 mm <sup>2</sup> (Cu)	
<b>ADDITIONAL FITTINGS</b>		<b>Control Cable</b>	
1. LV Neutral terminal box		Type : 1.1 KV XLPE-A-FRLS PVC (ST2) (Cu)	
2. Thermometer pocket with cover		No. & Size : 19X2.5 mm <sup>2</sup> , 2CX10 mm <sup>2</sup> , 5X2.5 mm <sup>2</sup>	
3. Tank magnetic oil level gauge		<b>Earth Conductor</b>	
4. Bi-directional roller		Body : 2-75X10 GI strip	
		Neutral : 2-1CX185 mm <sup>2</sup> XLPE-UA-FRLS PVC (Al), 1.1 kV	
		<b>Cable Gland Type &amp; Material</b>	
		Primary : } Double	
		Secondary : } compression	
		Control : } Rolled Al	
<b>PAINTING</b>			
		Type : EPOXY BASED	
		Shade : 631 OF IS : 5	
		Reqd. : <input checked="" type="checkbox"/> For a period of 2 Years	


- All unfilled data shall be filled by the bidder. Completely filled in Specification Sheet duly stamped & signed by the bidder shall be submitted after award of order.

- Impulse test certificate for similar rating shall be furnished after award of order.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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### TECHNICAL PARTICULARS TRANSFORMERS

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/>
		FINAL <input type="checkbox"/>	
<b>GENERAL</b>			
Item no. :			Ref. Stds. :
Quantity :			Make :
Description :			Maker's Type :
Code no. :			
<b>ELECTRICAL DATA</b>			
Rating / Voltage Ratio			
Rated Current - Primary / Secondary			
Rated No Load Current			
Temp. Rise over Ambient - Oil / Winding			
Load Loss at Rated Current at 75° C			
No Load Loss at Rated Voltage / Copper Loss			
Full Load Efficiency at CosΦ - Unity / 0.8 Lag			
Maxm. Efficiency & Load at which it occurs			
Full Load Regulation at CosΦ - Unity / 0.8 Lag			
Short Circuit Withstand Capacity			
B max. at Rated V & F ( Tesla )			
Excitation Loss per Kg. at B max.			
X/R Ratio			
<b>INSULATION GRADED / UNIFORM</b>	Primary		
	Secondary		
Induced Over Voltage Withstand Capacity : Pri / Sec.			
OLTC : Rated Voltage / Rated Current			
Total Auxiliary Power Requirement : AC / DC			
<b>CONTROL PANELS</b>	Sheet Metal Thickness		
	Enclosure Type		
	Control Scheme Ref. No.		
Cooling Fans : Qty. / Rating			
Minimum Clearance : H.V. / L.V.	i. Between phases		
	a. In air mm		
	b. In oil mm		
	ii. Between phase & earth		
	a. In air mm		
	b. In oil mm		
Short-circuit Impedance at 75 o C			
<b>MECHANICAL DATA</b>			
Core : Material & Grade			
Winding Type : Pri. / Sec.			
<b>INSULATING MATERIAL</b>	Between Turns		
	Between Primary & Secondary		
	Between Core & Winding		
<b>RADIATORS</b>	Cooling Tubes / Separate Bank		
	Thickness		
	Vacuum Withstand Capacity		
<b>TANK</b>	Material		
	Thickness : Side / Bottom / Cover		
	Vacuum Withstand Capacity		
	Over Pressure Capacity		
<b>DIMENSIONS</b>	Overall ( LXBXH )		
	Roller C/L		
	Largest Package ( LXBXH )		
Minimum Height required to lift the Core			
<b>WEIGHT</b>	Core & Winding		
	Total		
	Heaviest Package		
Oil Quantity in Litres			
Noise Level			
<b>BUSHING DATA (PRI. / SEC. / NEUTRAL )</b>			
Type & Make			
Ref. Standard			
Rated Voltage			

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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Rated Current	
Creepage Distance	
<b>MAKE &amp; TYPE OF BOUGHT OUT ITEMS</b>	
Temperature Indicators : Winding / Oil	
Buchholz Relay / Magnetic Oil Level Gauge	
Cooling Fans / Current Transformers	
OLTC	
Control Panels	
Pressure Release Device	

- Note: Completely filled in separate Technical Particulars Sheet for each type and rating of transformer shall be filled and submitted after award of order for owner/consultant approval before commencement of manufacturing in line with NIT/PO.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**SPECIFICATION SHEET**  
**MPDB / PDB – 1 / PDB - 2**

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR:	PROPOSAL <input type="checkbox"/>	ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/> FINAL <input type="checkbox"/>
<b>GENERAL</b>		<b>AMBIENT CONDITION</b>	
Ref. Stds. :	IS & IEC	Temp. Max./Min./Design Ref. :	47 / 1.7 / 50°C
Encl. Docs. :		Relative Humidity	100 %   Alt. above sea : <1000 M
Vendor :		<b>Atmospheric Pollution</b>	Dusts : Coal Dust
Vendor Ref. No. :			Vapour : Highly Corrosive
		<b>Location</b>	Indoor <input checked="" type="checkbox"/> Outdoor <input type="checkbox"/>
			Gr. Floor <input checked="" type="checkbox"/> 1 <sup>st</sup> floor <input type="checkbox"/>
<b>Addl. Scope :</b>	Incoming Bus Duct <input type="checkbox"/>		Tie Bus Duct <input type="checkbox"/>
	Erection & Comm. <input checked="" type="checkbox"/>		Supervision of Erection Comm. <input type="checkbox"/>
TESTS:	Routine <input checked="" type="checkbox"/>	Type <input type="checkbox"/>	Others <input type="checkbox"/>
<b>BASIC DATA</b>			
<b>TAG NO.</b>	Item No.		
	Description	415V SWITCHBOARDS : MPDB / PDB – 1 / PDB - 2	
	Code No.	--	
<b>REFERENCE DRAWINGS</b>	Single Line Diagram	Drg. No. PC183-7411-0985D/G/H	
	Feeder Details	Enclosed	
<b>SYSTEM DETAILS</b>	Auto Trip Alarm Scheme		
	Non Trip Alarm Scheme		
	Trip Circuit Supervision Scheme		
	Auto C/O Scheme		
	P.T. Bus Arrangement		
	Nominal Voltage with Variation	415V ± 10%	
Rated Frequency with Variation	50Hz ± 5%		
Combined V & F Variation	± 10%		
No. of Phases & Wires	3 Ph & 4W		
Insulation Level	2.5 KV		
Fault Level	36 MVA		
Earthing Mode	Solidly Earthed		
<b>BUS BARS</b>	<b>Rating</b>	Continuous	3200 A / 800 A / 800 A
		Short Time for 1 sec.	50 KA
	Bare / Insulated	Insulated	
	Type of Insulation	Heat Shrinkable PVC sleeved	
<b>EXECUTION</b>	<b>Breaker Feeders</b>	I/C: ST / DT	ST
		Others: ST / DT	DT
	<b>Other Feeders</b>	Single front / Double front	Single Front
		Fixed / Drawout	Drawout
	Cable Entry :	Top / Bottom	Bottom
	Bus Duct Entry :	Top / Bottom	--
Accessibility :	Front / Back	Front / Back	
<b>CONTROL SUPPLY</b>	<b>Breaker Feeders</b>	Closing & Indication	110V DC **
		Tripping	110V DC **
	Contactors	240V AC	
	Space Heater	240V AC	
<b>MISC. DATA</b>	<b>Painting</b>	Type	Epoxy
		Shade	631 of IS: 5
	Period for which Spares required	2 Years	

ST- SINGLE TIER  
DT- DOUBLE TIER

\*\* NOTE: For MPDB, 110V DC Power required for closing, tripping and indication of circuit breaker feeder shall be provided from DCDB. For PDB—1 and PDB2, 110V DC Power required for closing, tripping and indication of circuit breaker feeder shall be provided by the vendor through in-built power pack in the feeders having battery back-up of 30 minutes.




**TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS  
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RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION  
OF NEW QUARTER GUARD BUILDING  
AND ALLIED WORKS  
TALCHER FERTILISER LIMITED, TALCHER**

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**FEEDER DETAILS  
(BREAKER CONTROLLED FEEDERS)**

PROJECT: Coal Based Fertilizer Plant	PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH
ISSUED FOR: PROPOSAL <input type="checkbox"/>	ENQUIRY <input checked="" type="checkbox"/>
ORDER <input type="checkbox"/>	FINAL <input type="checkbox"/>

TAG NO.	Item No.	415 V Main Power Distribution Board MPDB at VGH				
	Description	--				
GENERAL	Code No.	--				
	Feeder No.	1 & 2	3			
	Feeder Description	Incomer (Transformer)	Incomer (DG)	Bus-coupler	ACB Outgoing Feeder	
	Eqpt. Code No.	--	--		--	
	Load in KW / Amp	-- / 3200A	-- / 800A	-- / 3200A	-- / 800A	
	Ref. Scheme Drgs.	--	--	--	--	
C. B.	Rating	3200 A (ACB)	800 A (ACB)	3200 A (ACB)	800 A (ACB)	
	Operating Mechanism	MWS	MWS	MWS	MWS	
CURRENT TRF.	Metering	3-1600-3200/1 A	3-800/1 A	3-1600-3200/1 A	3-800/1 A	
	Protection	3-1600-3200/1 A	3-800/1 A	3-1600-3200/1 A	3-800/1 A	
	O/C & E/F / Combined	Yes / --	Yes / --	Yes / --	Yes / --	
	Restricted Earth Fault	Yes	Yes	Yes	--	
	Stand By Earth Fault	Yes	Yes	Yes	--	
V. T.	Ratio	415/√3/110/√3	415/√3/110/√3	415/√3/110/√3	--	
	Connection : Bus / Feeder	Yes / Yes	Yes / Yes	Yes / Yes		
METERS	Ammeter	Yes (0-1600/3200A)	Yes (0-800A)	Yes (0-1600/3200A)	Yes (0-800A)	
	Voltmeter	Yes (0-500V)	Yes (0-500V)	Yes (0-500V)	--	
	KWH/KW	--/--	--/--	--/--	--/--	
	PF Meter	--	--	--	--	
	Frequency Meter	--	--	--	--	
	Multi Function Meter	Yes	Yes	Yes	Yes	
PROTECTIVE RELAY	Combined Motor Protn.	--	--	--	--	
	Over current	IDMTL	Yes	Yes	--	Yes
		High Set Inst.	Yes	Yes	Yes	--
		Res. IDMTL	Yes	Yes	--	Yes
	Earth Fault	Inst.	Yes	Yes	Yes	--
		Restricted	Yes	Yes	--	--
		Stand by	Yes	Yes	--	--
	Under Voltage with Timer / Synchrocheck / Overvoltage	Yes/--/Yes	Yes/--/Yes	Yes/Yes/--	Yes/--/Yes	
	PT Fuse Failure	Yes	Yes	Yes	Yes	
	Stalling / Single Phasing	--	--	--	--	
AUX. RELAY	Tripping Relay	Elect. Fault	Yes	Yes	Yes	Yes
		Process Fault	--	--	--	--
	Trip Circuit Supervision	Yes	Yes	Yes	Yes	
	Buchholz Alarm / Trip	Yes	--	--	--	
	WTI / OTI Alarm	Yes / Yes	--	--	--	
	Low Oil Level Alarm	Yes	--	--	--	
	Alarm / Alarm Cancellation	Yes / Yes	Yes / Yes	Yes / Yes	--	
Others as required	Yes	Yes	Yes	Yes		
CONTROL SWITCH	Trip-Neutral-Close / OFF-Auto-Manual / Local-	Yes / --	Yes / --	Yes / --	Yes / --	
	ASS / VSS	-- / Yes	-- / Yes	-- / Yes	-- / Yes	
	Local-Remote-Auto	Yes / Yes	Yes / Yes	Yes / Yes	Yes / --	
	Local-Remote-Auto	--	--	--	--	
PUSH BUTTON	Emg. Trip (T) / Test (Te)	-- / Yes	-- / Yes	-- / Yes	-- / Yes	
	Alarm Accept (AC) / Reset	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	
	Defeat Interlock or Emgy. Trip of CB	Yes	Yes	Yes	Yes	
	Emgy. Trip of CB	--	--	--	--	
SIGNAL LAMPS	ON(R) / OFF(G)	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	
	Non Trip (B) / Auto Trip (A)	-- / Yes	-- / Yes	-- / Yes	-- / Yes	
	Trip Ckt. Healthy (W)	Yes	Yes	Yes	Yes	
	Panel Space Heater ON	Yes	Yes	Yes	Yes	
	Ready for Service / Test	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	


	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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	Limit Switch: Service / Test	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
<b>AUX. EQPT.</b>	MCB for Motor Space	--	--	--	--
	Others as required	Yes		Yes	Yes
<b>CABLING DATA</b>	Power Cable: 1.1KV, XLPE-A-FRLS PVC	7R - 3.5 Cx400 mm <sup>2</sup> (Cu)	5 R - 3.5 C x 300 mm <sup>2</sup> (Al)	--	3 R - 3.5 C x 300 mm <sup>2</sup> (Al)
	Space Heater: 1.1KV, Control Cable: 1.1KV, XLPE-A-FRLS PVC	1-5x2.5 mm <sup>2</sup> (Cu), 1-3x2.5 mm <sup>2</sup> (Cu), 1-19x2.5 mm <sup>2</sup> (Cu)	1-5x2.5 mm <sup>2</sup> (Cu), 1-3x2.5 mm <sup>2</sup> (Cu), 1-12x2.5 mm <sup>2</sup> (Cu)	1-12x2.5 mm <sup>2</sup> (Cu), 1-10x2.5 mm <sup>2</sup> (Cu), 1-7x2.5 mm <sup>2</sup> (Cu)	1-12x2.5 mm <sup>2</sup> (Cu), 1-7x2.5 mm <sup>2</sup> (Cu), 1-5x2.5 mm <sup>2</sup> (Cu)

**Notes :**

- A. Metering CT shall be of accuracy class 0.5 / 0.2S.
- B. Protection CT shall be of accuracy class 5P20.
- C. All required items for momentary paralleling shall be integral to Switch board.
- D. CT ratios are tentative & shall be finalised during drawing approval stage.
- E. Contact multipliers as required for safe and satisfactory operation of the system is included in vendor's scope.
- F. Ratings are indicative and final ordered ratings shall be informed once these are confirmed by the respective vendors.
- G. 2 nos. loose CT for each switchboard of PS class for REF (having exactly same technical parameters as installed in the incomer panels) shall be provided by the bidder for mounting in transformer neutral terminal box by transformer vendor.
- H. Actual cable size shall be indicated at the time of drawing approval.



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PROJECT: Coal Based Fertilizer Plant PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH

ISSUED FOR: PROPOSAL  ENQUIRY  ORDER  FINAL

SWITCH BOARD DESCRIPTION: 415V Main Power Distribution Board MPDB at VGH

Feeder No.	Feeder Description and Code No.	Rating		Ref. Scheme Drg.	Fdr. Type	Power Cable Size (mm <sup>2</sup> )	Remarks
		KW	Amp.				
1	Incomer-1	--	3200A	--	Transformer Feeder	7R-3.5Cx400 mm <sup>2</sup> (Cu)	
2	Incomer-2	--	3200A	--	Transformer Feeder	7R-3.5Cx400 mm <sup>2</sup> (Cu)	
3	Incomer-3 for future use				DG Feeder	5 R – 3.5 C x 300 mm <sup>2</sup> (Al)	
4	O/G Feeder for Vikrampur Guest House	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm <sup>2</sup> (Al)	
5	O/G Feeder for Vikrampur Guest House	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm <sup>2</sup> (Al)	
6	O/G Feeder for CISF	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm <sup>2</sup> (Al)	
7	O/G Feeder for CISF	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm <sup>2</sup> (Al)	
8	O/G Feeder for Bungalows	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm <sup>2</sup> (Al)	
9	O/G Feeder for Bungalows	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm <sup>2</sup> (Al)	
10	Spare O/G Feeder (2 Nos.)	--	800A	--	Power Feeder (ACB)	Later	
11	SPDB for Lighting / 16A/6A S/S (2 Nos.) plus 3 Spare feeders	--	63A	PDS: 8485	Power Feeder	1R-3.5CX25 mm <sup>2</sup> (Al)	
12	O/G for Welding Socket	--	63A	PDS: 8485	Power Feeder	1R-3.5CX50 mm <sup>2</sup> (Al)	
13	Spare O/g Feeder 1 to 2 for Hostel		400A	PDS: 8485	Power Feeder	Later	With MFM
14	Spare O/g Feeder 3 to 4		250A	PDS: 8485	Power Feeder	Later	With MFM
15	Spare O/g Feeder 5 to 8		125A	PDS: 8485	Power Feeder	Later	With MFM
16	Vacant Feeder 6 to 7		400A	PDS: 8485	Power Feeder	Later	With MFM
17	Vacant Feeder 8 to 9		250A	PDS: 8485	Power Feeder	Later	With MFM

Power Feeder shall be as per attached PDS 8485 but with MCCB, Ammeter with CTs & ASS and MFM.

Note: Final cable size shall be indicated at the time of drawing approval.




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TALCHER FERTILISER LIMITED, TALCHER**

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**FEEDER DETAILS  
(BREAKER CONTROLLED FEEDERS)**


PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR:	PROPOSAL <input type="checkbox"/>	ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/> FINAL <input type="checkbox"/>
<b>TAG NO.</b>	Item No.		
	Description	PDB-1 & PDB-2	
	Code No.	--	
<b>GENERAL</b>	Feeder No.	1 & 2 (PDB-1 & PDB-2)	
	Feeder Description	Incomer	
	Eqpt. Code No.	--	
	Load in KW / Amp	-- / 800A	
	Ref. Scheme Drgs.	--	
<b>C. B.</b>	Rating	800 A (ACB)	
	Operating Mechanism	MWS	
<b>CURRENT TRF.</b>	Metering	3-800/1 A	
	Protection	3-800/1 A	
	O/C & E/F / Combined Motor Protn.	Yes / --	
	Restricted Earth Fault Protn.	--	
	Stand By Earth Fault Protn.	--	
<b>V. T.</b>	Ratio	415/√3/110/√3	
	Connection : Bus / Feeder	Feeder	
<b>METERS</b>	Ammeter	Yes (0-800A)	
	Voltmeter	--	
	KWH/KW	--/--	
	PF Meter	--	
	Frequency Meter	--	
	Trivector Meter	Yes	
	Multi Function Meter	Yes	
<b>PROTECTIVE RELAY</b>	Combined Motor Protn.	--	
	<b>Over current</b>	IDMTL	Yes
		High Set Inst.	Yes
	<b>Earth Fault</b>	Res. IDMTL	Yes
		Inst.	Yes
		Restricted	--
		Stand by	--
	Under Voltage with Timer / Synchrocheck / Overvoltage	Yes/--/Yes	
	PT Fuse Failure	Yes	
	Stalling / Single Phasing	--	
<b>AUX. RELAY</b>	<b>Tripping Relay</b>	Yes	Yes
		--	--
	Trip Circuit Supervision	Yes	
	Buchholz Alarm / Trip	--	
	WTI / OTI Alarm	--	
	Low Oil Level Alarm	--	
	Alarm / Alarm Cancellation	--	
Others as required	Yes		
<b>CONTROL SWITCH</b>	Trip-Neutral-Close / OFF-AUTO-ON	Yes / --	
	Auto-Manual / Local-Remote	-- / Yes	
	ASS / VSS	Yes / --	
	Local-Remote-Auto		
<b>PUSH BUTTON</b>	Emg. Trip (T) / Test (Te)	-- / Yes	
	Alarm Accept (AC) / Reset I	Yes / Yes	
	Defeat Interlock or Momentary Paralleling	Yes	
	Emgy. Trip of CB		
<b>SIGNAL LAMPS</b>	ON(R) / OFF(G)	Yes / Yes	
	Non Trip (B) / Auto Trip (A)	-- / Yes	
	Trip Ckt. Healthy (W)	Yes	
	Panel Space Heater ON	Yes	
	Ready for Service / Test	Yes / Yes	
Limit Switch: Service / Test	Yes / Yes		
MCB for Motor Space Heater			

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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AUX. EQPT.	Others as required	Yes
<b>CABLING DATA</b>	Power Cable: 1.1KV, XLPE-A-FRLS PVC	3 R – 3.5 C x 300 mm <sup>2</sup> (Al)
	Space Heater: 1.1KV, XLPE-A-FRLS PVC Control Cable: 1.1KV, XLPE-A-FRLS PVC	1-12x2.5 mm <sup>2</sup> (Cu), 1-7x2.5 mm <sup>2</sup> (Cu), 1-5x2.5 mm <sup>2</sup> (Cu)

**Notes :**


- A. Metering CT shall be of accuracy class 0.5 / 0.2S.
- B. Protection CT shall be of accuracy class 5P20.
- C. All required items for momentary paralleling shall be integral to Switch board.
- D. CT ratios are tentative & shall be finalised during drawing approval stage.
- E. Contact multipliers as required for safe and satisfactory operation of the system is included in vendor's scope.
- F. Ratings are indicative and final ordered ratings shall be informed once these are confirmed by the respective vendors.
- G. Actual cable size shall be indicated at the time of drawing approval.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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### FEEDER DETAILS

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH					
ISSUED FOR: PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>		ORDER <input type="checkbox"/>		FINAL <input type="checkbox"/>	
SWITCH BOARD DESCRIPTION: PDB-1 (CISF Barrack)							
Feeder No.	Feeder Description and Code No.	Rating		Ref. Scheme Drg.	Fdr. Type	Power Cable Size (mm <sup>2</sup> )	Remarks
		KW	Amp.				
1	Incomer-1	--	800A	--	Power Feeder	3R-3.5Cx300 mm <sup>2</sup> (Cu)	
2	Incomer-2	--	800A	--	Power Feeder	3R-3.5Cx300 mm <sup>2</sup> (Cu)	
3	LSDB-1 to LSDB-17 plus 5 Spare feeders	--	63A	PDS: 8485	Power Feeder	1R-3.5CX25 mm <sup>2</sup> (Al)	
4	Spare O/g Feeder 18 to 19		125A	PDS: 8485	Power Feeder	Later	With MFM
5	Spare O/g Feeder 20 to 21		250A	PDS: 8485	Power Feeder	Later	With MFM


PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH					
ISSUED FOR: PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>		ORDER <input type="checkbox"/>		FINAL <input type="checkbox"/>	
SWITCH BOARD DESCRIPTION: PDB-2 (Bungalows)							
Feeder No.	Feeder Description and Code No.	Rating		Ref. Scheme Drg.	Fdr. Type	Power Cable Size (mm <sup>2</sup> )	Remarks
		KW	Amp.				
1	Incomer-1	--	800A	--	Power Feeder	3R-3.5Cx300 mm <sup>2</sup> (Cu)	
2	Incomer-2	--	800A	--	Power Feeder	3R-3.5Cx300 mm <sup>2</sup> (Cu)	
3	LSDB-1 to LSDB-12 plus 3 Spare feeders	--	125A	PDS: 8485	Power Feeder	1R-3.5CX25 mm <sup>2</sup> (Al)	With MFM
4	LSDB O/g Feeder 13 plus 1 Spare feeder	--	63A	PDS: 8485	Power Feeder	1R-3.5CX25 mm <sup>2</sup> (Al)	
5	O/g Feeder 14 to 15	--	250A	PDS: 8485	Power Feeder	1R-3.5CX150mm <sup>2</sup> (Al)	With MFM

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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### TECHNICAL PARTICULARS


#### 415V MAIN POWER DISTRIBUTION BOARDS (MPDB, PDB-1 & PDB-2) / DCDB

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR: PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/>
		FINAL <input type="checkbox"/>	
<b>GENERAL</b>			
Manufacturer's Type			
Ref. Standards			
Rated Operational Voltage with $\pm$ %			
Rated Insulation Voltage			
Rated Voltage of Aux. Circuits with $\pm$ %			
Rated Current			
Short Circuit Rating			
Degree of Protection of Enclosure			
Service Conditions : Indoor / Outdoor			
<b>DRAWOUT FACILITIES</b>	Circuit Breakers		
	P.Ts.		
	Motor Starters		
	Protective Relays		
	Meters		
<b>SINGLE FRONT / DOUBLE FRONT</b>	C.B. Feeders		
	Other Feeders		
Cable Entry :	Top / Bottom		
Accessibility :	Front / Back		
<b>MAXIMUM NOS. OF FEEDERS IN ONE PANEL</b>	Circuit Breakers		
	Motor Starters		
	Switch Fuse		
<b>SHEET STEEL TYPE &amp; THICKNESS</b>	Load Bearing member		
	Non Load Bearing member		
	Base Channel		
Material of Gaskets			
Material of External Hardware			
Operating Height : Max. / Min.			
Space Heater Rating of each Panel			
<b>PAINTING</b>	Method of Pre-treatment		
	Type		
	Thickness of Paint		
	Finishing Shade		
Dimensions : L X B X H / Dim. Drg. Ref. No.			
Shipping Dimensions of Largest Package			
Weight : Static / Dynamic			
<b>BUS - BARS</b>			
Material			
<b>SIZE</b>	HBB : Phase / Neutral		
	VBB : Phase / Neutral		
	Ground		
	Supporting Calculations Attached		
<b>MINIMUM CLEARANCE</b>	Between Phases		
	Between Phase & Earth		
Minimum Creepage Distance			
Current Rating : Continuous / Short Time			
Temp. Rise for : Cont. Load / Short Time Current			
<b>SUPPORT</b>	Material		
	BIL		
	Arrangement : Separate/Common		
Material of Bus-bar Insulation			
Shrouding Material for Joints			
No. & Type of Bolts			


	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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CIRCUIT BREAKERS		
Make		
Maker's Type		
Ref. Standards		
Type of Circuit Breaker		
Short Circuit Category		
Maximum Operating Voltage		
No. of Poles		
<b>CURRENT RATING</b>	Continuous	
	1 second RMS	
	Momentary ( kA Peak )	
<b>BREAKING CURRENT</b>	Symmetrical KA	
	Asymmetrical KA	
	Sym. MVA at Rated Voltage	
Making Current ( Peak )		
<b>INSULATION LEVEL</b>	1 Min. PF withstand Voltage	
	Impulse withstand Voltage	
No. of Breaks per Pole		
<b>TYPE AND MATERIAL OF</b>	Main Contacts	
	Arcing Contacts	
Contact Pressure		
Type of Closing Mechanism		
Type of Tripping Mechanism		
Type of Arc Control Device		
Arc Pumping Features with Details		
Trip Free Features with Details		
Total Closing Time		
Interrupting Time at 10%, 50%, 100% of rated Interrupting Capacity	Total	
	Arcing Time	
<b>SPRING CHARGING MOTOR</b>	Rating	
	Voltage	
	Insulation	
	Duty	
Spring Charging Time		
<b>CONTROL VOLTAGE WITH RANGE</b>	Closing	
	Tripping	
	Alarm and Indication	
<b>POWER/ CURRENT REQUIRED FOR</b>	Closing	
	Tripping	
<b>AUXILIARY CONTACTS</b>	No. of Spare Contacts : NO / NC	
	Contact Rating : AC / DC	
	Convertible : Yes / No	
Net Weight of Breaker		
Type Testing Authority & Test Report Ref. No.		
CURRENT TRANSFORMERS		
Make / Maker's Type		
Ref. Standard		
Type of Primary Winding		
Ratio		
Rated Burden		
Accuracy Class		
ALF / ISF		
Insulation Class & Material		
Ref. Magnetisation Curve No.		
POTENTIAL TRANSFORMERS		
Make / Maker's Type		
Ref. Standard		



	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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Winding Connection	
Ratio	
Rated Burden	
Accuracy Class	
Insulation Class & Material	
<b>SWITCHES</b>	
Make / Maker's Type	
Ref. Standard	
Type of Switch	
Rated Operational Voltage	
Utilisation Category	
Rated Operational Current	
Short Time Withstand Current	
No. of Poles / Break	
Type Test Certificate Ref. No.	
<b>FUSES</b>	
Make / Maker's Type	
Ref. Standard	
Type of HRC Fuse	
Rated Voltage / Current	
Category of Duty	
Prospective Breaking Current	
<b>CURRENT TIME CURVE SHOWING PRE-ARCING AND TOTAL I<sup>2</sup>T VALUES</b>	Ref. No. Attached
<b>CONTACTORS</b>	
Make / Maker's Type	
Ref. Standard	
Rated Operational Voltage	
Utilisation Category	
Rated Duty	
Rated Thermal Current	
<b>OPERATING VOLTAGE OF COIL</b>	Pick up Max./Min. Drop off Max./Min.
Coil Consumption Pick up / Hold on	
<b>RELAYS</b>	
Make / Maker's Type	
Ref. Standard	
Operating Principle	
Setting Range	
Type of Mounting	
Burden	
Reset : Hand or Self	
Flag Indication Type	
Ref. Characteristic Curve Type	
Ref. Descriptive catalogue	
<b>INSTRUMENTS AND METERS</b>	
Make / Maker's Type	
Ref. Standard	
Operating Principle	
Scale Range	
Accuracy	
Size	
Type of Mounting	
<b>CONTROL SWITCHES</b>	
Make / Maker's Type	
Ref. Standard	
Contact Rating	
Utilisation Category	

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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PUSH BUTTONS	
Make / Maker's Type	
Ref. Standard	
Contact Rating	
Utilisation Category	
SIGNAL LAMPS	
Make / Maker's Type	
Ref. Standard	
Rated Voltage / Watts	
Type of Lamp Holder	
Type of Globe	
MINIATURE CIRCUIT BREAKER	
Make / Maker's Type :	
Ref. Standards	
Rated Current	
Breaking Capacity	
MOULDED CASE CIRCUIT BREAKERS	
Make / Maker's Type	
Ref. Standard	
Current Rating	
Breaking Capacity	
Setting Range of Thermal Release	
Setting Range of Magnetic Release	
CABLE GLANDS	
Material	
Type	
TERMINAL BLOCKS	
Make	
Type	
Current Rating	

**NOTE:**


- Completely filled in Technical Particulars Sheet shall be furnished after award of order for owner/consultant approval before commencement of manufacturing in line with NIT/PO.
- Inter-tripping of primary and secondary of transformer shall be provided for all faults through lockout relays.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**SPECIFICATION SHEETS  
JUNCTION BOX**

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
<b>ISSUED FOR :</b> PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/> FINAL <input type="checkbox"/>
<b>GENERAL</b>			
Ref. Stds.		IS / IEC	
Encl. Docs.			
Make			
Maker's type			
Sample Required		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<b>AMBIENT CONDITIONS</b>			
Temp. Max. / Min. / Design Ref.		46 / 1 / 50°C	
Rel. Humidity		100%	
Alt. Above Sea Level		<1000M	
<b>ATMOSPHERIC POLLUTION</b>	Dusts	Dusts : Coal Dust	
	Vapours	Vapour : Highly Corrosive	
Area		Safe <input checked="" type="checkbox"/>	Hazardous <input type="checkbox"/>
Hazardous area classification		Zone:	Encl. Gr.: Temp. Class:
Location		Indoor <input checked="" type="checkbox"/>	Outdoor <input checked="" type="checkbox"/>
<b>TESTS</b>		Routine <input checked="" type="checkbox"/>	Type <input type="checkbox"/> Others <input type="checkbox"/>
<b>BASIC DATA</b>			
Item No.	1		
Quantity	Refer SOR		
Rated Voltage	240V±10%		
Rated Frequency	50Hz±5%		
Rated Current	16A		
No. of Phases & Wires	1Phase / 3wires (PNE)		
Application	For looping of cable		
Material of Enclosure	LM-6		
Shape of Enclosure	Round		
Degree of Protection	IP-55		
Addl. Degree of Protection	--		
Type of Cover	Dome		
No. of Outlets	3 nos. + one plug		
<b>PAINTING</b>		Type: Epoxy based	
		Shade: 631 as per IS: 5	
<b>SPARE</b>		Required: Yes	
		Duration: 2 Years	
No. of Terminals: As required			
Cable gland: 4 nos.			
Stopping Plug: 1 no.			
<b>CABLE SIZE</b>	Incoming -- 3Cx2.5 mm <sup>2</sup> (Cu) 1.1 KV XLPE ARMoured FRLS PVC		
	Outgoing -- 3Cx2.5 mm <sup>2</sup> (Cu) 1.1 KV XLPE ARMoured FRLS PVC		


Note: Double compression rolled aluminium cable glands, lugs and plugs shall be provided

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**TECHNICAL PARTICULARS  
JUNCTION BOX**

PROJECT: Coal Based Fertilizer Plant	PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH
<b>ISSUED FOR :</b> PROPOSAL <input type="checkbox"/> ENQUIRY <input checked="" type="checkbox"/> ORDER <input type="checkbox"/> FINAL <input type="checkbox"/>	
<b>GENERAL</b>	
Item No.	
Ref. Std.	
Type of Junction Box	
Make	
Maker's type	
<b>CONSTRUCTIONAL FEATURES</b>	
Material of Construction	
Thickness of Enclosure	
Enclosure Protection Class	
Mounting Arrangement	
Cover Fixing Arrangement	
Gasketing Material	
External Cable Sizes	
Dimensions LX B X H / Dimensional Drg. Ref. No.	
Weight	
Painting	
Type Test Certificate No.	
<b>CABLE GLAND</b>	
Type	
Material of Construction	
Make	
<b>TERMINAL BLOCK</b>	
Nos. of Terminals	
Material	
Type	
Current Rating	
Fixing Arrangement	
Make	


NOTE: Completely filled in Technical Particulars Sheet shall be furnished after award of order for owner/consultant approval before commencement of manufacturing.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**SPECIFICATION SHEET**  
**LIGHTING SUB DISTRIBUTION BOARD / SPDB for 16 A Switch Socket / AC**

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH		
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/>	
		FINAL <input type="checkbox"/>		
<b>GENERAL</b>		<b>AMBIENT CONDITION</b>		
Ref. Stds. : IS/IEC		Temp. Max./Min./Design Ref.: 46 / 1 / 50°C		
Encl. Docs. :		Relative Humidity: 100%; Alt. above sea : <1000 M		
Vendor :		Atmospheric	Dusts : Coal Dust	
Vendor Ref. No. :		Pollution	Vapour : Highly Corrosive	
<b>SYSTEM DETAILS</b>		Area	Safe <input checked="" type="checkbox"/> Hazardous <input type="checkbox"/>	
Nominal Voltage with ± % : 415V ± 10%,		Hazardous	Zone : Encl. Gr. :	
Rated Frequency with ± % : 50 Hz ± 5%,		Area Class	Temp. Class :	
Combined V & F Variation : ± 10%,		Location	Indoor <input checked="" type="checkbox"/> Outdoor <input type="checkbox"/>	
No. of Phases & Wires : 3-Phase, 4-wire		Type <input type="checkbox"/> Others <input type="checkbox"/>		
TESTS TO BE WITNESSED: Routine <input checked="" type="checkbox"/>				
<b>BASIC DATA</b>				
Item No. :				
Quantity :		AS PER ATTACHED SOR		
Description :		AS PER ATTACHED SLDs		
Code No.				
Incoming & Outgoing feeders		AS PER ATTACHED SLDs		
Degree of Protection :		IP65		
Addl. Degree of Protection :		--		
Cable Type & Size		Incoming (Al)	AS PER ATTACHED SLDs / TS / SOR	
		Outgoing (Cu)	AS PER ATTACHED SLDs / TS / SOR	
Painting Type & Shade :		Epoxy based, 631of IS:5		
Period for which Spares required :		2 years		
<b>MAKE OF COMPONENTS</b>				
SWITCH		: Refer Make of Electrical Items		
M.C.B.		: -do-		
CABLE GLANDS		: -do-		
TERMINAL BLOCKS		: -do-		
<b>TECHNICAL PARTICULARS</b>				
General	Item No. :			
	Make & Maker's Type			
	Material & Thickness of Enclosure			
	Gasketing Material			
	COVER TYPE		Internal :	
			External :	
	PAINTING		Pre treatment	
			Shade	
	Material of Ext. Hardware < 8mm / > 8mm			
	Dimensional Drawing Reference No. :			
Weight :				
M.C.B.	Make & Maker's Type			
	Reference Standards			
	Category of Duty :			
	Rated Current :			
	No. of Poles :			
Type of Neutral :				
Terminal Block	Make & Type			
Rated Current				
Cable Gland	Type :			
	Material :			


- NOTE: Completely filled in Technical Particulars Sheet shall be furnished after award of order for owner/consultant approval before commencement of manufacturing.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**SPECIFICATION SHEET  
HT CABLES**


PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH		
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/> FINAL <input type="checkbox"/>	
<b>GENERAL</b>		<b>AMBIENT CONDITION</b>		
Encl. Docs. :		Temp. Max./Min./Design Ref. 46 / 1 / 50°C		
Vendor :		Relative Humidity: 100 %	Alt. above Sea Level < 1000M	
Vendor Ref. No. :		<b>Atmospheric Pollution</b>	Dusts : Coal Dust	
			Vapour : Highly Corrosive	
<b>TESTS TO BE WITNESSED:</b> Routine <input checked="" type="checkbox"/> Type <input type="checkbox"/> Acceptance <input checked="" type="checkbox"/> Others <input type="checkbox"/>				
<b>Type Tests Certificate of Similar Cable :</b> Required <input checked="" type="checkbox"/> Not required <input type="checkbox"/>				
<b>BASIC DATA</b>				
Item No.	1	2		
Ref. Stds.	IS:7098 (PART-2)	IS:7098 (PART-2)		
Voltage Grade	11 KV POWER CABLE	11 KV EARTHING CABLE		
System Earthing	UE	E		
Type of Cable	POWER	EARTHING		
<b>CONDUCTOR</b>	ALUMINIUM/ COPPER	ALUMINIUM		
	STRANDED	STRANDED		
Insulation Type	XLPE EXTRUDED	XLPE EXTRUDED		
Inner Sheath Type	EXTRUDED PVC (ST2)	--		
<b>CONDUCTOR SCREEN</b>	Required	--		
	Not Required	--		
Material of Conductor Screen	AS PER IS	--		
<b>ARMOURING</b>	Required	--		
	Material	--		
	No. of Layer	--		
Outer Sheath Type	EXTRUDED FRLS PVC TYPE- ST2	EXTRUDED FRLS PVC TYPE- ST2		
Special Requirements	INSULATION SCREEN REQUIRED	--		
Drum Material	STEEL	WOOD		
<b>BILL OF QUANTITY</b>				
Item No.	No. of Core & Cross-Sectional Area in sq. mm.	Qty. in Mtr.	Preferred Drum Length	Remarks
<b>11 KV XLPE insulated, armoured, FRLS PVC outer sheathed power cable of following sizes:</b>				
1.	3C x 240 sq. mm (Al)	Refer SOR	LATER	
<b>Single Core XLPE insulated, 11KV grade unarmoured FRLS PVC outer sheathed cable for earthing of following sizes:</b>				
2.	--	--	--	



	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**SPECIFICATION SHEET  
LT POWER & CONTROL CABLES**


PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH		
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/> FINAL <input type="checkbox"/>	
<b>GENERAL</b>		<b>AMBIENT CONDITION</b>		
Encl. Docs. :		Temp. Max./Min./Design Ref.: 46 / 1 / 50°C		
Vendor :		Relative Humidity: 100 %	Alt. above Sea Level < 1000M	
Vendor Ref. No. :		<b>Atmospheric Pollution</b>	Dusts : Coal Dust Vapour : Highly Corrosive	
<b>TESTS TO BE WITNESSED:</b> Routine <input checked="" type="checkbox"/> Type <input type="checkbox"/> Acceptance <input checked="" type="checkbox"/> Others <input type="checkbox"/>				
<b>Type Tests Certificate of Similar Cable :</b> Required <input checked="" type="checkbox"/> Not required <input type="checkbox"/>				
<b>BASIC DATA</b>				
Item No.				
Ref. Stds.	IS:7098 (PART-1)	IS:7098 (PART-1)	IS:7098 (PART-1)	
Voltage Grade	1.1 KV POWER CABLE	1.1 KV CONTROL CABLE	1.1 KV EARTHING CABLE	
System Earthing	NEUTRAL SOLIDLY EARTHED	NEUTRAL SOLIDLY EARTHED	NEUTRAL SOLIDLY EARTHED	
Type of Cable	POWER	CONTROL	EARTHING	
<b>CONDUCTOR</b>	ALUMINIUM/ COPPER	ALUMINIUM / COPPER	COPPER	
	STRANDED	STRANDED	STRANDED	
Insulation Type	XLPE EXTRUDED	XLPE EXTRUDED	XLPE EXTRUDED	
Inner Sheath Type	EXTRUDED PVC (ST2)	EXTRUDED PVC (ST2)	--	
<b>CONDUCTOR SCREEN</b>	Required	--	--	
	Not Required	--	--	
Material of Conductor Screen	--	--	--	
<b>ARMOURING</b>	Required	YES	YES	
	Material	GALVANISED STEEL STRIP / WIRE	GALVANISED STEEL WIRE	
	No. of Layer	SINGLE	SINGLE	
Outer Sheath Type	EXTRUDED FRLS PVC TYPE-ST2	EXTRUDED FRLS PVC TYPE-ST2	EXTRUDED FRLS PVC TYPE-ST2	
Special Requirements	--	--	--	
Drum Material	WOOD	WOOD	WOOD	
<b>BILL OF QUANTITY</b>				
Item No.	No. of Core & Cross-Sectional Area in Sq. mm.	Qty. in M.	Preferred Drum Length	Remarks
<b>1.1 KV XLPE insulated, armoured, FRLS PVC outer sheathed, Power Cables of following sizes:-</b>				
1.	3.5C X 400 sq. Mm (Cu)	Refer SOR	LATER	
2.	3.5CX120 sq. mm (Al)			
3.	3.5CX300 sq. mm (Al)			
4.	3.5CX150 sq. mm (Al)			
5.	3.5CX50 sq. mm (Al)			
6.	3.5CX25 sq. mm (Al)			
7.	3CX6 sq. mm (Cu)			
8.	3CX2.5 sq. mm (Cu)			
<b>1.1 KV XLPE insulated, armoured, FRLS PVC outer sheathed, Control Cables of following sizes:-</b>				
1.	19CX2.5 sq. mm (Cu)	Refer SOR	LATER	
2.	12CX2.5 sq. mm (Cu)			
3.	10CX2.5 sq. mm (Cu)			
4.	5CX2.5 sq. mm (Cu)			
5.	3CX2.5 sq. mm (Cu)			
<b>Single Core 1.1 KV XLPE insulated, unarmoured FRLS PVC outer sheathed cable for earthing of following sizes:-</b>				
6.	1CX185 sq. mm (Al)	Refer SOR	LATER	
7.	1CX16 sq. mm (Al)		LATER	

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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### TECHNICAL PARTICULARS CABLES


P PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/>
		FINAL <input type="checkbox"/>	
<b>GENERAL</b>			
Make			
Ref. Standard			
Item No.			
Voltage Grade			
Suitable For Earthed / Unearthed System			
No. of Cores & Size of Conductor			
<b>CONSTRUCTIONAL DETAILS</b>			
<b>CONDUCTOR</b>	Material		
	Construction		
	No. & Dia of wires per Core		
<b>CONDUCTOR SCREEN</b>	Material		
	Thickness		
<b>INSULATION</b>	Material		
	Thickness		
	Core Identification Method		
<b>INSULATION SCREEN</b>	Material		
	Thickness		
<b>INNER SHEATH</b>	Type & Material		
	Thickness		
<b>ARMOURING</b>	Type & Material		
	Dia of Wire / Strip Thickness		
<b>OUTER SHEATH</b>	Material		
	Thickness		
<b>ELECTRICAL DATA</b>			
<b>CONTINUOUS CURRENT RATING WHEN LAID IN</b>	Ground At 30 <sup>0</sup> C		
	Air At 40 <sup>0</sup> C		
Short Circuit Current For 1 sec.			
<b>CONDUCTOR TEMP.</b>	Continuous		
	Short Time		
Resistance At Operating Temp. (Ohm / KM)			
Reactance At 50 C/S (Ohm/KM)			
Capacitance (F/Km)			
Insulation Resistance			
Polarisation Index			
<b>DERATING FACTOR CHART ATTACHED FOR</b>	Temperature		
	Grouping		
	Exposure to Sun		
<b>MECHANICAL DATA</b>			
<b>DIAMETER WITH TOLERANCE</b>	Over Inner Sheath		
	Over Armour		
	Overall		
Weight Of Cables Per KM			
Minimum Bending Radius			
Maximum Pulling Tension			
Standard Drum Length			
Tolerance On Drum Length			

Notes: Completely filled in Technical Particulars Sheet shall be furnished separately for each type & size of cable and shall be submitted after award of order for owner/consultant approval before commencement of manufacturing in line with NIT/PO.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**SPECIFICATION SHEET  
LIGHTING FIXTURES AND ACCESSORIES**


PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH		
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/>	
		FINAL <input type="checkbox"/>		
<b>GENERAL</b>		<b>AMBIENT CONDITION</b>		
Ref. Stds. : IS / IEC		Temp.- Max / Min / Design ref.: 46 / 1 / 50°C		
Encl. Docs. :		Max Relative Humidity: ≤ 100% Alt. above sea : <1000 M		
Vendor :		Atmospheric	Dusts : Coal Dust	
Vendor Ref. No. :		Pollution	Vapour : Highly Corrosive	
<b>SYSTEM DETAILS</b>		Area	Safe : <input checked="" type="checkbox"/> Hazardous : <input type="checkbox"/>	
Nominal Voltage : 240V ± 10%		Haz. Area class	Zone Encl. Gr. :	
Rated Frequency: 50Hz ± 5%		Temp. Class :		
Combined V & F variation : ± 10%		Location: Indoor <input checked="" type="checkbox"/>	Outdoor <input checked="" type="checkbox"/>	
TESTS TO BE WITNESSED : Routine <input checked="" type="checkbox"/> Acceptance <input type="checkbox"/> Type <input type="checkbox"/> Others <input type="checkbox"/>				
<b>BASIC DATA</b>				
Item no.				
Degree of Protection		IP-55	IP-20	
Addl. Degree of Protection		--	--	
Material of Housing		Cast Aluminium alloy	CRCA sheet steel	
CONTROL	Separate	Yes		
GEAR	Integral	--	Yes	
Cable Type & Size		3 x 2.5 mm <sup>2</sup> (Cu)	3 x 2.5 mm <sup>2</sup> (Cu)	
Looping facility		Yes	Yes	
CABLE	Required	Yes	Yes	
GLANDS	Type	Rolled Al	Rolled Al	
MOUNTING	Required	Yes	Yes	
BRACKET	Not Required	--	--	
PAINTING	Type	Epoxy	Epoxy	
	Shade	631 as per IS: 5	631 as per IS: 5	
LOCATION	Indoor	--	--	
	Outdoor	Yes	Yes	
SAMPLE	Required	--	--	
	Not Required	Not Required	Not Required	
Period for which Spares Required		2 years	2 years	
<b>BILL OF QUANTITY</b>				
Item No.	Lamp Type & Wattage	Description of Fixtures	Qty.	Remarks
1.	2X20W/1X20W LED Tube	Ceiling/wall mounted Industrial	As per SOR	
2.	1X9W LED Tube	Ceiling/wall mounted Industrial		
3.	9W LED Bulb	Bulk Head		
4.	90W LED Lamp	Flood lighting fixture		
5.	45W LED Lamp	Street Lighting Fixture		
6.	Round surface mounted 6W LED Down Lighter	Ceiling mounted		
7.	Outdoor Type Bollard Light 12W LED			

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**TECHNICAL PARTICULARS  
LIGHTING FIXTURES AND ACCESSORIES**

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	ORDER <input type="checkbox"/>
		FINAL <input type="checkbox"/>	
<b>FIXTURE</b>			
Item No			
Make			
Type			
Ref. Standard			
<b>Suitable For</b>	Type Of Lamp		
	Wattage Of Lamp		
Suitable For Outdoor Use			
Control Gear Integral / Separate			
<b>Degree of Protection</b>	Fixture		
	Control Gear Box		
<b>Additional Degree of Protection</b>	Fixture		
	Control Gear Box		
<b>Material &amp; Finish</b>	Housing		
	Reflector		
	Control Gear Box		
	Diffuser / Louvre		
	Gasket		
<b>Pre - treatment</b>	Ext. Hardwares <8mm/>8mm		
	Housing		
	Reflector		
	Control Gear Box		
<b>Thickness of material</b>	Housing		
	Reflector		
	Control Gear Box		
Minimum Mounting Height			
Spacing / Height Ratio			
Light Output Ratio - Up / Down			
Surface Temp. Rise Range ( For FLP Fxt )			
<b>Cable Gland</b>	Type		
	Material		
	Qty. Fittings / Control Gear Box		
<b>Threaded Plug Provided</b>	Fixture		
	Control Gear Box		
<b>Looping Facility Available</b>	Fixture		
	Control Gear Box		
Mounting Bracket Provided			
Weight Of Fixture			
<b>Catalogue attached indicating</b>	General Arrangement		
	Light Distribution		
	Utilisation Factors		
	I FL / I Starting		
<b>ACCESSORIES</b>			
<b>Ballast</b>	Make & Maker's Type		
	Ref. Standard		
	Rating		
	Winding Wire Material		
	Insulation Class		
<b>Capacitor</b>	Power Loss in Ballast		
	Make & Maker's Type		
	Ref. Standard		
	Rating		
<b>Lamp Holder</b>	Make & Maker's Type		
	Ref. Standard		
	Rating		
<b>Starters</b>	Make & Maker's Type		
	Ref. Standard		


NOTE: Completely filled in Technical Particulars Sheet for each type of Lighting Fixtures shall be furnished after award of order for owner/consultant approval before commencement of manufacturing in line with NIT/PO.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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### SPECIFICATION SHEET INTERLOCKING SWITCH SOCKET & PLUG

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	
		ORDER <input type="checkbox"/>	
		FINAL <input type="checkbox"/>	
<b>GENERAL</b>		<b>AMBIENT CONDITION</b>	
Ref. Stds. :	IS / IEC	Temp.- Max / Min / Design ref.: 46 / 1 / 50°C	
Encl. Docs. :		Max Relative Humidity ≤100% Alt. above sea : <1000 M	
Vendor :		Atmospheric	Dusts : Coal Dust
Vendor Ref. No. :		Pollution	Vapour : Highly Corrosive
Sample Req. :		Area	Safe <input checked="" type="checkbox"/> Hazardous - <input type="checkbox"/>
		Hazardous	Zone : Encl. Gr. :
		Area Class	Temp. Class :
		Location :	Indoor <input checked="" type="checkbox"/> Outdoor <input checked="" type="checkbox"/>
<b>TESTS TO BE WITNESSED :</b> Routine <input checked="" type="checkbox"/> Type Others			
<b>BASIC DATA</b>			
Item No.		Refer SOR (Supply)	
Quantity			
Rated Voltage & Frequency		415V ± 10 %, 50Hz ± 3%	240V+ 10%, 50 Hz± 5%.
Rated Current		63 Amp	16 Amp
No. of Phases & Pins		3 Ph, 5 Pin	1 Ph, 3 Pin
Degree of Protection		IPW55	IP65
Addl. Degree of Protection			
Cable Size	Supply	3.5C X 50 mm <sup>2</sup> (Al)	3 C X 4 mm <sup>2</sup> (Cu)
	Plug	4 C X 6 mm <sup>2</sup> (Cu)	3 C X 2.5 mm <sup>2</sup> (Cu)
Period for which Spares required		--	--
<b>MAKE OF COMPONENTS</b>			
SWITCH :			
FUSE:			
SOCKETS :			
PLUG :			
CABLE GLANDS :			
TERMINAL BLOCKS :			
<b>TECHNICAL PARTICULARS</b>			
<b>General</b>	Make & Maker's Type		
	Material & Thickness of Enclosure		
	Gasketing Materials		
	Material of Ext. Hardwares < 8mm / > 8mm		
	Cable glands Type & Material		
	Painting	Pre treatment	
		Shade	
	Dimensional Drawing Reference No.		
Weight of Switch Socket / Plug			
<b>Switch</b>	Make & Maker's Type		
	Reference Standards		
	Rated Current		
	Utilisation Category		
<b>Fuse</b>	Make & Maker's Type		
	Reference Standards		
	Rated Current		
<b>Socket</b>	Make & Maker's Type		
	Reference Standards		
	Rated Current		
<b>Plug</b>	Make & Maker's Type		
	Reference Standards		
	Rated Current		

- NOTE: Completely filled in Technical Particulars Sheet shall be furnished after award of order for owner/consultant approval before commencement of manufacturing.


	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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### SPECIFICATION SHEET BATTERY CHARGER

PR PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	
		ORDER <input type="checkbox"/>	
		FINAL <input type="checkbox"/>	
<b>GENERAL</b>		<b>AMBIENT CONDITION</b>	
Ref. Stds. : IS/IEC		Temp.- Max / Min / Design ref.: 46 / 1 / 50°C	
Encl. Docs : <input type="checkbox"/>		Relative Humidity 100% Max.   Alt. above Sea Level < 1000M	
Make : As per vendor list enclosed		<b>ATMOSPHERIC POLLUTION</b> Dusts : Coal Dust Vapour : Highly Corrosive	
Maker's Type :			
		<b>LOCATION</b> A/C Room <input type="checkbox"/>   Ventilated Room <input checked="" type="checkbox"/> Non Ventilated Room <input type="checkbox"/>	
TESTS: Routine <input checked="" type="checkbox"/>		Type <input type="checkbox"/>	
		Others <input type="checkbox"/>	
<b>BASIC DATA</b>			
<b>TAG NO. &amp; QUANTITY</b>	Item No.		
	Code No.		
	Description	Battery Charger	
	Quantity		
<b>A.C. SUPPLY SYSTEM DETAILS</b>	Nominal Voltage with ±%	415 V ± 10 %	
	Rated Frequency with ±%	50 Hz ± 5 %	
	No. of Phases & Wires :	3 Phase, 4 Wire	
	Earthing Mode	Solidly Earthed	
	Fault Level		
<b>LOAD DETAILS</b>	Continuous Current	40A	
	Rated D.C. Voltage	110V	
<b>ASSOCIATED BATTERY DETAILS</b>	Make & Type	Ni-Cd	
	No. of Cells	90	
	Nominal Voltage	110 V ,DC,± 10%	
	Float Charging Current in Amp.		
	Float Charging Voltage	1.1	
	Boost Charging Current Starting/ Finishing	Ni-Cd - 1.3-1.45	
	Charging Final Voltage		
	Tapping provided at Cell No.	Ni-Cd - 1.42-1.7	
	Boost Charging Time	10 Hrs	
	Internal Resistance per Cell ( <input type="checkbox"/> <input type="checkbox"/> Ω)		
<b>CABLING DETAILS</b>	A.C. Power Supply		
	Battery		
	Load		
	Control		
<b>PAINTING</b>	Type & Shade		
<b>SPARE PARTS</b>			

Note: All unfilled data shall be filled by bidder and shall be furnished after award of order for owner/consultant approval before commencement of manufacturing.



	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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**TECHNICAL PARTICULARS  
BATTERY CHARGER**


PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
<b>ISSUED FOR :</b>		PROPOSAL <input type="checkbox"/>	ENQUIRY <input checked="" type="checkbox"/>
		ORDER <input type="checkbox"/>	FINAL <input type="checkbox"/>
<b>GENERAL</b>	Item No.		
	Make		
	Maker's Type		
<b>CONSTRUCTIONAL DETAILS</b>	Degree of Protection for Enclosure		
	Type of Sheet Steel		
	Thickness of Sheet Steel		
	Gasket Material		
	External Hardware <8 mm / >8 mm		
	Dimensions (L x B x H)		
	Total Weight		
	<b>Painting</b>	Type	
	Shade		
<b>FLOAT / STAND BY FLOAT CHARGER</b>	Type of Charger.		
	DC Output Voltage		
	DC Output Current		
	Manual range of Output Voltage Variation		
	Output Voltage Regulation		
	Ripple Content		
	Voltage Drop Across Dropper Diodes at FL		
	Over Load Capacity		
<b>BOOST CHARGER</b>	Type of Charger		
	Output Current : Starting / Finishing		
	Output Voltage Range		
	Ripple Content		
	Float Current for Automatic Switching		
	Charge Termination Device		
<b>FLOAT/ STAND BY FLOAT / BOOST CHARGER</b>	<b>CHANGE-OVER ARRANGEMENT FROM</b>	Float to Standby Float	
		Standby Float to Float	
		Float / Standby Float to Boost	
		Boost to Float / Standby Float	
	Short Circuit current		
	Heat Dissipation		
		<b>Float / Standby float</b>	<b>Boost</b>
<b>RECTIFIER TRANSFORMER</b>	Make		
	Type		
	Class of Insulation		
	Vacuum Impregnated		
	KVA Rating ( Design / Load)		
<b>THYRISTORS</b>	Temp. Rise Over Ambient		
	Make		
	Type		
	VRRM		
<b>DIODES</b>	lav		
		<b>Rectifier – Float / Boost</b>	<b>Blocking Diodes</b>
	Make		<b>Dropper Diodes</b>
	Type		
<b>PCBS</b>	VRRM		
	lav		
	Type		
<b>FILTER CAPACITOR</b>	Self Diagnostic feature		
	Make		
	Type		
	Capacity		




**TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS  
(SUPPLY & ERECTION)  
RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION  
OF NEW QUARTER GUARD BUILDING  
AND ALLIED WORKS  
TALCHER FERTILISER LIMITED, TALCHER**

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	Rated Voltage					
<b>D.C. CHOKE</b>	Make & Type					
	Insulation Class					
	Rating : Current / Inductance					
<b>BATTERY E/F RELAY</b>	Make					
	Type					
	Setting Range					
<b>DC U/V RELAY</b>	Make					
	Type					
	Setting Range					
<b>THERMAL RELAY</b>		<b>Float / Standby float</b>		<b>Boost</b>		
	Make					
	Type					
	Setting Range					
<b>AUX. RELAY</b>	Make					
	Type					
<b>SWITCHES</b>		<b>Float / Standby Float</b>		<b>Boost</b>		<b>Battery</b>
		Input	Output	Input	Output	
	Make					
	Type					
	Rated Voltage/Current					
Utilisation Category						
<b>CONTACTORS</b>		<b>Float/Standby Float I/P</b>		<b>Boost I/P</b>		<b>D.C. Contactor</b>
	Make					
	Type					
	Rated Voltage/Current					
	Utilisation Category					
	Operating Voltage of Coil					
<b>FUSES</b>		<b>Float/Standby Float</b>		<b>Boost</b>		
		Input/Output/SCR/Diodes		Input/Output/SCR/Diodes		
	Make					
	Type					
	Rated Voltage/Current					
Prospective Breaking Current						
<b>PUSH BUTTONS</b>	Make					
	Type					
	Current / Voltage Rating					
	Utilisation Category					
<b>CONTACTORS &amp; SELECTOR SWITCHES</b>	Make					
	Type					
	Current / Voltage Rating					
	Utilisation Category					
<b>TIMER</b>	Make					
	Type					
	Timer Range					
<b>INSTRUMENTS &amp; METERS</b>	Make					
	Type					
	Operation					
	Accuracy					
<b>SIGNAL LAMPS</b>	Make					
	Type					
	Rated Voltage / Wattage					
	Rating of Safety Resistor					
<b>CABLE GLAND</b>	Make					
	Type					
	Material					
<b>TERMINAL BLOCK</b>	Make					
	Type					
	Current Rating					

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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- NOTE: Completely filled in Technical Particulars Sheet shall be furnished after award of order for owner/consultant approval before commencement of manufacturing.

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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## SPECIFICATION SHEET BATTERY

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>	
		ORDER <input type="checkbox"/>	
		FINAL <input type="checkbox"/>	
<b>GENERAL</b>		<b>AMBIENT CONDITIONS</b>	
Ref. Stds. : IS/IEC		Temp.- Max / Min / Design ref.: 46 / 1 / 50°C	
Encl. Docs. : <input type="checkbox"/>		Relative Humidity: 100% Max.	Alt. above Sea Level <1000M
Make : As per enclosed vendor list		<b>Atmospheric Pollution</b>	Dusts : Coal Dust
Maker's Type :			Vapour : Highly Corrosive
		<b>Location</b>	A/C Room <input type="checkbox"/> Ventilated Room <input checked="" type="checkbox"/>
			Non Ventilated Room <input type="checkbox"/>
<b>TESTS:</b> Type <input type="checkbox"/>		Routine <input checked="" type="checkbox"/>	
		Acceptance <input type="checkbox"/>	
		Others <input type="checkbox"/>	
<b>BASIC DATA</b>			
<b>TAG NO. &amp; QUANTITY</b>	Item No.		
	Code No.		
	Description	Ni- Cd Battery	
	Quantity		
<b>BATTERY DETAILS</b>	Rated Nominal Voltage of battery bank	110 V DC	
	Capacity in AH at 2 hrs rate		
	No. of Cells		
	Nominal Voltage per cell		
	Cell Designation		
	Intermediate Tapping point		
	Earthing mode		
<b>CABLE DETAILS</b>	No.		
	Size		
	Type		
<b>ROOM DIMENSION</b>	Length		
	Breadth		
	Height		
<b>SPARE PARTS</b>	Required <input checked="" type="checkbox"/> for a Period of 2 Years operation and maintenance		


**Note:** All unfilled data shall be filled by bidder and shall be furnished after award of order for owner/consultant approval before commencement of manufacturing.

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### TECHNICAL PARTICULARS BATTERY

P PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH	
<b>ISSUED FOR :</b> PROPOSAL <input type="checkbox"/> ENQUIRY <input checked="" type="checkbox"/> ORDER <input type="checkbox"/> FINAL <input type="checkbox"/>			
<b>GENERAL</b>			
Item No.			
Make			
Maker's Type			
No. of Cells Per Battery			
Capacity at 10 Hr Rate			
<b>CONSTRUCTIONAL DETAILS</b>			
<b>POSITIVE PLATES</b>	Type		
	Size		
	Number Per Cell		
<b>NEGATIVE PLATES</b>	Type		
	Size		
<b>SEPARATORS</b>	Type		
	Material		
	Thickness		
<b>CONTAINERS</b>	Thickness		
	Material		
<b>CONNECTORS BETWEEN CELLS</b>	Size		
	Material		
	Method of Connection		
	Clearance Between Bottom of Plates & Containers		
Overall Dimensions of each Cell			
Weight of Complete Cell			
<b>ELECTRICAL DATA</b>			
<b>RECOMMENDED RATES OF CHARGE</b>	Starting (A)		
	Finishing (A)		
	Float (A)		
	First Charge (A)		
<b>RECOMMENDED VOLTAGE PER CELL</b>	Float Charging		
	<b>Boost Charging</b>	Start	
		Finish	
Open Circuit Voltage On Full Charge			
<b>GUARANTEED <math>\gamma</math> AT 10 Hr. RATE</b>	Amp. Hr.	%	
	Watt Hr.	%	
Internal Resistance Per Cell			
<b>DISCHARGE CAPACITY IN Amp.</b>	5 Hr. Rate to	V Per Cell	
	3 Hr. Rate to	V Per Cell	
	1 Hr. Rate to	V Per Cell	
	30 Min. Rate to	V Per Cell	
	15 Min. Rate to	V Per Cell	
	5 Min. Rate to	V Per Cell	
	1 Min. Rate to	V Per Cell	
	30 Sec. Rate to	V Per Cell	
	15 Sec. Rate to	V Per Cell	
	5 Sec. Rate to	V Per Cell	
1 Sec. Rate to	V Per Cell		
<b>MISCELLANEOUS DATA</b>			
<b>Electrolyte Details</b>	Qty. Per Cell for First Filling		
	Sp. Gr. for First Filling		
	Sp. Gr. at the end of Full Charge		
	Sp. Gr. at the end of Discharge		
Recom. Max. Period of Storage before 1 <sup>st</sup> Charge			
Battery Supporting Rack Dimensions			

- NOTE: Completely filled in Technical Particulars Sheet shall be furnished after award of order for owner/consultant approval before commencement of manufacturing.


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**SPECIFICATION SHEET  
DCDB**

PROJECT: Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room & Shops, D-Type Bungalows, VGH		
<b>ISSUED FOR :</b> PROPOSAL <input type="checkbox"/> ENQUIRY <input checked="" type="checkbox"/> ORDER <input type="checkbox"/> FINAL <input type="checkbox"/>				
<b>GENERAL</b>		<b>AMBIENT CONDITIONS</b>		
Ref. Stds. : IS/IEC		Temp.- Max / Min / Design ref.: 46 / 1 / 50°C		
Encl. Docs. : <input type="checkbox"/>		Relative Humidity: 100% Max.	Alt. above Sea Level <1000M	
Make : As per enclosed vendor list		<b>Atmospheric Pollution</b>	Dusts : Coal Dust	
Maker's Type :			Vapour : Highly Corrosive	
		<b>Location</b>	A/C Room <input type="checkbox"/> Ventilated Room <input checked="" type="checkbox"/>	
			Non Ventilated Room <input type="checkbox"/>	
<b>TESTS:</b> Type <input type="checkbox"/> Routine <input checked="" type="checkbox"/> Acceptance <input type="checkbox"/> Others <input type="checkbox"/>				
<b>BASIC DATA</b>				
<b>TAG NO.</b>	Item No.	DCDB		
	Description	DC DISTRIBUTION BOARD		
	Code No.			
<b>REFERENCE DRAWINGS</b>	Single Line Diagram	--		
<b>SYSTEM DETAILS</b>	Nominal Voltage with Variation	110V DC		
	Rated Frequency with Variation	--		
	Combined V & F Variation	--		
	No. of Phases & Wires	1 Phase 2 wire		
	Insulation Level	1.1 KV		
	Fault Level			
	Earthing Mode			
<b>BUS BARS</b>	<b>Rating</b>	Continuous		
		Short Time for 1 sec.	16 kA	
	Material of Construction	Al		
	Bare / Insulated	Insulated		
Type of Insulation	Heat Shrinkable Raychem Sleeves			
<b>EXECUTION</b>	Single Front / Double Front	Single Front		
	Drawout / Non Drawout	Non Drawout		
	<b>CABLE ENTRY</b>	Top	--	
		Bottom	Yes	
<b>MISC. DATA</b>	Dummy Panel Req'd. ( Yes / No )	No		
	Width of Dummy Panel	--		
	No. of Dummy Panel	--		
	<b>PAINTING</b>	Type	Epoxy Based	
		Shade	RAL 7035	
Spares Parts Req'd. For a Period of				


Note: All unfilled data shall be filled by bidder and shall be furnished after award of order for owner/consultant approval before commencement of manufacturing.



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**FEEDER DETAILS  
DCDB**

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ISSUED FOR: PROPOSAL <input type="checkbox"/>		ENQUIRY <input checked="" type="checkbox"/>		ORDER <input type="checkbox"/>		FINAL <input type="checkbox"/>	
SWITCH BOARD DESCRIPTION: DCDB							
Feeder No.	Feeder Description and Code No.	Rating		Ref. Scheme Drg.	Fdr. Type	Power Cable Size (mm <sup>2</sup> )	Remarks
		KW	Amp.				
1	Incomer-1	--	63A	--	Power Feeder	3.5Cx25 mm <sup>2</sup> (Al)	
2	Incomer-2	--	63A	--	Power Feeder	3.5Cx25 mm <sup>2</sup> (Al)	
3	O/G feeders 1 to 14	--	32A		- Power Feeder	3CX2.5 mm <sup>2</sup> (Cu)	

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## SECTION – 3.0

### ERECTION, TESTING & COMMISSIONING SPECIFICATION


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## 1. SCOPE OF WORK

- 1.1 The scope of work shall include storage, handling, transportation, unpacking, checking, reporting of damages / defects, assembling, erection, installation, including fabrication, alignment, levelling, grouting, welding, bolting, painting (wherever specified), etc., testing and commissioning of various electrical equipment supplied by the contractor, earthing system, fabrication & installation of steel structural etc. as per drawings & documents, specifications, standards & codes, prevalent rules & regulations and best engineering practices.
- 1.2 The scope shall also include obtaining approval from statutory authorities, as required.

## 2. SCOPE OF ERECTION

- 2.1 The scope comprises of erection / installation, testing and commissioning of electrical equipment / items as indicated in SOR.
- 2.2 Laying of cables in excavated / RCC trenches and on cable trays as required.
- 2.3 Supply of single/double compression aluminium cable glands and crimping type tinned copper cable lugs, shall be provided by the electrical contractor. Normally, equipment shall be received at site with cable lugs and glands. Where these are short supplied or wrongly supplied by the equipment supplier, these shall be provided by the electrical contractor for which unit rates shall be quoted.
- 2.4 Excavation and back filling of cable trenches/direct buried cables.
- 2.5 Termination of power, control and lighting cables.
- 2.6 Fabrication with supply of MS material, consumable and hardware of frames, supports, cable racks etc. as required.
- 2.7 Supply, laying & connection of the complete earthing system including supply of GI earth electrode as per sketch given, GI earthing strips, flexible earthing conductors etc.
- 2.8 Civil works such as digging of earth and refilling for directly buried cables, earth strips, cable protection pipes, earth electrode pits, ground mounted lighting pole foundations, civil works such as making earth pit inspection chambers with covers, grouting of base plate, channels, supports and foundation bolts, including chipping of concrete or in brick work for earth strips, pipes and other minor chipping for foundation preparation, if required, cutting holes in walls for racks, risers, light fitting brackets, sealing of cable entries and making good the same after installation of the equipment and levelling and other minor similar jobs shall be in contractor's scope.
- 2.9 Straight - through jointing of cables (wherever required)
- 2.10 Making / providing canopies / rain hoods.
- 2.11 All hardware required for successful commissioning, whether specifically mentioned or not in the specification.
- 2.12 Concrete foundations for pedestals, lighting poles, grouting of equipments etc., including supply of grouting materials.
- 2.13 Removal of materials / scraps to the scrap yard and stores etc. as per instructions of Owner / Consultant.
- 2.14 Supply and installation of any other item not specifically mentioned but found necessary by the engineer-in-charge for satisfactory completion of job.
- 2.15 All letter writing on switchboards, transformer, danger boards, sign etc shall be done by the contractor.
- 2.16 Any work not included in this tender but may be required, as decided by engineer-in-chief, such as site modification of panel wiring, mounting of additional equipment etc. for which extra

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payment shall be made as per the man-day-rates to be quoted for various categories of workmen.

- 2.17 "AS BUILT" drawings with all site modifications shall be prepared by making the changes on owner's drawings.
- 2.18 All major civil engineering works pertaining to electrical equipment as per Technical Specification of Civil enclosed elsewhere in the tender.

### 3. CODES AND STANDARDS

- 3.1 The design, manufacture, testing, installation of the equipment shall comply with the latest issue of all relevant Indian Standards and codes of practices and all applicable Statutory Acts & Regulations.
- 3.2 The contractor shall have valid "A" class licence. The contractor must have PF & ESI codes covering all persons hired by him for carrying out the job. He shall engage suitably skilled / licensed workmen of various categories for execution of work supervised by supervisors / engineer of appropriate qualification and experience to ensure suitable quality of work.
- 3.3 The contractor shall observe safety rules and take all necessary safety precautions to carry out the internal electrification work.

### 4. GENERAL PROCEDURE FOR ERECTION


- 4.1 The general procedure governing "Transfer of equipment and materials to Contractor", erection and final acceptance of owner / consultant are given below:

#### 4.1.1 Storage of equipment at site

- a. All equipment and materials shall be properly stored by the contractor at site in the designated storage area provided by the owner. Contractor shall arrange to draw the necessary equipment / materials in the sequence required for erection and transport the same from contractor's store to erection point.
- b. The contractor shall keep proper record of the materials supplied by him / owner.
- c. The contractor shall ensure that all the materials drawn / supplied by him are stored indoor / under shade. However, if a package is temporarily stocked outdoor due to unavoidable reasons, this shall be ensured that the storage area is dry, hard and well-drained.
- d. Goods must not be placed directly on the floor / ground but shall be kept on blocks, 60 mm to 120 mm above the floor level such that the bottom is well ventilated.
- e. In case of outdoor storage, the contractor at his own cost shall provide waterproof PVC sheets/ tarpaulin to cover all goods so as to protect them from rain etc. These sheets / tarpaulin shall be removed for inspection once in a week and if found moist or mouldy, shall be dried in direct sunlight.
- f. In addition to the above, the equipment manufacturer's storage instructions, if any, shall be strictly followed.

#### 4.1.2 Contractor's inspection at site

- a. On receipt of any material (supplied by the contractor) at site, contractor shall fully unpack and inspect all equipment received for completeness, signs of damages, defect etc. in the presence for owner's representative. Any damage / short supply detected shall be recorded immediately. The contractor shall be required to make good / replace / repair the defective / damaged items at no extra cost to the owner.

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#### 4.1.3 Handling and cleaning

- a. The contractor shall be responsible for proper handling and cleaning of all materials / equipment drawn / supplied by him until owner / consultant finally accepts the erected equipment.
- b. Equipment shall be handled with care by experienced riggers under guidance of competent supervisors and as per rigging marks given on cases. Dragging on floor shall be avoided and crane / suitable rollers shall be used for moving the equipment at any times.
- c. The contractor shall be fully responsible for the safe keeping of equipment issued to him till these are erected, tested, commissioned by him and accepted by owner / consultant.

#### 4.1.4 Transportation


This involves transportation of various electrical equipments / materials from contractor's store to erection site. When transporting the equipment, it shall be loaded on suitable trailer / trucks as per capacity and size of equipment, and shall be properly supported on the trailers / trucks by means of ropes / stoppers to avoid damage or tilting due to heavy jerks and vibration. Precautions, if any, displayed on equipment shall be strictly observed.

#### 4.1.5 Erection Requirements

- a. All work shall be carried out as per drawings supplied. Placing on foundation, aligning, grouting, connecting, fixing danger notice plate / board on equipment as specified, meggering, labelling and painting shall form part of erection requirements.
- b. Fixing of supporting frames / pedestals, grouting, cutting and dressing holes in walls / ceiling and any other minor civil work necessary for installation and levelling of electrical equipment are included in electrical erection scope.
- c. The scope of erection also includes cable dressing / clamping / minor rerouting, minor relocation of fittings, internal cleaning of equipment, overhauling and minor repairs.
- d. Fabrication of clamps from the materials specified and clamping of cables on racks, trays etc. fixing of single core cables in tri-foil formation in aluminium clamps, earthing of cable armour and lead sheath, wherever necessary (and as per the details given by Consultant) fall under erection scope of work.
- e. Marking of cables by fixing / grouting the cable marks / number tags at every 25 metres along entire route of cables are included in the scope of work. The tags shall be made of Aluminium Strips.
- f. The contractor shall without any extra cost, touch up with paint all electrical equipment which are damaged / scratched during handling, erection or repair. The paint used shall match exactly the painted surface of the equipment on which touch-up is done, and shall be epoxy based.
- g. The descriptions given above are only to give a preliminary idea about the scope of work and they do not limit the entire scope to these descriptions only. Hence all other parts of the tender document shall be read in conjunction with the referred standards, associated drawings, specification sheets and schedule of materials & services to assess actual scope of work.
- h. The contractor shall undertake erection of all equipment specified herein in accordance with good engineering practices in conformity with statutory regulations and Code of Practice and to the entire satisfaction of the purchaser / owner.
- i. The contractor shall arrange all the necessary erection tools, tackles, testing and measuring instruments and shall supply all erection materials as required.

#### 4.1.6 Erection Supervision by OEM Suppliers

- a. For guiding / supervising erection of sophisticated equipment, services of main equipment supplier's engineer may be made available free of cost by the contractor for the electrical

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equipment. However, this will neither absolve the contractor from his responsibility nor his obligation to provide his own supervisors or technical personnel.

- Switchboard
- Transformer

- b. The contractor shall have to comply with all the directions of Engineer-in-Charge, drawings etc. issued to him within the scope of his contract by supplier's engineer.

## 5. SPECIFICATION FOR ELECTRICAL ERECTION

### 5.1 General

- 5.1.1 These specifications lay down the erection procedures to be followed for each type of equipment, over and above the general "Erection Requirements".
- 5.1.2 The contractor shall also follow manufacturer's instructions and any other instructions of consultant / Principal / Statutory bodies during erection.
- 5.1.3 Suggestive Erection Drawings shall be supplied to the successful bidder for Lighting, Earthing, Cable Tray Routing, etc. These drawings may be suitably modified, if required, to suit site requirement with the approval of owner / consultant.
- 5.1.4 As-Built Drawings shall be prepared by the bidder and supplied to owner/ consultant.

### 5.2 Switch Boards


#### 5.2.1 Handling

- a. As far as possible lifting of switchboards shall be done by making use of eyebolts provided. It shall be ensured that before lifting, all eyebolts are fully tightened and that panel supports, nuts and bolts are intact and tight.
- b. If lifting arrangement is not provided/ not feasible and final positioning by sliding is unavoidable, packing base shall be retained as long as possible and rolled on suitable pipes. Dragging of panel directly on floor by crowbars shall be avoided.
- c. Maximum care shall be taken to avoid any damage to insulator, bushings, meters and protective equipment.

#### 5.2.2 Erection

- a. Check the foundation according to the drawings. Ensure that all pockets have been rightly made. Fix the datum level, and level the foundation by chipping in such a way that the prescribed point of cubicle base plate is flushed with finished floor.
- b. Check the individual cubicle for any deformity and ensure that all faces are straight. Any dent on sheet steel frame shall be rectified before placing on foundation.
- c. Wherever separate base frames are supplied, level the foundations in both directions (lateral and transverse) and ensure that these have been correctly levelled throughout. In case of runner rails, check the rails for level in both the directions and ensure that they are parallel to each other. Wherever base frame is fixed to cubicle, place the cubicle on foundation ensuring that holding down bolts are directly over the foundation pockets.
- d. Obtain correct level of panel with respect to floor/ existing bus-bar by putting shims below base frame, shims are to be supplied by the contractor. Measure the level of each frame with reference to datum and ensure that level difference between the two ends of the switchboard base frame is within  $\pm 2$  mm.
- e. Cubicle shall be so adjusted that front face of all the panels are in one plane, all sides are plumb and corresponding horizontals on all panel faces (e.g. minimum lines, door edges, inter



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cubicle joints) line up in the same horizontal line (s). Match the cubicles and adjust properly. Provide gasket between edges, if required; so that no inter-panel gaps are seen.

- f. Bolt adjacent cubicles and base frame together by drilling new holes, wherever necessary to match holes.
- g. Grout the foundation bolts with mortar, run grouting mixture under base of the cubicle frame, ram to ensure solidity. After grout has set properly, tighten the foundation bolts.

#### 5.2.3 Bus Connections and Installation of Loose items

- a. Fix bus bar links and inter panel bus-bar connections with coupling bolts / supporting insulators. Clean the contact surface of bus bars and links and smear with contact grease before bolting.
- b. Wherever recommended, fix shroud on the joints and fill compound, or compound may be put on joint to form smooth homogenous & spherical shaped mass and then wrapped with tape. Simple taping of joints may also be done. Recommendation of manufacturer/ consultant/ Principal shall be followed in this respect.
- c. In case of misalignment of bus bars, adjustments may be necessary. The connecting pieces may have to be re-drilled or re-fabricated.
- d. Check tightness of bus bars bolts connections with torque wrench. Follow vendor's recommendations in this regard.
- e. Install all loose relays, instruments, cable boxes, metering and protective CTs, PTs etc. Before fixing the relays, make sure that they are cleaned and all packing materials have been removed from them and proper operation. Clean the contacts.
- f. Connect all inter-panel bus wiring. Connections of relays and instruments shall be done as per drawings. Check the wiring according to wiring diagram.
- g. Connect all earthing bus bar between the cubicles and it shall be connected at two points by Al / GI strip or cable to the main earthing ring. Fix all glands for incoming and outgoing and control cable connections on the holes provided for the purpose, as per drawings.
- h. Drill holes for fixing cable glands/ cable boxes as per drawings, if such holes are not provided. All spare holes, gaps etc. shall be blanked as per instructions of Principal / Consultant.

#### 5.2.4 Cleaning

After erection is complete all cubicles, switches, starters, CTs, PT Chambers, Bus bar Chambers etc. should be cleaned by blowing air (preferably hot air). Surface of the insulation shall be cleaned with cloth soaked in CTC / Benzene.


#### 5.2.5 Circuit breakers installation (Air Circuit Breaker)

- a. Clean the contacts properly with cloth soaked in CTC / Benzene etc. Clean and lubricate the operating mechanism, check and rectify the main insulating contacts and bushings and also secondary contact for any damage/ misalignment. Check the locking mechanism.

5.2.6 Manually close and trip the breaker several times and check contact alignment and pressure. Adjustment, if required, shall be done according to the manufacturer's instruction. The arc chute if despatched separately should be fixed properly, only after checking of contact alignment etc. After fixing the Arc Chute, operate manually the breaker and check the contacts make properly. Measure contact resistance with conductor. Check the operation of OFF-ON indicator.

#### 5.2.7 General Checks

- a. Ensure that all gaskets are in position, replace the same if found damaged.

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- b. All opening covers and rear doors shall be bolted with required number of bolts. Take care that no bolt/nut/ washer gets lost during handling and erection.
- c. Check inter-changeability of breakers of same rating.

### 5.3 **Transformer**

#### 5.3.1 **Handling**


- a. Transformers shall be lifted by lugs or shackles provided for the purpose to avoid unbalance while lifting.
- b. It shall be ensured that Lifting chains / slings do not interfere with any part of the transformer.
- c. Cover bolts shall be checked for tightness. If found loose, it shall be tightened fully before handling. Care shall be taken that the bolt does not rotate to avoid damage of the gasket.
- d. Jacks shall be used, if required, only on jacking pads provided for the purpose (jacks shall never be used under valves or radiators tubes).
- e. Transformer shall never be left without putting stoppers of the wheels.

#### 5.3.2 **Erection**

- a. Foundation of the transformer shall be prepared and checked for its level as per Drg. before shifting / transferring the transformers from the stores.
- b. Proper time shall be given for curing the level of rails.
- c. Wheels shall be fixed before placing of the transformer in position. Wheels of the transformers shall be checked for its proper movement. Greasing shall also be done on the shaft of wheel before placing the wheels in position. Split pins must be used / placed in position before its rolling.
- d. Transformer shall be placed on the prepared foundation only.
- e. Transformer's wheels shall be checked for its free movement on the rails/ plates. It shall be then levelled & aligned with the bus ducts, which shall be connected on the LT side of the transformer.
- f. Stoppers to the transformer wheels shall be provided immediately after alignment to prevent any movement.
- g. Cleaning of all the accessories like radiators, cooling fans, valves, air cell type conservator tank, explosion vent pipe, bushings and other accessories shall be done.
- h. Radiators shall be flushed with hot oil before assembly.
- i. Cloth only shall be used for cleaning purposes.

**CAUTION:** While working on the transformers with hand-holes or bushing holes, take care that no tools or any other foreign matters are dropped into the tanks. All the loose tools shall be properly tied and secured.

- j. All accessories such as radiators, conservator, valves, explosion vent pipe, Buchholz relay, HV and LV bushings, cable end termination boxes, marshalling box, instruments, capillary tubes, silica gel breather with dried silica gel, fans etc. shall be assembled as per vendor's drawings and instructions.
- k. Operation of shut off valves and tightness of all gasket joints shall be checked before topping up of oil. Thermometers shall also be fixed.
- l. Oil samples from each drum for dielectric strength shall be tested. Oil with standing 40 KV for 1 minute shall only be filled.
- m. Oil shall be filtered with filtering machine by using metallic hose.

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- n. Bottom drain valve shall be used to fill oil in the transformer tank to prevent aeration in oil.
- o. It shall be ensured during oil filling operation that no air pockets are left in the tank and no dust or moisture enters the oil. All air vents shall be opened. Oil flow rate shall be reduced when oil level is almost upto the bottom of the main cover to prevent internal pressure from rupturing the diaphragm of pressure relief pipe. Sufficient time shall be allowed to escape all air bubbles. Air bubble accumulated in Buchholz relay shall be released by opening air release cock provided on the top. Vent plugs shall be closed.
- p. Cables shall be connected to HV and LV terminals of transformer.
- q. Control cables / power cables shall be connected to Marshalling Box. Stop push button mounted on the wall of transformer room shall be connected to trip the transformer.
- r. Transformer body shall be earthed at two separate points to main earthing strip.
- s. Transformer neutral shall be earthed to a separate and distinct neutral earth pit (through NER, wherever applicable) as per design and drawings.
- t. Danger notice board conforming to IS: 2551 and IE Rules 1956 shall be provided on enclosure or door of the enclosure.
- u. Transformer Room's door / enclosures shall be earthed as per IE Rules, 1956.
- v. Safety items i.e. fire extinguishers, shock treatment chart, fire buckets with screened sand etc. shall be provided.


#### 5.4 **Cable Installation**

##### 5.4.1 **General**

- a. All fabrication, cutting, laying, spacing, fixing etc. of cables, trays, supports, hangers etc. shall be as per drawings and instructions of Owner / Engineer-in-Charge.
- b. The contractor shall keep accurate record of cable drums, the drum nos. and actual length of cable taken out of each drum. Each cable length shall be cut from a specific drum as per approved schedule of cable. Lengths of cable runs shown in the cable schedule are calculated lengths only, hence the actual lengths shall be measured at site before laying and cutting the cable. The contractor shall take extreme care to adjust cable runs from drums so that joints in the cable are avoided and wastage reduced to minimum.
- c. For purpose of measurement of cable run for payment the length of cable between and terminations only shall be considered.

##### 5.4.2 **Laying**

- a. The cable drums should be properly mounted on jack / cable wheel. Make sure that the spindle is suitable for carrying weight of the drum without bending. Check that spindle is laying horizontal on the bearing so as to prevent the drum creeping to one side or to the other while rotating.
- b. Unroll the cables from the drum in correct direction. Rotate drum only as per arrow mark given in the cable drum. Ensure that the end protection box attached to the flange of the drum is removed and securing rope cut to allow cable and move freely. Rotate the cable drum and simultaneously pull cable steadily and with even pulls and not with unnecessary jerk or strain. In no case the cable shall be allowed to twist or kink since this is likely to spring the armour and fracture the insulation and outer serving of the cable.
- c. Do not drag the cable on floor or hard surface. Use only wooden / steel cable rollers for this purpose.
- d. Cable should not be bent sharply to a small radius. The cable bending radius shall be as large as possible and will not be less than 15 times the outside diameter for XLPE cables and 12


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times for PVC cables. At joint termination the individual core of cable shall not be bent with bending radius of less than 15 times the diameter over the insulation.


- e. Where cables are laid on the MS racks, trays etc. ensure that trays / racks / supports are fixed properly in an approved manner or according to the drawings. Check from drawings that for horizontal runs of cable, bracket, risers, supports, angles are grouted or fixed in formation as required.
- f. In sub-station where large no. of cables rise to panels/ switchboards, it shall be ensured that these risers do not interfere with cables on racks and rising cables do not interfere with cables on racks and rising cables do not cross the other cables in horizontal runs. Risers are to be properly supported so that weight of cable does not fall on terminations. All cable crossings shall be avoided.
- g. Cable laid in trenches should be sealed at the entry to hazardous area / non-hazardous area as per direction of owner / engineer-in-charge.
- h. Openings in substation basement and floors for entry of cables shall be sealed after the cables are laid.
- i. Cables shall be clamped by taking care to be taken to space clamps at such intervals as to prevent buckling of cables.
- j. The laying of the cable on the racks shall be done in an approved manner and according to the drawings supplied.
- k. Where cables are laid in cable slits, the slits after laying of cables shall be filled with sand & lean cement mixture and plastered so that surface flushes with top of slit.

#### 5.4.3 Directly Buried Cables

- a. Laying of under ground directly buried cables shall include excavation of earth along the cable route, laying of Hume / GI pipes for road crossing, back filling, ramming, removing of extra earth including supply of bricks, sand etc. as per drawing and instruction of Owner / Engineer-in-Charge.
- b. Broken bricks shall not be use for brick working. Only Class-I bricks shall be used.
- c. If new cables are laid to cross existing cables, the new cable shall be laid under existing cables at depth of not less than 300 mm from the existing cable. It shall be ensured that the approach of new cable to the crossing is uniform and gradually sloped.
- d. Where cables are directly laid into ground, trenches should be dug up to such a depth as to ensure that the depth of the top of the entire cable below the ground level is min. 750 mm for medium and low voltage cables, and min.1050 mm for high voltage cables. Before laying of cables at these trenches, bottom of the trench should be properly levelled up and all odd and sharp materials removed. Trench bottom then should be bedded with a 75 mm thick layer of sand. Approval of Owner / Engineer-in-Charge shall be taken for preparation of this bed before laying of cables. Cables shall be laid in the trenches in straight runs. Care shall be taken so that any kinds or bends are not formed. After laying of the cables, bricks shall be placed length wise on both the sides of the cables along the entire length to form trough.
- e. Fill up space between bricks with sand up to height of the bricks. Then place bricks closely width wise on top of the sand layer throughout the length. Fill up loose earth in trench, ram properly to compact, remove extra earth from site. Broken bricks shall not be use for brick working. Only Class-I bricks shall be used.
- f. If new cables are laid to cross existing cables, the new cable shall be laid under existing cables at depth of not less than 200 mm from the existing cable. It shall be ensured that the approach of new cable to the crossing is uniform and gradually sloped.

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- g. Fix cable markers at interval not exceeding 30 Mtrs. In straight portion, at bends in cable route apart and at joints on the entire cable route length of the cables. The cable markers shall be made of pre-cast concrete blocks of 300 mm x 350 mm x 350 mm size with markings of “HT CABLE”, “LT CABLE”, “Depth of Cable”, “Arrow Marks” etc. inscribed. These shall be supplied by the contractor at no extra cost and fixed as per directions of the Owner / Engineer-in-Charge. The top of the above concrete slabs shall have a smooth finish with cement only.
- h. Laying of cables under road crossings etc. shall be done in pipes, and pipe ends shall be sealed with bitumen compound and sand as required after cables are laid. Backfilled soil shall be rammed thoroughly to prevent road surface cracking due to settlement of loose soil.
- 5.4.4 Laying in Readymade Trenches
- a. RCC slabs / chequered plates lifted from trenches for laying cables shall be put back in position at close of work every day to avoid accident & damage to cables in the trench.
- b. When cables pass through pipes, pipe ends shall be sealed with bitumen compound and sand as required.
- c. Protection pipes shall be provided, whenever cables enter from the floor, trench etc. in the equipment and sealing in and around these pipes shall be done.
- 5.5 **Cable Jointing and Termination**
- 5.5.1 General
- The scope of work shall include but not limited to the followings:
- a. Soldering / crimping of sockets / ferrules and connections at all joints/ terminations as per specifications. Sockets shall be provided at all terminations except where pressure clamp type terminals are provided.
- b. Glanding of cable and fixing of cable boxes.
- 5.5.2 Specifications
- a. HT XLPE cables shall be terminated by use of heat shrink type termination kits.
- b. All LT XLPE power and control cables shall be terminated through compression type gland.
- c. In case of LT XLPE cables, armours shall be suitably earthed in compression type glands. For HT XLPE cables, this shall be done either in glands or by any other suitable means like bonding the armour with suitable wire and connecting same to the earth terminals inside cable box.
- d. All lighting and control cables shall be provided with crimped Al / Cu Sockets before termination in junction boxes.
- 5.5.3 Crimping
- a. For all power cables, crimping type Al lugs for Al cables and tinned Cu lugs for Cu cables shall be provided. These lugs shall be crimped on the cable conductors by means of special hand/ hydraulic crimping tools. Before crimping the socket inhibiting grease shall be smeared over the conductor. Conductor shall be shaped properly before sliding the socket over it. Crimping shall be done in an approved manner.
- b. All the control cables, which shall be of copper conductor, shall be terminated without any additional lugs in screwed type terminals provided in various equipments.
- c. Bimetallic washer shall be used at copper to aluminium connection.
- 5.5.4 Jointing
- a. The jointing shall be done in an approved manner. Care shall be taken not to damage the insulation when opening the cable for jointing.

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- b. Before commencing soldering of the socket, conductor shall be thoroughly cleaned and insulation protected. The ferrules shall be thoroughly cleaned. Ferrule and each strand of the cable shall be thoroughly sweated with solder to tin them and fill the conductor gaps to remove all air pockets. Soldering materials of approved quality as per ISS practice shall be used. Taping of the conductors shall be done in an approved manner after crimping / soldering.
- c. Filling up compound and sealing the cable box shall never be done in one operation. After the first pouring of compound, it should be topped up again with compound and then sealed.

#### 5.5.5 Straight Through Joints

- a. Jointing of XLPE & XLPE cables shall be done with extreme care and manufacturer's instructions shall be strictly followed. Soldering of sockets shall also be done with extreme care as indicated above.

Earth continuity wire shall be plumbed and / or clamped. Compound shall be filled according to the instructions of manufacturers of terminating kit / cable. Joints made inside trench or on rack shall be properly supported. Wherever joints are made inside ground, brick masonry work shall be done around the joint box and filled with sand, and there after covered with earth at no extra cost.

- b. A tent shall be used in all circumstances where jointing work is being done outdoor, for protection against rain and to prevent dust from being blown in to exposed joints and jointing materials. Extreme care shall be taken to maintain proper phase sequence while terminating at equipment ends. Records of connection details shall be maintained. Conductors shall be shaped properly while terminating and no sharp bends shall be given. Where numbers of cables are to be connected in parallel, proper tests shall be done before connection, so that no cross connection shall be made. No phase crossings shall be allowed for making the connections.
- c. Cables shall be supported adequately at the entry to cable box / equipment so that load of cable does not come on cable glands.
- d. All cables shall be meggered (checked for insulation resistance) before and after jointing and insulation values recorded.
- e. While terminating at equipment end, each core shall be properly tagged with numbering ferrules as per nomenclature given in the drawings. Wires should be dressed and clamped neatly, bolting shall be done properly.

#### 5.6 Earthing & Lightning


##### 5.6.1 General

- a. Painting of all earth strip joints with anti-corrosive paints shall be carried out as per details given in drawings and instruction of Owner / Engineer-in-Charge.
- b. All electrical equipment rated 415 V and above shall be connected to earth bus by two separate and distinct earth connections. All equipment rated 240 V and below shall be earthed with single earth conductor.

##### 5.6.2 Specifications

- a. Types and sizes of earthing conductors shall be as indicated in the SOR attached. All earthing installations shall conform to IS-3043 / National building code 2016 / IS / IEC : 62305
- b. Underground conductors shall run at a depth of 600 mm below ground level. Where these conductors run along with cables, they shall be laid at the same depth as cables. Where conductors run on wall, ceilings, they shall be laid on clamps or brackets made out of Al/GI strips.



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- c. Wherever, earthing conductor is passing through floor, walls etc. the conductor shall be taken through PVC / GI pipes.
- d. All paints, enamel etc. shall be removed from point of contact before making connections.
- e. Connections between G.I. strips shall be done by welding. For connecting Al conductor / G.I. wire, Al socket shall be crimped on the conductor / wire. At the equipment end, connections shall be done by bolting.
- f. Connection between Al & GI shall be done by bolting. Graphite grease shall be applied on contact surfaces.
- g. Epoxy resin paint or bitumen shall be applied on welded or bolted joints to prevent corrosion and taping done as indicated in the drawing. Connections between Al wires shall be done by crimping back to back Al ferrule.
- h. Earth electrodes - Earth electrodes shall be provided as per drawings / specification. Work includes excavation of earth, installation of electrodes and test links etc., supply and filling of charcoal and common salt, back filling of earth and removal of extra earth as specified earlier. It also includes making brick wall around the electrode and cover as per drawings / specifications. The testing links shall be grouted on brick wall and connections with earth electrode and conductors shall be made. Distance between two electrodes shall not be less than 10 meters and may be located 4 M away from building foundation.
- i. Earth pits for equipment earthing, neutral earthing and lightning protection shall be separate. However, these pits shall be inter-connected.

## 5.7 **Building Lighting**

5.7.1 The electrical installation covered by this specification shall conform to relevant Indian Standards & codes of practices.

5.7.2 Erection of light fittings, plug sockets etc.


Fabrication of supports for lighting fittings, sockets, junction boxes / Air condition points / TV points shall be done as per the best practice / relevant drawings / instructions given by the owner / engineer-in-charge. These shall be grouted to walls, ceiling or welded to insert plates, steel structures etc. Insert plates on ceilings shall normally be provided. However, if required, the contractor shall weld such supports to the reinforcement rods after exposing by chipping off concrete at no extra cost. Installation of lighting fittings includes control boxes, where supplied separately and shall be done as per drawings. Before installation, checking of internal parts, assembly of accessories shall be done as per manufacturer's instruction.

5.7.3 The explosion-proof fittings shall be earthed through third core of the cable used for wiring. The third pin and body of 16 amps shall be earthed similarly.


5.7.4 Installation of explosion proof equipment shall be done strictly following manufacturer's instruction or relevant Standards. Cable termination shall be done as per relevant drawings. No drilling of holes or any change in construction of equipment or part thereof shall be done.

5.7.5 Wiring for normal AC supply light points and plugs shall be taken on the same brackets but wiring for emergency DC supply lights shall be taken separately. Drawings for lighting layout give only tentative location of fittings and wiring route shall be decided in consultation with owner / engineer-in-charge. Wiring shall follow shortest possible route and no. of circuit shall be bunched together to the extent possible in the same route.

5.7.6 Cable for wiring light points and socket outlets shall normally be laid along wall, ceilings, structures, on suitable brackets made out of M.S. / Al sheets or strips. Connections to the points with fluorescent fixtures in one circuit shall be taken through junction boxes. Junction boxes shall be suitably located for branching off from the circuit to the individual point. Wherever indicated, cables may be laid directly on walls, ceilings etc. by clamping on saddles.

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- 5.7.7 Wherever indicated, the wire can be drawn through PVC bushings provided in the fittings. Relevant drawings may also be referred to.
- 5.7.8 Lamps shall be installed after installation of fittings and wirings.
- 5.7.9 All light fittings and corresponding control switches shall be numbered in a permanent way as instructed by owner / engineer-in-charge.
- 5.8 **ERECTION OF STRUCTURES**
- 5.8.1 Specification
- The fabrication work shall be done as per drawings / specifications / sketches in an approved manner and to the entire satisfaction of owner / engineer-in-charge. The contractor shall take adequate measures to avoid wastage. Scrap quantity shall not exceed 2% of total quantity used for erection.
- 5.8.2 Erection of racks, risers, supports etc.
- a. Erection of racks and risers for cable supports shall be done along the cable routes as indicated in the drawings. The contractor before erection shall check the route for any obstruction like process pipe lines, structures, equipment etc. In case of obstructions, the matter shall be brought to the notice of owner / engineer-in-charge in writing and racks shall be re-routed as per his instructions.
  - b. As and where indicated in the drawings, supports for racks, risers etc. shall be welded on the steel structure, such as MS beams, pipe trestles, insert plates provided in the RCC column etc. for erection of racks.
  - c. Wherever indicated, supports for racks, risers, shall be grouted on walls. The racks, risers etc. shall be installed on such supports and those properly welded.
  - d. Opening on walls / floors shall be provided where racks / risers are crossing floors/ walls.
  - e. Heavy channels, risers may also be grouted on the floors in addition to supports provided from walls, ceilings, steel structures etc.
  - f. As indicated in the drawings, racks and risers shall be erected either in single tier/ multi tier formation.
- 5.8.3 Erection of supports in trench
- a. Supports and Hangers shall be grouted with rag bolts on the walls of readymade concrete trench.
  - b. In existing trench wall, contractor may be required to provide pockets for grouting cable supports at some points. This shall be done without any extra cost to the owner.
  - c. In case of requirement of insert plates for support of cable rack, the contractor shall weld such plates to the reinforcement MS rods. This shall be done by chipping the concrete for exposing the reinforcement MS rods and thereafter welding the plates and making good the concrete chipping by plastering.
- 5.8.4 The pipes will have to be bent (wherever required) and fixed / embedded in floor, wall and ground for laying the cables. Neoprene bushes shall have to be fixed at the end of such pipes.
- 5.8.5 GI trays of different sizes shall be cut in size and fixed on racks and risers. Fixing of trays shall only be done after erection / welding / painting of the supports as required.
- 5.8.6 Erection of support frames for miscellaneous equipments, base channels for transformers and switchboards etc. shall be carried out at no extra cost.
- 5.8.7 Dismantling of steel fabrication and re-erecting as required by owner / engineer-in-charge shall have to be carried out by the contractor.

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5.8.8 Dismantling of cable racks and re-erecting as required by owner / engineer in charge shall be carried out by the contractor.

## **6. GENERAL PROCEDURE FOR TESTING & COMMISSIONING**

6.1 Before proceeding with the work, contractor shall fully inspect all installed Electrical Equipment for completeness, signs of damages, defects etc. and record all discrepancies noticed. The contractor shall be required to make good / repair / replace the damaged components at no extra cost.

### **6.2 Testing and Commissioning Requirements**

- a. All works shall be carried out in accordance with the drawings, supplier's instructions / manuals for equipment and as per relevant ISS & Code of Practices.
- b. Before conducting test on any equipment, the contractor shall obtain permission from owner / engineer-in-charge and all tests shall be conducted in their presence.
- c. Results of each test shall be recorded by the contractor immediately after the test on approved performa and counter signed by the owner's authorised representative. The test results shall be furnished in four copies in the form of 'Test Certificates'. Performa for some of the items are given in Appendix-1.
- d. Copies of the record shall be handed over to owner / engineer-in-charge.
- e. The Contractor shall commission all electrical equipment and carry out all pre-commissioning / commissioning tests inclusive of no-load and on-load tests on motors, and shall be responsible for final adjustments of relays, motors, instruments, starters, breakers etc. as per operational data supplied and as per directions of Engineer-in-Charge.
- f. All terminals, cable joints, earth terminals which are opened for testing purposes shall be re-terminated and re-insulated by the Contractor to restore their original state.

#### **g. Painting**

The contractor shall without any extra cost, touch up with paint all electrical equipment which are damaged / scratched during testing and commissioning work. The paint used shall match exactly painted surface of the equipment on which touch up is done.

### **6.3 Cleaning and Regular Maintenance.**

Till the commissioned equipment is finally accepted by owner / engineer-in-charge, Contractor shall be responsible for regular cleaning and maintenance of all electrical equipment. The maintenance job is to be done in consultation with or on advice from the Owner/ Consultant.

## **7. TESTING & COMMISSIONING SPECIFICATIONS**

7.1 These specifications lay down the testing and commissioning procedures to be followed for each type of equipment, over and above the general requirements laid down in specifications for erection.


Manufacturer's instructions and any other instructions of owner / engineer-in-charge / statutory bodies shall also be followed by the contractor during testing and commissioning.

The contractor shall maintain and furnish the records of all equipments i.e. HT Panels, Transformer, LT panels, CT, PT, relay etc. including any special test as per manufacturer's manual.


### **7.2 Switch Boards**

#### **7.2.1 General Checks**

- a. Check all auxiliary contacts of breakers for proper make / break operation.

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- b. If necessary, make minor adjustments to circuit breakers mechanism, auxiliary contacts etc. for proper operation of circuit breakers. Proper greasing and lubrication or mechanism shall also be done before final commissioning.
- c. Check for termination of control circuit wiring as per drawing and ensure that the terminals at equipment and panel are mechanically sound.
- d. Ensure proper operation of all test operation switches and push button.
- e. Check wiring of all space heaters, indication lamps bells, buzzers etc.
- 7.2.2 Insulation resistance test
- a. Measure the insulation resistance of main bus-bars (Phase to phase & Phase to earth) and circuit breaker with 1000 V Megger (IR values shall generally be not less than 100 MΩ for 11 KV, 50 MΩ for 3.3 KV, 10 MΩ for 415 V).
- b. Control wiring shall be tested with 500 V Megger (IR values shall not be less than 2 MΩ).
- 7.2.3 High Voltage Test
- The test shall be conducted on switch Gear rated 3.3 KV and above. Test shall be as per relevant Indian Standard. However, for AC high voltage test the value shall be twice the working voltage of the switchgear plus 1000V. This voltage shall be maintained for 1 minute. Each phase shall be tested in turn with remaining phases earthed. After high voltage test, a further megger test shall be made to make sure that insulation resistance to earth has not altered appreciably. The reading of second megger test should be consistent with that of the first. (AC test voltage for 1 min. duration shall be 24KV for 11 KV panel and 8 KV for 3.3 KV panel).
- 7.2.4 Testing of Current Transformer
- a. Insulation resistance to earth of secondary winding shall be tested with 500 V megger (remove earth connection before test).
- b. Check the polarity of C.T:- Connect zero centre voltmeter in the secondary winding, connect 6 V battery with switch in the primary, close the switch and from the kick of the voltmeter, ascertain the polarity.
- 7.2.5 Testing of P.T. Insulation
- Testing of H.T. & LT side of P.T. shall be done with 1000 Volts and 500 Volts megger respectively (the value shall not be less than 100 MΩ and 2 MΩ respectively).
- 7.2.6 Testing of Relays
- a. Checking of wiring shall be done according to Manufacturer's drawings. Check relay continuity at all taps and also ensure plug bridge contact satisfactory.
- b. Secondary injection test
- Use secondary injection test set incorporating timer. Testing of all protective relays such as but not limited to over current, earth fault, differential, motor protection, under voltage relays etc. shall be done as per the procedure set by the manufacturers of the relays. All time delay relays shall be tested to verify their characteristics for IDMT and instantaneous relay pick up and drop off values shall be noted at various taps. Relays shall be tested at all taps. Errors shall be calculated and compared with permissible limits specified by manufacturers. Adjustment, such as in establishing circuit, shall be done as recommended by manufacturer. After testing, relays shall be set at values given by Consultant.
- c. Timer relay shall be tested and calibrated and set properly.
- d. All auxiliary relays shall be tested for proper operation.

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### 7.2.7 Testing of Instruments

All indicating and recording instruments like Ammeter, Voltage meter, KWh meter etc. shall be calibrated. Zero error of each instrument shall be corrected.

### 7.2.8 Operational Test

Conduct the following operational tests after putting the circuit breaker at test and service position. Check that the fuses of proper rating are put in control circuit as per wiring diagram.

- a. Close and trip the circuit breaker several times with power or manually. In case of motor operated spring charged closing mechanism, check the operation of charging motor. Ensure that it cuts in/ off properly.
- b. Check the indication scheme ON, OFF, trip circuit healthy, auto-trip etc.
- c. Trip the breaker by operating the protective relays (operate contact manually).
- d. Check the trip free feature
- e. Check the anti-pumping feature
- f. Check operation of voltage selector relay scheme for supply.
- g. Check annunciation scheme for AC/DC power supply failure.
- h. Each motor starter shall be tested for correct operation. All operational tests to verify sequence of operation, inter-locking, alarm indication schemes (by simulating the connection) shall be done.
- i. Bi-metallic type thermal over load relay shall be tested at different settings. Current shall be injected through the thermal elements (three elements can be connected in series) at twice and thrice the set value and tripping time shall be noted. The values shall be compared with the data supplied by manufacturer.
- j. Single phase prevention relays shall be tested for proper operation.
- k. Check that fuses of specified ratings are put in various outlets.

Following testing shall also be done

- a. Wiring check for completeness for all equipment of the Panel.
- b. IR value with 500V Insulation Tester.
- c. Operational check of the Panel by simulation.
- d. All Meters and Indications shall also be checked at site.

## 7.3 Transformer

7.3.1 Final testing before commissioning shall be done in cold condition after drying out the transformer and disconnecting H.V. and L.V. side cables by removing link in disconnecting chamber, cables and also earth connections to neutral.

7.3.2 At least 1000 Volt megger shall be used for 33 KV winding and manufacturer's test certificates shall be compared for the purpose. 500 Volt megger shall be used for auxiliary power cables and control cable and values shall be preferably more than 2 MΩ.


Polarization Index shall be recorded as below to determine whether drying is necessary or not:-

$$PI = \frac{IR \ 10 \ Min}{IR \ 1 \ Min}$$

Evaluation of insulation  
condition based

Base  
on PI

Drying  
on PI

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Hazardous	< 1	Mandatory
Bad	1-1.5	Mandatory
Doubtful	1.5 - 2	Recommended
Adequate	2 - 3	No
Good	3 - 4	No
Excellent	> 4	No

### 7.3.3 Oil Tests

- a. Crackle Test: Cleaned Iron piece shall be heated red hot and put in the oil taken in a pot. In case of crackle sound, presence of moisture is indicated.
- b. Dielectric Strength Test: It shall be done as prescribed in Appendix 'C' of IS: 335. The oil should withstand minimum of 40 KV for 1 minute.

Even oil conditions are found satisfactory in testing after final topping. It is advisable that as an additional precaution, the transformers shall be dried out.

### 7.3.4 Drying out Procedure

- a. Drying out of the transformers shall be carried out in accordance with IS: 10028.

Before drying out following points shall be checked:-

- Any oil leakage through bushings and radiators
- Transformer tank is connected to the earth
- Temperature indicators are suitably calibrated and connected

- b. Precautions when drying :-

Maximum sustained temperature shall not be more than 80°C. Do not leave the transformer unattended during drying out period. Watch the transformer during drying out process and record carefully all observations viz. Oil temperature, winding temperature and insulation resistance of H.V. and L.V. windings. Drying out shall be continued till the insulation resistance value is steady prescribed in Standard Code of practice and IS: 10028 Part-II and steady value remains constant for 12 hours. Within the above period, several samples of oil are to be tested to ascertain dielectric strength. All readings shall be recorded (hourly/ half hourly) for insulation resistance and temperature of oil and winding. Sample of transformer oil shall be collected from bottom only. The oil shall be allowed to settle for at least 24 hrs.

In case the insulation value does not improve by the above method, low voltage equal to impedance voltage shall be supplied to HV side for few hours after short-circuiting the LV side. During the process, regular readings of insulation resistance of winding to earth, winding to winding and temperature against time shall be recorded.


If necessary / depending upon the manufacturer's recommendations, a vacuum pressure of 635 mm of mercury shall be applied for removal of air bubble. Hot air shall be released after drying out is done. Vent cocks and screws after release of air shall be closed.

### 7.3.5 Ratio Test :

3 phase, 415 volt shall be supplied on HV side for every tap position and reading shall be taken on other side. For every tap changing, supply shall be switched off for off-load changer.

### 7.3.6 Polarity Test



	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKS (SUPPLY &amp; ERECTION)</b> <b>RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS</b> <b>TALCHER FERTILISER LIMITED, TALCHER</b>	PC183-TS-0805	0
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3 phase, 415 volts shall be applied to HV side. One terminal of HV side shall be joined to corresponding terminal of LV side, say A-a. The voltage across A-a, A-b, B-a, B-b, B-c, C-a, C-b, C-c, N-a, N-b, N-c shall be recorded and vector group shall be ascertained.

### 7.3.7 Phasing for Paralleling Operations

Two transformers shall be connected on primary side. Terminal 'a' of secondary side shall be connected to bus-bar which corresponds to the equivalent terminal of second transformer. Both transformers shall be at same tap. Then 415 volt, 3 phase supply shall be connected to primary side. Circuit breaker of second transformer shall be closed. The corresponding secondary terminal voltage of two transformers, a1-a2, b1-b2, c1-c2 shall be measured. These voltages shall be zero in case both transformers are of same polarity and phase displacement. Voltmeter of the double reading of voltage of the secondary shall be used for measuring their condition. In case of star connected secondary winding having star joint earthed, secondary terminals need not be connected as stated earlier.

### 7.3.8 Buchholz Relay Testing

Air pressure shall be inserted through petcock gently till alarm contacts make. Pressure shall further be increased till trip contact makes. For low oil pressure also check shall be done.

### 7.3.9 Temperature Indicators

Temperature indicator shall be calibrated for the alarm contact properly.

### 7.3.10 Following points shall be checked before commissioning the transformer :-

#### a. General Inspections

- i) Assembly of accessories and mounting shall be checked with reference to Drgs.
- ii) Tightness of all cover bolts, flange etc. shall be checked.
- iii) Oil leakage through bushings, valve, radiator valve etc. shall be checked.

#### b. Oil Level

- i) Correct level in conservator shall be checked.
- ii) Oil level in disconnecting chamber and in thermometer pocket shall be checked.

#### c. Buchholz Relay

It shall be checked that floats are at normal position and shut off valve between relay & conservator is open.

#### d. Breather

- i) It shall be checked that the protective cover on air passage is removed.
- ii) Oil level in seal chamber and condition of silica gel shall be checked.


#### e. Explosion Vent

- i) It shall be checked that the diaphragm is intact and no oil visible in gauge glass.
- ii) Equaliser pipe valve between vent and conservator shall be opened.

#### f. Radiator

All the valves between radiator bands and main tank shall be opened.

#### g. Thermometer

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The connection of C.T. and Heater element for winding temperature indicator shall be checked.

h. **Wiring**

Wiring from instruments to marshalling box and to switch board/ control panel shall be checked.

i. **HV and LV Bushing and connections.**

i) Bushings shall be cleaned and connections shall be checked for outgoing and incoming lines.

ii) Gap of arcing horn (HV bushing) shall be checked.

iii) High pot test and cable and test of transformer shall be completed.

j. After all checking found O.K., the breaker for incoming of transformer shall be made ON for charging the transformer. It shall be watched for at 24 hrs. without load. Then it can be loaded after finding everything O.K.

**7.4 Cables**

a. All HT & LT cables shall be tested for insulation resistance with 1000V megger after termination.

For 11 KV---With 5000V Megger (Motorised)

For 1.1 KV-- With 1000V Megger

IR shall be measured between phases and between phase & earth. The voltage shall be applied for 1 minute.

b. All HT cables shall be tested for high voltage as per IS: 1255 after making all termination and joints followed by IR test.

**7.5 Lighting**

Before energising any lighting circuit, the IR values (phase to phase and phase to earth) shall be recorded for entire wiring installation. The testing shall be done with 500 V megger. After switching on the power supply, load of each circuit shall be measured.


**7.6 Earthing**

- Measurement of earth resistance of each earth pit
- Checking earth grids for size, continuity and connections
- Checking size and continuity of earth connections from grid to each equipment
- Measurement of connections to earth at equipment which are likely to have highest earth resistance
- Measurement of earth loop impedance for checking the operation of protective devices in case of earth fault.
- The continuity of earthing and resistance of each earth pit and grid shall be measured with earth megger.

**7.7 Miscellaneous Equipment**

Under this are included, exhaust fans, blowers, limit switches, vibrators, electro-magnets, air pressurisation unit etc. The following tests shall be conducted.

- a. Measurement of insulation resistance
- b. Check up the direction of rotation.

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c. Operational test

## 8. DOCUMENTATION

- 8.1 For the purpose of completion certificate, the following documents will be deemed to form completion document:
- a. The technical documents according to which the work was carried out.
  - b. Final check-list and completion report.
- 8.2 Three sets of construction drawings showing therein the modifications and correction made during the course of execution signed by Owner / Engineer-in-charge.
- 8.3 Test certificates for the materials purchased by Contractor.
- 8.4 Material appropriation statement for the materials issued by Owner for the works and list of surplus materials returned to Owner's stores duly supported by necessary documents.
- 8.5 No claim certificate by the Contractor certifying that the entire work done by him under the contract has been measured & accepted for the final bill to his satisfaction and that he will have no claim(s) concerning any work(s) or part thereof performed by him under the Contract, to Owner except otherwise indicated in the final bill.
- 8.6 The completion certification shall be issued by Owner within 30 days of the Contractor furnishing documents listed in this clause jointly certified by Owner / Engineer-in-charge and Contractor's Site Engineer.


## 9. HANDING OVER TO OWNER

- 9.1 The contractor shall hand over the complete installation as a whole. Minor works not specified or mentioned in the scope or SOR but required to complete the job as a whole will have to be done by the contractor without extra cost. Any equipment / installation shall not be deemed as handed over to Owner until the same is complete in all respect and is accepted in writing by the Owner / Engineer-in-charge.
- 9.2 The final acceptance of the work shall be after the demonstration of guarantees by the Contractor. Owner shall issue the final acceptance / taking over certificate upon fulfilment of the guarantees.

## 10. OBLIGATIONS & RESPONSIBILITIES OF CONTRACTOR

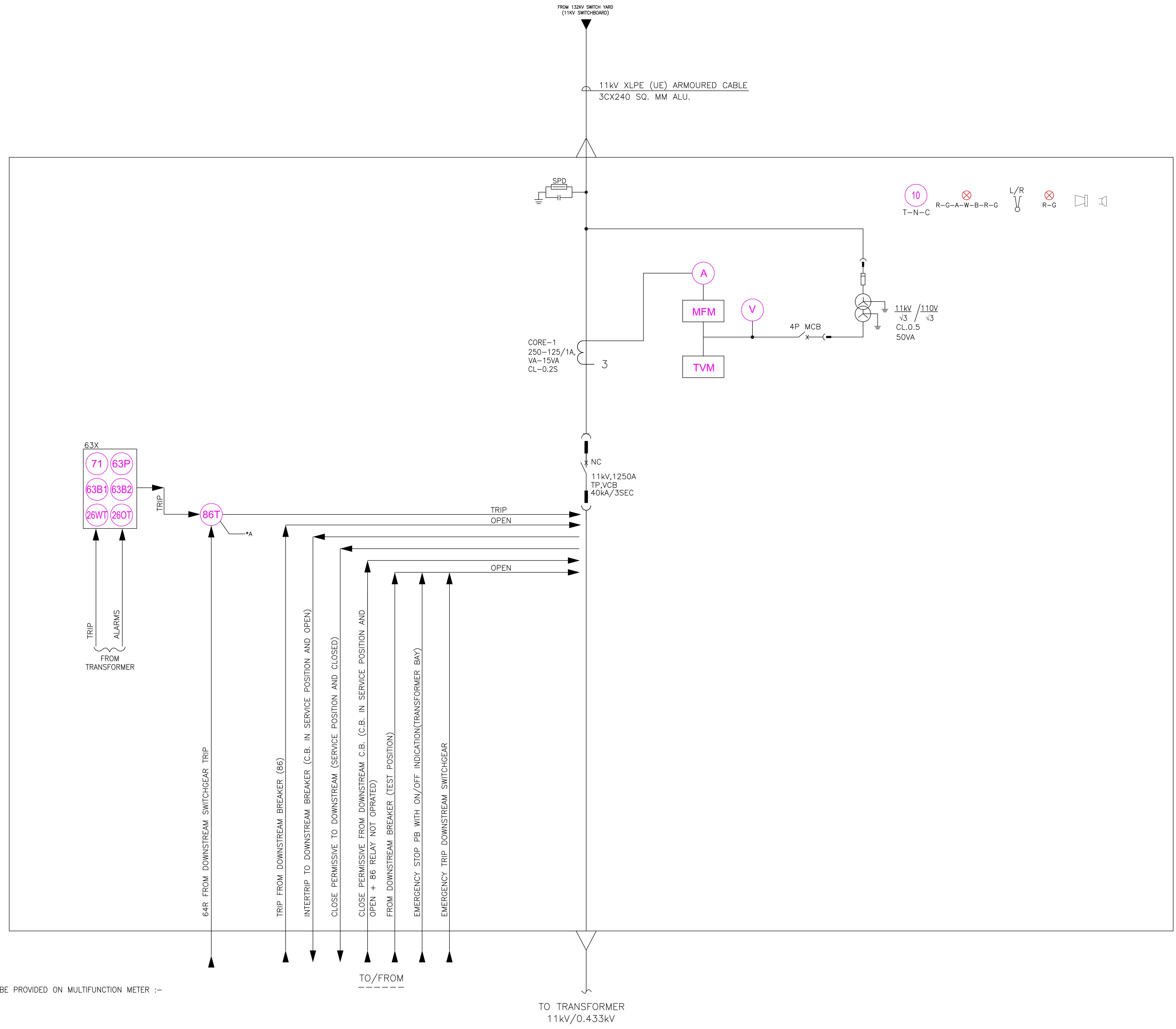
The contractor's obligations and responsibilities shall include but not limited to the following:

- 10.1 To deploy skilled, semi skilled and unskilled personnel in requisite numbers and as per scheduled programme so as to complete the WORK as per overall project schedule.
- 10.2 To deploy suitably qualified supervisors and engineers in requisite numbers to assure execution of good quality job as per best engineering practices and to the full satisfaction of Owner / Consultants.
- 10.3 Safety supervisor shall be deployed at site that monitors safety aspect during the site construction work. Contractor to note that all workers shall use PPE (helmet, safety shoes, hand gloves, goggles, double lanyard safety belt etc. and they shall be medically tested before putting into the job.
- 10.4 To prepare detailed planning and execution schedule considering the availability of fronts and materials. This shall be reviewed by Owner / Engineer-in-charge and Contractor shall be required to keep updating the same (as per the instructions of Owner / Engineer-in-charge) to take care of any changes in the availability of fronts and materials and to complete all jobs as per the overall project schedule. Owner / Engineer-in-charge shall in no way be held responsible for such changes.

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- 10.5 To check for quantity compliance between bill of materials and drawings for cable, structural, earthing materials etc. and intimate Owner / Engineer-in-charge sufficiently in advance regarding discrepancies, if any.
- 10.6 To prepare & submit lighting layout, conduit layout, earthing/lightning protection layout drawings of the CISF Barracks, Guard Room & Shops and D-Type Bungalows (4 Nos.) for review/approval before starting of erection work at site.
- 10.7 To arrange all required tools and tackles, consumables, instruments, erection materials & machineries etc. for handling erection, testing & commissioning of complete electrical installation.
- 10.8 To arrange and supply storage tanks for drinking water so as to avoid any inconvenience that may be caused due to interruption in water supply at times.
- 10.9 To provide proper storage and security arrangements for his tools, tackles, equipments, materials etc. as well as equipment and materials issued by Owner / Engineer-in-charge to Contractor. Owner / Engineer-in-charge shall not be responsible for any loss or damage to items in the custody of Contractor at site for any reason whatsoever.
- 10.10 Completion of all repairs arising out of defective work done by Contractor, Owner / Engineer-in-charge may at his discretion require the Contractor to rectify certain defects in materials caused due to bad workmanship of supplier and / or during transportation. For such work of course, the payment modalities shall be settled by mutual agreement before starting such rectification jobs.
- 10.11 To maintain all the records for men, materials and execution of job as required by law as well as Owner / Engineer-in-charge.
- 10.12 To get his work inspected by Owner / Engineer-in-charge and get approved from statutory agencies such as but not limited to Electrical Inspector, Factory Inspector etc.
- 10.13 All co-ordination with Statutory Authorities shall be contractor's responsibility. Only statutory fee required for approval shall be paid by the owner.
- 10.14 To make arrangements for services such as transport, medical, lighting, canteen etc. for working round the clock.
- 10.15 In addition to safety regulations indicated in this enquiry, Owner / Engineer-in-charge may issue certain safety directives, which shall have to be followed meticulously without any reservation.
- 10.16 To undertake and execute work and supply as per scope of work, scope of supply and follow Technical Conditions including specification for electrical erection, specification for electrical testing and commissioning and as per schedule of rates
- 10.17 Reconciliation of all materials issued by owner / supplied by contractor.
- 10.18 Handing over of the completed works to owner / engineer-in-charge as per procedure laid down by Consultant.
- 10.19 To submit documentation forming part of request for issue of completion certificate.
- 10.20 Clearing the site after cleaning the areas where the Contractor executed the job, stored the materials and built his office, fabrication shop etc.

LEGENDS:-			
71	MULTI FUNCTION METER	72	VOLTMETER ALONG WITH VSES
63B1	INSTANT OVER CURRENT RELAY	73	AMMETER ALONG WITH ASS
63B2	INSTANT EARTH FAULT RELAY	74	POWER FACTOR METER
26WT	TRIP CIRCUIT SUPERVISION RELAY	75	SURGE PROTECTION DEVICE
26OT	UNDER VOLTAGE RELAY	76	ISOLATOR
86T	TIMER	77	PH VECTOR METER
63P	SYNCHRO CHECK RELAY	78	LIGHTNING ARRESTOR
63B1	LINE DIFFERENTIAL RELAY		
63B2	DIRECTIONAL OVER CURRENT RELAY		
26WT	BACKUP EARTH FAULT RELAY		
26OT	LOCK OUT RELAY		
86T	TNC SWITCH		
63P	OIL LEVEL INDICATOR WITH CONTACTS		
63B1	PRESSURE RELAY OILPUMP		
63B2	TEMP. RELAY FOR WINDING		
26WT	TEMP. RELAY FOR OIL		
26OT	LOCK OUT RELAY(AND RESET) 3-TRANSFORMER		
86T	INSTANT. OVER CURRENT		
63P	INSTANT. OVER CURRENT GROUND FAULT RELAY CONNECTED IN RESIDUAL WAY		
63B1	OVER VOLTAGE RELAY		
63B2	DC SUPPLY FAILURE		
26WT	UNDER VOLTAGE RELAY TO INTIMATE MOTOR FOR TRIP		
26OT	VF FAILURE		

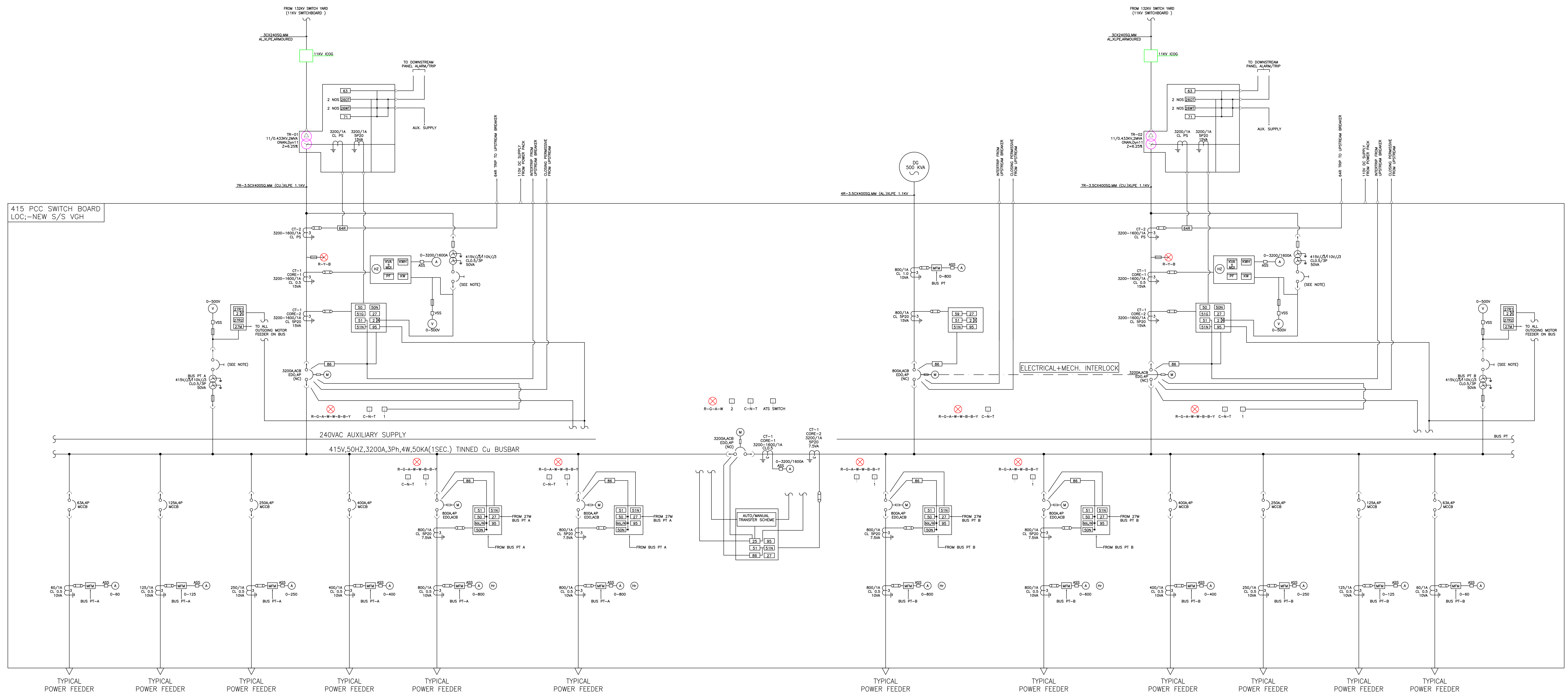


- NOTE:-
- FOLLOWING MINIMUM METERING SHALL BE PROVIDED ON MULTIFUNCTION METER :-  
 -3 PHASE CURRENT  
 -LINE VOLTAGES  
 -POWER FACTOR & FREQUENCY  
 -KW,KVAR,KVA,KWH, & KVARH
  - LAMP TEST PUSH BUTTON SHALL BE PROVIDED.
  - SIGNALS/INDICATIONS TO/FROM 11kV ICOG ARE INDICATIVE, AND SHALL BE CONFIRMED DURING DETAIL ENG.
  - CIRCUIT BREAKER 'ON', 'OFF' INDICATION SHALL BE PROVIDED AT THE BACK OF EACH PANEL. ALTERNATIVELY ALARM SHALL BE PROVIDED IN CASE PANEL BACK DOOR IS OPENED WITH BREAKER 'ON'.

FOR TENDER PURPOSE

0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:- TALCHER FERTILIZER LIMITED	REV. 0		
			SHEET 1 OF 1		
		PROJECT:- EARLY WORKS FOR COAL BASED FERTILIZER PROJECT	SCALE: N.T.S.		
		TITLE:- TYPICAL SINGLE LINE DIAGRAM	DRG. NO.- PC183-7411-0985E		
			FILE:		
		प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA			





NOTE:-

- ALL RELAYS SHALL BE NUMERICAL, COMPREHENSIVE PROTECTION CONTROL & METERING TYPE WITH OPEN TYPE PROTOCOL SUITABLE FOR REMOTE COMMUNICATION.
- SEPARATE METERING SHALL BE PROVIDED AS INDICATED IN ADDITION TO THE AVAILABILITY OF FEATURE IN NUMERICAL RELAY. ALL METERS INDICATED SHALL BE ANALOG TYPE. LOCKOUT RELAY SHALL HAVE PROVISION FOR MANUAL RESET.
- ALL INDICATING LAMPS SHALL BE LED TYPE WITH LOW VOLTAGE GLOW PROTECTION (LVGP).
- MCB WITH AUX. CONTACT SHALL BE PROVIDED IN PROTECTION CORE OF PT SECONDARY. MCB AUX. CONTACT SHALL BE USED FOR BLOCKING THE OPERATION OF UNDER VOLTAGE RELAY IN CASE OF MCB TRIP.
- RELAY 86 SHALL BE DISCRETE RELAY. HOWEVER, RELAY 95 SHALL BE PART OF NUMERICAL RELAY.
- PANEL SPACE HEATER WITH THERMOSTAT SHALL BE PROVIDED ON EACH PANEL AND SUPPLY SHALL BE TAKEN FROM 240V AUX. AC SUPPLY BUS.
- 240V, AC AUX. SUPPLY SHALL BE TAPPED FROM INTERNALLY FROM MAIN BUSBAR
- RELAYS, METERS, CONTROL TIMERS, SWITCHES ETC. AS MENTIONED AND REQUIRED WHILE DEVELOPING THE CONTROL SCHEMATIC AND FELT NECESSARY FOR SAFE OPERATION SHALL BE PROVIDED.
- DESCRIPTION OF THE SELECTOR SWITCH INDICATED ON THE DRAWING ARE AS FOLLOWS:-

- BREAKER CONTROL SWITCH : CLOSE-NEUTRAL-TRIP (LOCKABLE WITH SPRING RETURN) (BREAKER CONTROL SWITCH SHALL BE HARDWIRED TYPE IN ADDITION TO CONTROL SWITCH AVAILABLE AS A PART OF NUMERICAL RELAY)
- SELECTOR SWITCH (AUTO/INDEPENDENT/MANUAL) FOR AUTO TRANSFER SCHEME.
- EMERGENCY TRIP PUSH BUTTON
- POSITION SELECTOR FOR TRIP BREAKER-A, TRIP BUS COUPLER & TRIP BREAKER B.

- ALL FEEDER INCLUDING SPARE FEEDER SHALL BE FULLY EQUIPPED WITH RELAY/METERS, LAMPS, CT ETC AS PER RESPECTIVE TYPICAL FEEDERS.
- CIRCUIT BREAKERS SHALL BE PROVIDED WITH THE PROVISIONS OF MANUALLY CLOSE/TRIP ON LOSS OF CONTROL VOLTAGE.
- PUSH BUTTON WITH PAD LOCK FEATURE SHALL BE PROVIDED IN ALL TRANSFORMER BAYS FOR TRIPPING UPSTREAM BREAKER.
- FOR OTHER DETAILS REFER FEEDER DETAILS, ENCLOSED WITH NIT.
- VACANT SPACE FOR FOLLOWING FEEDER RATING SHALL BE PROVIDED.  
A-400AMP.-2NOS.  
B-250AMP.-2NOS.

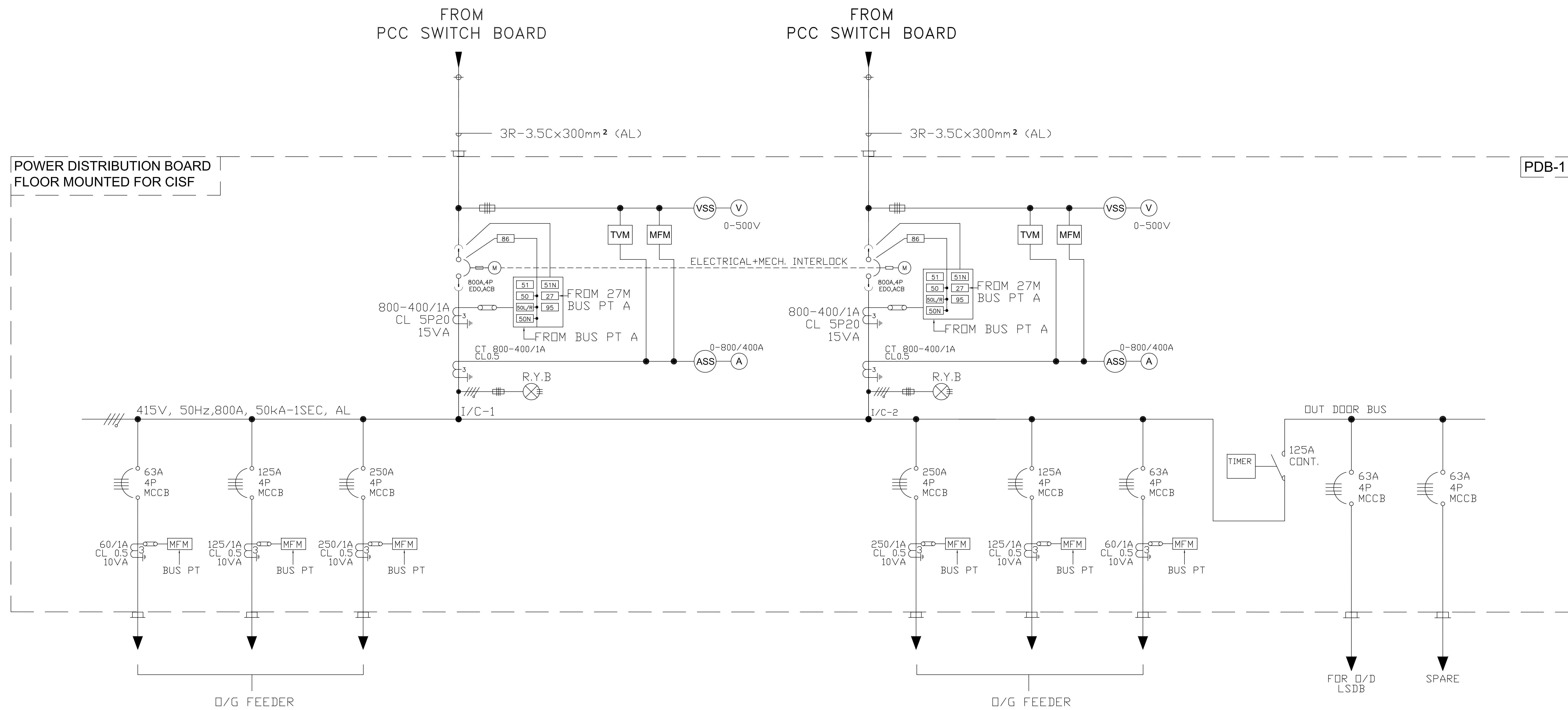
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	AIR CIRCUIT BREAKER		UNDER VOLTAGE RELAY
	CONTROL TRANSFORMER		PHASE UNBALANCE RELAY
	MCB/MCCB		THERMAL RELAY
	CURRENT TRANSFORMER		INSTANTANEOUS OVER CURRENT
	MULTI FUNCTION METER		+ EARTH FAULT RELAY
	AMMETER		LOCK ROTOR PROTECTION RELAY
	AMMETER SELECTOR SWITCH		IDMT OVER CURRENT
	VOLTMETER		+ EARTH FAULT RELAY
	VOLTMETER SELECTOR SWITCH		MAGNETIC OIL LEVEL GAUGE
	FREQUENCY METER		LOCKOUT RELAY
	KILOWATT HOUR METER		TRIP CIRCUIT SUPERVISION RELAY
	POWER FACTOR METER		RESTRICTED EARTH FAULT RELAY
	TIME DELAY		INCOMPLETE SEQUENCE RELAY
	SYNCHRO CHECK RELAY		CABLE GLAND

S.NO	O/G FEEDER RATING	QTY.	DESCRIPTION
1.	800A	2NOS.	CISF
2.	800A	2NOS.	VGH
3.	800A	1NOS.	SPARE
4.	800A	2NOS.	BUNGALOW
5.	800A	1NOS.	SPARE
6.	400A	2NOS.	SPARE
7.	250A	2NOS.	SPARE
8.	125A	4NOS.	SPARE
9.	63A	2NOS.	LSDB
10.	63A	1NOS.	WELD. SOCKET
11.	63A	3NOS.	SPARE

FOR TENDER PURPOSE


0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:-	REV. 0		
		TALCHER FERTILIZER LIMITED	SHEET 1 OF 1		
PROJECT:-		EARLY WORKS FOR	SCALE: N.T.S.		
		COAL BASED FERTILIZER PROJECT	DRG. NO.-		
TITLE:-		TYPICAL SINGLE LINE DIAGRAM	PC183-7411-0985D		
		(LOCATION :-VIKRAMPUR GUEST HOUSE)	FILE:		
		प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा	PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA		

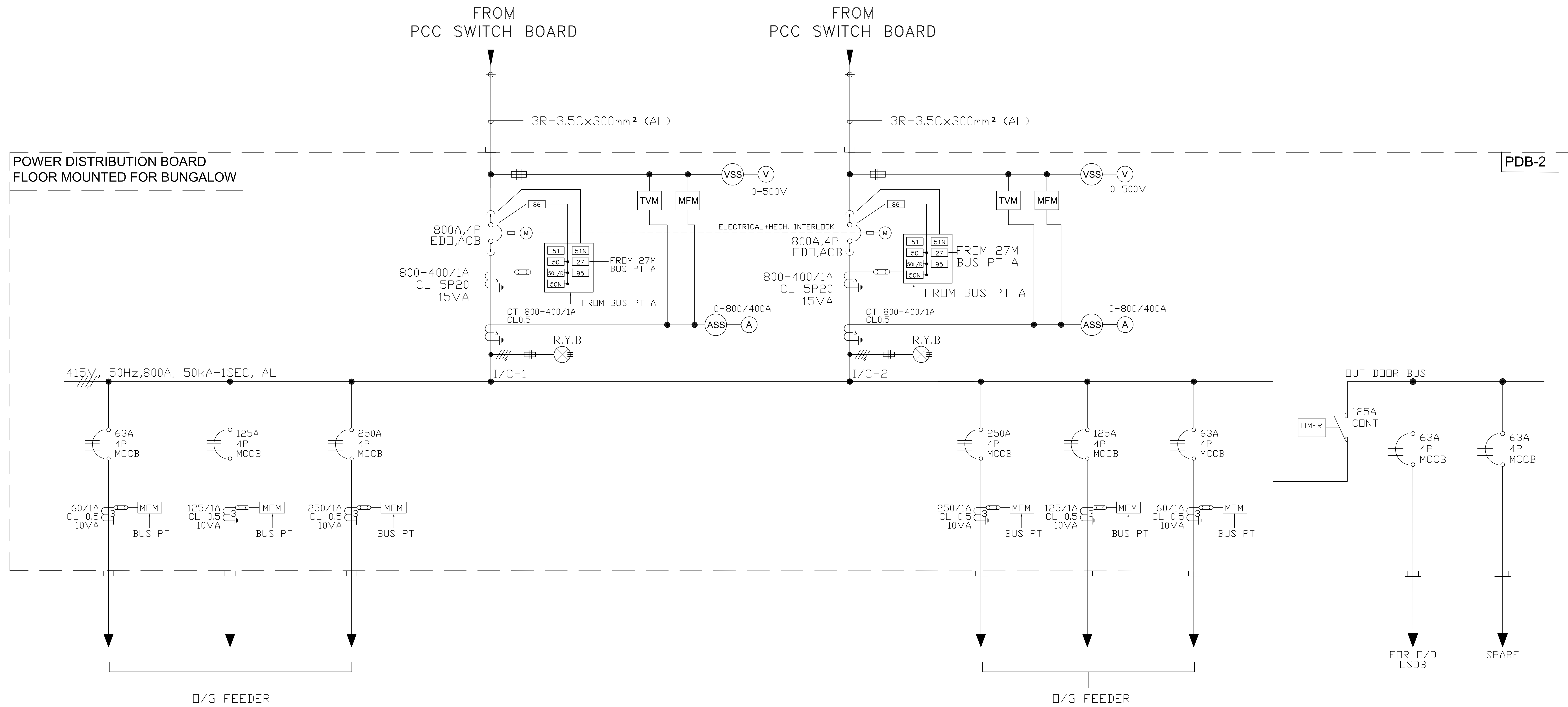




S.NO	O/G FEEDER RATING	QTY.
1.	63A	22NOS.
2.	125A	2NOS.
3.	250A	3NOS.

FOR TENDER PURPOSE

0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:- TALCHER FERTILIZER LIMITED	REV. 0	SHEET 1 OF 1	
		PROJECT:- EARLY WORKS FOR COAL BASED FERTILIZER PROJECT	SCALE: N.T.S.		
		TITLE:- TYPICAL SINGLE LINE DIAGRAM	DRG. NO.- PC183-7411-0985G		
		 प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA			



NOTE :-ALSO REFER FEEDER DETAILS

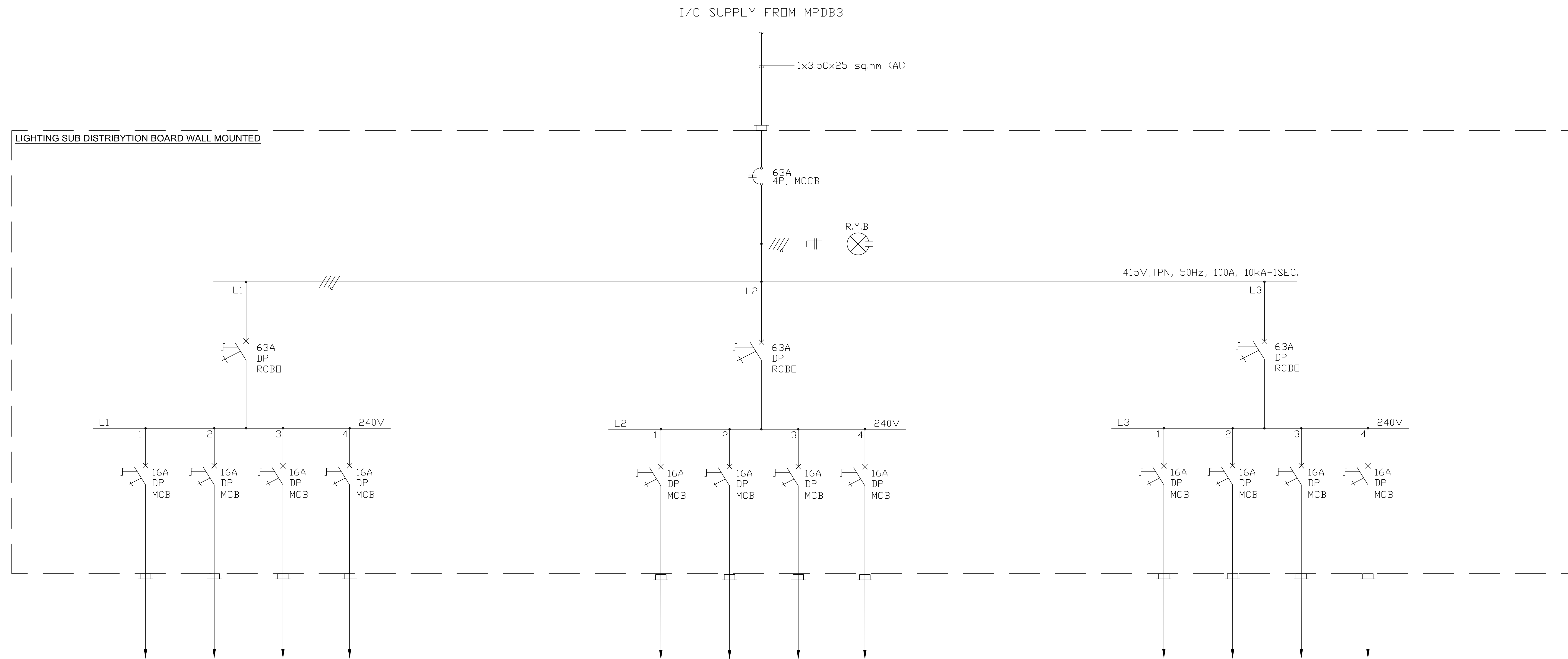
FOR TENDER PURPOSE

S.NO	O/G FEEDER RATING	QTY.
1.	63A	2NOS.
2.	125A	15NOS.
3.	250A	2NOS.

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REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:- TALCHER FERTILIZER LIMITED	REV. 0	SHEET 1 OF 1	
PROJECT:-		EARLY WORKS FOR COAL BASED FERTILIZER PROJECT	SCALE: N.T.S.		
TITLE:-		TYPICAL SINGLE LINE DIAGRAM	DRG. NO.- PC183-7411-0985H		
		प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA	FILE:		

**GENERAL NOTES:**

1. BUSBAR MATERIAL - AI
2. SYSTEM VOLTAGE - 415V, 3φ N, 50HZ
3. RATED SHORTCIRCUIT WITHSTAND - 10KA, 1 SEC
4. DEGREE OF PROTECTION (IEC 60529) - IP65. PAINT SHADE - RAL 7032.
6. CABLE ENTRY : INCOMER - BOTTOM  
OUTGOING - BOTTOM



**LEGEND:**

- FUSE
- INDICATING LAMP
- MCB/RCBO WITH THERMAL ELECTROMAGNETIC PROTECTION
- CABLE GLAND
- MCCB

TYPICAL

FOR TENDER PURPOSE

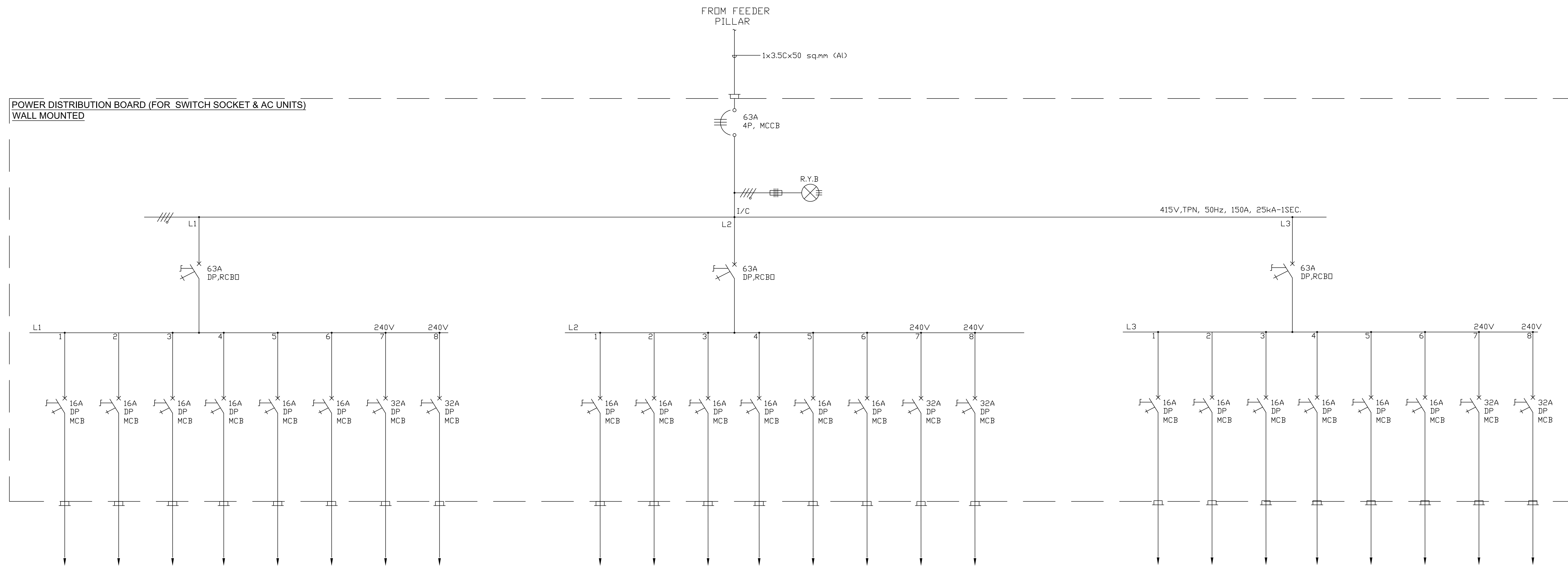
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REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:- TALCHER FERTILIZER LIMITED	REV. 0		
			SHEET 1 OF 1		
			SCALE: N.T.S.		
PROJECT:-		EARLY WORKS FOR COAL BASED FERTILIZER PROJECT	DRG. NO.- PC183-1215		
TITLE:-		TYPICAL SINGLE LINE DIAGRAM	FILE:		
		प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA			



**GENERAL NOTES:**

1. BUSBAR MATERIAL - AL.
2. SYSTEM VOLTAGE - 415V, 3φ N, 50HZ
3. DEGREE OF PROTECTION (IEC 60529) - IP:65.  
PAINT SHADE - 631 OF IS:5.
4. CABLE ENTRY : INCOMER - BOTTOM  
OUTGOING - BOTTOM

POWER DISTRIBUTION BOARD (FOR SWITCH SOCKET & AC UNITS)  
WALL MOUNTED



**LEGEND:-**

- FUSE
- INDICATING LAMP
- MCB/RCBO WITH THERMAL ELECTROMAGNETIC PROTECTION
- MCCB
- CABLE GLAND

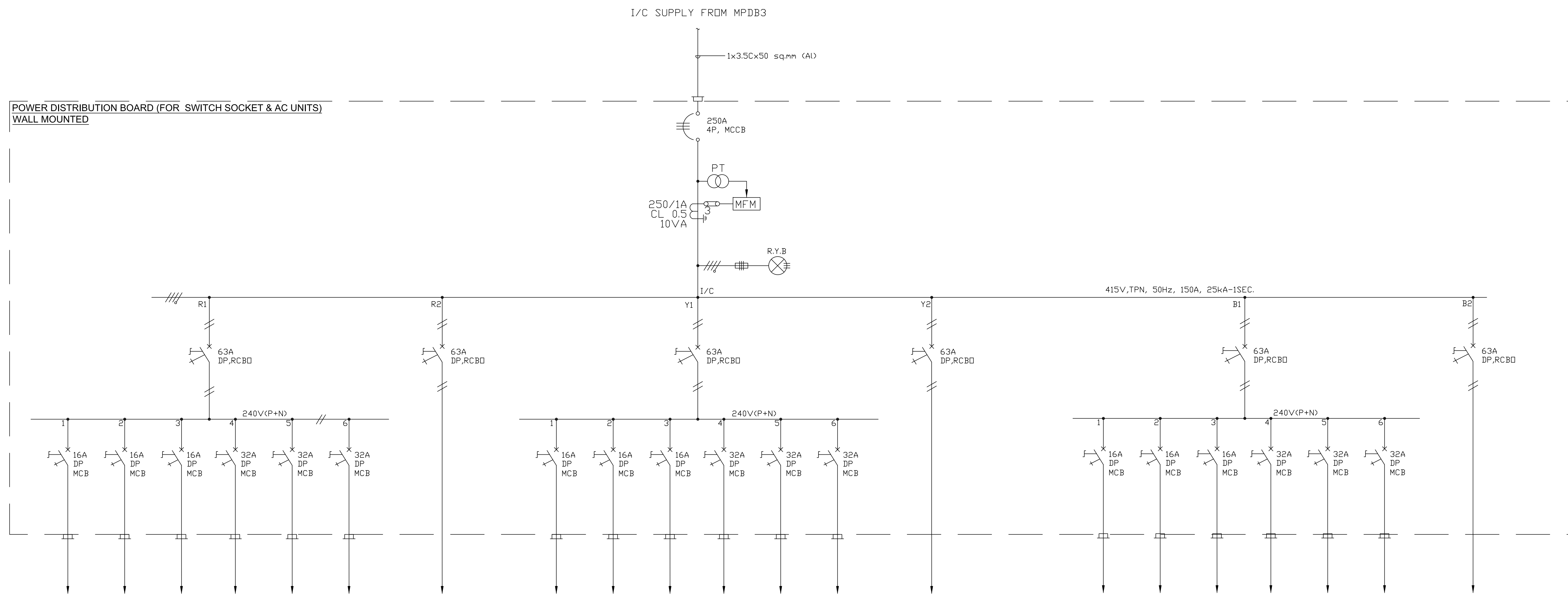
FOR TENDER PURPOSE

0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:- TALCHER FERTILIZER LIMITED	REV. 0		
			SHEET 1 OF 1		
			SCALE: N.T.S.		
PROJECT:-		EARLY WORKS FOR COAL BASED FERTILIZER PROJECT	DRG. NO.- PC183-1216		
TITLE:-		TYPICAL SINGLE LINE DIAGRAM	FILE:		
		प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA			

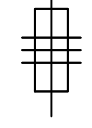
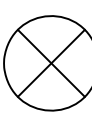
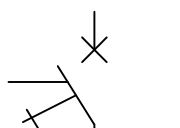
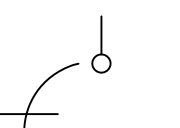

**GENERAL NOTES:**

1. BUSBAR MATERIAL - AL.
2. SYSTEM VOLTAGE - 415V, 3φ N, 50HZ
3. DEGREE OF PROTECTION (IEC 60529) - IP:65.  
PAINT SHADE - 631 OF IS:5.
4. CABLE ENTRY : INCOMER - BOTTOM  
OUTGOING - BOTTOM



POWER DISTRIBUTION BOARD (FOR SWITCH SOCKET & AC UNITS)  
WALL MOUNTED



**LEGEND:-**

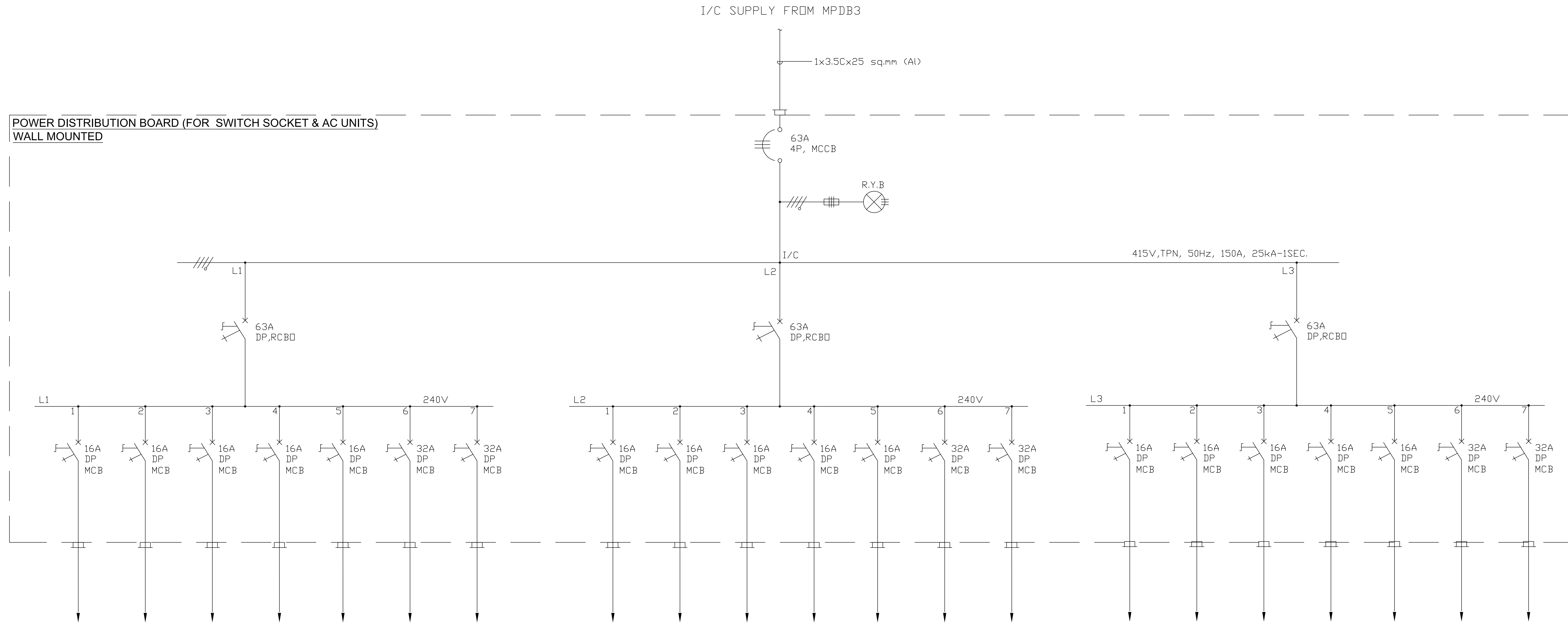
-  FUSE
-  INDICATING LAMP
-  MCB/RCBO WITH THERMAL ELECTROMAGNETIC PROTECTION
-  MCCB
-  CABLE GLAND

FOR TENDER PURPOSE

0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:- TALCHER FERTILIZER LIMITED	REV.	0	
			SHEET	1	OF
PROJECT:-		EARLY WORKS FOR COAL BASED FERTILIZER PROJECT	SCALE: N.T.S.		
TITLE:-		TYPICAL SINGLE LINE DIAGRAM	DRG. NO.- PC183-1216A		
		PROJECTS & DEVELOPMENT INDIA लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA			
		FILE:			

**GENERAL NOTES:**

1. BUSBAR MATERIAL - AL.
2. SYSTEM VOLTAGE - 415V, 3 $\phi$  N, 50HZ
3. DEGREE OF PROTECTION (IEC 60529) - IP:65.  
PAINT SHADE - 631 OF IS:5.
4. CABLE ENTRY : INCOMER - BOTTOM  
OUTGOING - BOTTOM



**LEGEND:-**

- FUSE
- INDICATING LAMP
- MCB/RCBO WITH THERMAL ELECTROMAGNETIC PROTECTION
- MCCB
- CABLE GLAND

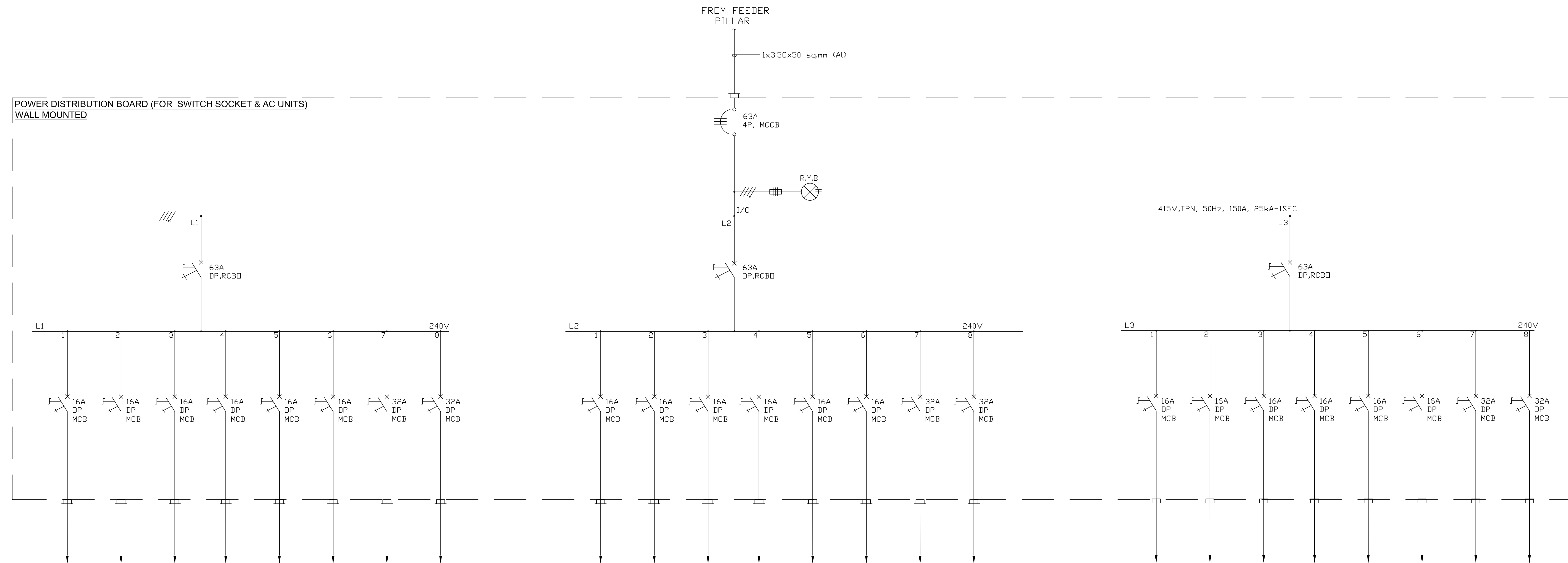
**FOR TENDER PURPOSE**

0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:- TALCHER FERTILIZER LIMITED			REV.	0	
			SHEET 1 OF 1		
PROJECT:-			SCALE: N.T.S.		
EARLY WORKS FOR COAL BASED FERTILIZER PROJECT			DRG. NO.- PC183-1217		
TITLE:-			FILE:		
TYPICAL SINGLE LINE DIAGRAM					
		प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA			



**GENERAL NOTES:**

1. BUSBAR MATERIAL - AL.
2. SYSTEM VOLTAGE - 415V, 3 $\phi$  N, 50HZ
3. DEGREE OF PROTECTION (IEC 60529) - IP:65.
- PAINT SHADE - 631 OF IS:5.
4. CABLE ENTRY : INCOMER - BOTTOM  
OUTGOING - BOTTOM



POWER DISTRIBUTION BOARD (FOR SWITCH SOCKET & AC UNITS)  
WALL MOUNTED

**LEGEND:-**

- FUSE
- INDICATING LAMP
- MCB/RCBO WITH THERMAL ELECTROMAGNETIC PROTECTION
- MCCB
- CABLE GLAND

TYPICAL

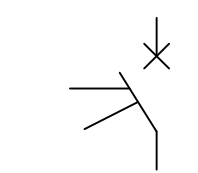
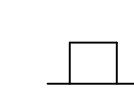
FOR TENDER PURPOSE

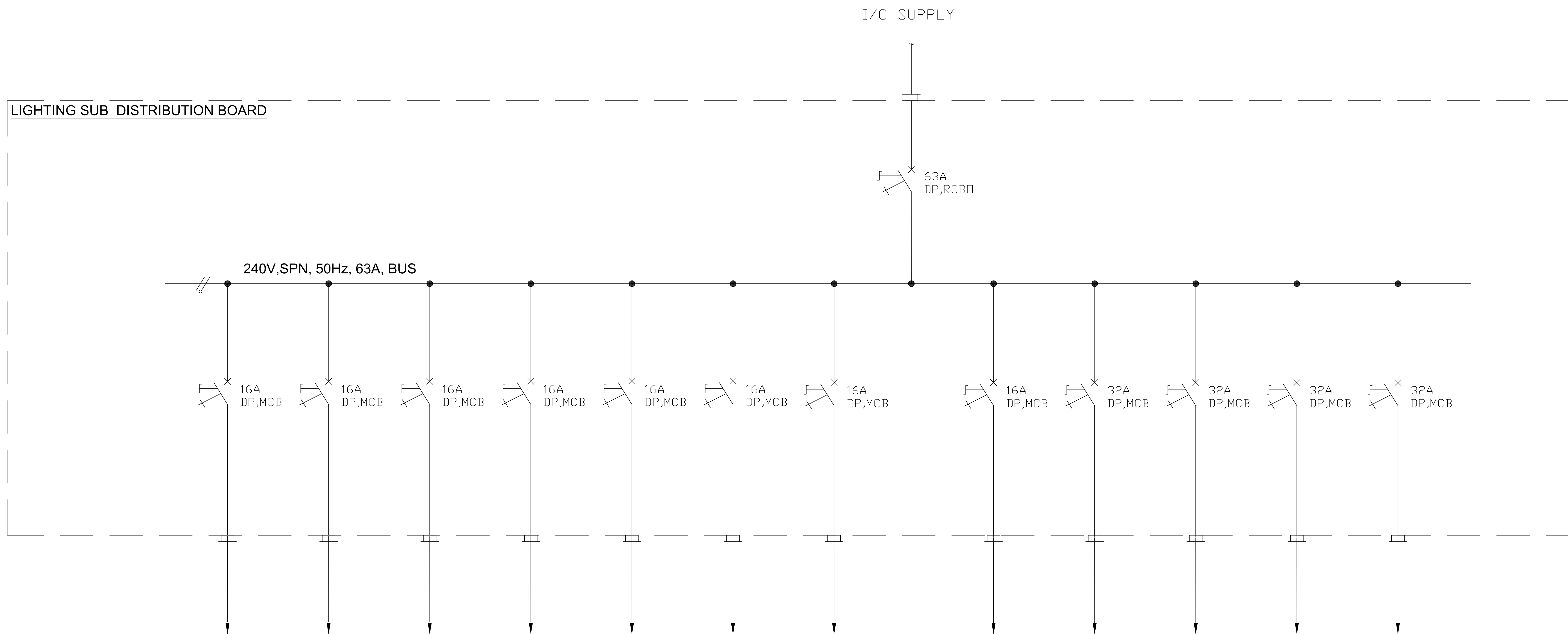
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:- TALCHER FERTILIZER LIMITED	REV.	0	
			SHEET 1 OF 1		
			SCALE: N.T.S.		
PROJECT:-		EARLY WORKS FOR COAL BASED FERTILIZER PROJECT	DRG. NO.- PC183-1218		
TITLE:-		TYPICAL SINGLE LINE DIAGRAM	FILE:		
		प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA			

**GENERAL NOTES:**



1. BUSBAR MATERIAL - AL.
2. SYSTEM VOLTAGE - 240V, 1φ N, 50HZ
3. DEGREE OF PROTECTION (IEC 60529) - IP:65.  
PAINT SHADE - 631 OF IS:5.
4. CABLE ENTRY : INCOMER - BOTTOM  
OUTGOING - BOTTOM

**LEGEND:-**

-  MCB/RCBO WITH THERMAL ELECTROMAGNETIC PROTECTION
-  CABLE GLAND



FOR TENDER PURPOSE

0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
		CLIENT:-	TALCHER FERTILIZER LIMITED		
		TALCHER FERTILIZER LIMITED			REV. 0
PROJECT:-		EARLY WORKS FOR COAL BASED FERTILIZER PROJECT	SCALE: N.T.S.		
TITLE:-		TYPICAL SINGLE LINE DIAGRAM	DRG. NO.- PC83-1219		
		प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA			



# ENGINEERING STANDARD

## POWER TRANSFORMERS

REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD
2	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	<i>Sharma</i> AV	<i>SC</i> BKC / SC	<i>BB</i> BB
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	AV	BKC	BB
0	OCT'97	--	ISSUED FOR IMPLEMENTATION	RNS/JKT/SC	JKT	HSW

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**1.0 SCOPE**

- 1.1 This standard covers the technical requirements of design, manufacture, testing at works and despatch in well-packed condition of Power Transformers.
- 1.2 This standard shall be applicable for 3 phase, core type, separate winding power transformers of rating 315 KVA and above.
- 1.3 This standard shall be read in conjunction with the relevant specification sheets.

**2.0 STANDARDS TO BE FOLLOWED**

- 2.1 The design, manufacture and testing of the equipment covered by this standard shall comply with the latest issue of IS: 2026, unless otherwise specified. Equipment complying with equivalent IEC standards shall also be acceptable.
- 2.2 The design and operational features of the equipment offered shall comply with the provisions of the latest issue of the Indian Electricity Rules and other relevant Statutory Acts and Regulations. The supplier shall, wherever necessary, make suitable modifications in the equipment to comply with the above.
- 2.3 Wherever any requirement, laid down in this standard, differs from that in Indian Standard Specifications, the requirement specified herein shall prevail.

**3.0 SERVICE CONDITIONS****3.1 Ambient Conditions**

These shall be as indicated in Specification Sheet.

**3.2 System Details**

These shall be as indicated in Specification Sheet.

**4.0 OPERATING REQUIREMENTS**

- 4.1 The transformer shall be suitable for operating at the rated capacity continuously at any of the taps, under the ambient conditions and with the voltage and frequency variations indicated in Specification Sheet without exceeding the permissible temperature rise and without any detrimental effect on any part.
- 4.2 The transformer shall also be capable of delivering rated current at a voltage equal to 105 % of the rated voltage.
- 4.3 The transformer shall be capable of allowing at least three consecutive starts of the largest Squirrel Cage Induction Motor, as indicated in Specification Sheet, while delivering 85% of its rated power without any harmful effect on its insulation. It shall be possible to repeat the starting cycle once in eight hours.
- 4.4 The transformer shall be designed to be loaded as per IS: 6600.



4.5 The transformer shall be so designed as to operate in parallel satisfactorily with similar transformers.

## 5.0 GENERAL DESIGN FEATURES

5.1 The design of the transformers shall be in accordance with the latest practice.

### 5.2 Rated Voltage, Frequency and Phase Connection

These shall be as indicated in Specification Sheet.

### 5.3 Tap Changing Gear

5.3.1 Each transformer shall be provided with on-load/ off-circuit tap changing equipment on the high voltage winding with taps, as specified in Specification Sheet. It shall be mounted on one side, in an easily accessible position.

5.3.2 The range of tap changer shall be as indicated in Specification Sheet and arranged in steps of 2.5% unless specified otherwise in Specification Sheet.

5.3.3 The off-circuit tap changing shall be affected by an externally operated handle capable of being padlocked in any position and provided with tap position indicator and mechanical stops at the extreme positions.

5.3.4 For transformer specified with on-load tap changer, tap changing gear shall be complete with tap position indicator, limit switch, lock and key and necessary control panel. Provision shall be made for auto-manual operation. The manual operation shall be possible both from the panel as well as from field. In case the tap changer is located in a separate housing, the housing shall be connected with the conservator for oil connection. A separate buchholz relay shall be provided in such a case. Emergency mechanical manual device shall also be provided. A minimum of 2 lakh trouble-free operations shall be guaranteed.

### 5.4 Impedance Voltage

The impedance voltage of the transformer at 75°C shall be as indicated in Specification Sheet. This shall be guaranteed within limits specified in Specification Sheet at principal tap position.

### 5.5 Losses

The losses under the full load condition, at the rated voltage and frequency shall be indicated by the vendor at 75°C. These shall be guaranteed within the tolerable limits specified in IS: 2026 at principal tap position. The purchaser has the right to impose penalty charges or reject the transformer in case of any difference in the test and guaranteed values.

### 5.6 Temperature Rise

The temperature rise of the winding, oil and core shall not exceed the values specified in IS: 2026 when the transformer is delivering its rated output continuously under the service conditions as indicated in Specification Sheet.



**5.7 Insulation Level**

All windings up to maximum system voltage of 72 KV shall have uniform insulation to earth. For windings having higher maximum system voltage, graded insulation is acceptable.

**5.8 Terminal Arrangements**

The HV and LV side terminal arrangement shall be provided as specified in Specification Sheet. Disconnecting link chambers shall be provided on the transformer primary side in all cases as well as on secondary side, except where the termination is through bus duct. The disconnecting chambers shall be oil filled, preferably connected with the main tank through an isolating valve and also provided with a drain valve. However for system not exceeding 11 KV, air filled disconnecting chamber may be accepted. Suitable cable end box complete with cable glands and lugs shall be provided for termination of cables as indicated in Specification Sheet. Gland plate for single core cables shall be non-magnetic.

5.9 The transformer shall be able to withstand the electro-dynamic and thermal stresses due to terminal short circuit of the secondary, assuming the primary side fed from an infinite bus. All leads and windings in cores shall be properly supported, clamped and tightened after vacuum drying to ensure the short circuit withstand capacity. The short circuit withstand duration shall be 3 Secs.

5.10 The short circuit test results for similar transformers shall be furnished.

5.11 The transformer shall be so designed as to minimise any undue noise and vibration.

5.12 Due attention shall be given in the design for the suppression of harmonics.

**5.13 Cooling System**

5.13.1 The cooling system shall be as indicated in Specification Sheet. In case the transformer is designed for two types of cooling, the output rating for each type shall be indicated in the offer. The minimum acceptable output shall be 70% of rated output when forced type of cooling system is not in operation.

5.13.2 Wherever ONAF Cooling is specified, the cooling fans shall be adequately rated and shall be suitable for auto/manual and local/remote operation. Auto operation shall be through winding temperature indicator contact. Cooling fan motors may be group controlled and shall be suitable for DOL starting. Individual DOL circuit shall be provided with bi-metallic thermal overload relay, back up fuse, contactor etc.

**6.0 CONSTRUCTIONAL FEATURES****6.1 Core**

6.1.1 The transformer core shall be of high grade, non-ageing, electrical silicon cold rolled magnetic sheet steel of low hysteresis loss and high permeability. The



maximum flux density in any part of the core and yoke at rated voltage and frequency shall not exceed 1.7 Tesla. The core structure shall be securely grounded to prevent electrostatic potential. Lifting eyes and lugs shall be provided on the limbs and coils assembly. Preferably no bolt shall be used in the cores. Clamping shall be done external to the limb. Bolts passing through the yoke, if any, shall be insulated for 2 KV for transformers rated up to 33 KV and 5 KV for higher voltage ratings.

6.1.2 The temperature of the core shall not exceed that permitted in IS.

## 6.2 Tank

6.2.1 The tank shall preferably be made of mild steel plate of adequate thickness capable of withstanding stress not less than  $0.40 \text{ kg/cm}^2$ , properly welded and gusseted to ensure a rigid construction. It shall also be able to withstand normal transportation shocks without any deformation and shall be capable of withstanding following vacuum.

Highest System Voltage	MVA Rating	Vacuum in mm of Hg
Up to 72 KV	Up to 1.6	250
	Above 1.6 to 20	500
	Above 20	760
Above 72 KV	For all Ratings	760

6.2.2 For outdoor transformer, the top of the tank, the marshalling box and the headers of radiators, shall be of such a construction so as to prevent accumulation of water.

6.2.3 Guides shall be provided to facilitate tanking and unloading of the core with the coil assembly. The details of anchoring of core and coil assembly of the tank shall be furnished.

6.2.4 Radiators, where necessary, shall be provided on the tank to facilitate cooling. These shall be detachable type and shall be provided with isolating valves at ends, drain plug and air release plug. The radiators shall be fabricated out of minimum 1.25 mm thick seamless steel tubing or pressed sheet steel. For sizes up to 500 KVA, cooling tubes shall be acceptable.

6.2.5 Means for lifting and jacking of the transformer shall be provided.

## 6.3 Windings

6.3.1 Each coil shall be made out of paper insulated electrolytic grade copper conductor. Similar coils shall be interchangeable. Successive coils of a winding shall be connected by accessible joints and shall be brazed and finished smooth to prevent abrasive damage to insulation. There shall be no sharp bends in the connecting leads to prevent corona discharge. Aluminium foil wound transformer will also be acceptable.

6.3.2 The winding assembly shall be dried and impregnated in the vacuum with tested insulating oil. The insulation resistance and polarization index of the winding measured after impregnation shall be furnished in the test certificate.



6.3.3 For transformers rated 20 MVA and above vapour phase drying shall be adopted.

6.3.4 The magnitude of impulse surges transferred from HV to the LV winding by inductive and capacitive coupling shall be limited to a value below the rated impulse strength of the LV winding. The impulse voltage test results and surge distribution on windings for similar transformer shall be furnished.

#### 6.4 **Insulation Materials**

6.4.1 Class 'A' insulating materials specified in IS: 1271 shall be used. Paper insulation shall be new and free from punctures. Wood insulation, where used, shall be well seasoned and treated.

6.4.2 The mineral oil shall comply with IS: 335. 10% extra oil shall be supplied along with the transformer in non-returnable drums.

6.4.3 For the transformers required to be filled up with inert gas for transport purpose, the required amount of oil including 10% extra shall be supplied in non-returnable drums.

#### 6.5 **Bushing**

The bushing insulator shall be rated for the maximum system voltage and shall comply with the requirements laid down in IS. The minimum current rating shall be 400 Amps. in case of overhead line connected transformers, the bushings shall be outdoor type having required creepage distances to suit the atmospheric condition and complete with arcing horns. In case of transformers connected with bus duct or cable, the bushings shall be enclosed in the terminal box. In either case, they shall be detachable from outside of the tank. The hardware shall be of tinned copper or nickel plated brass suitable to receive the conductor sizes as specified. Separate neutral bushings shall be provided for earthing the neutral, if indicated in Specification Sheet. All bushings shall be marked with the symbols corresponding to the connection diagram indicated in the diagram plate and in accordance with IS.

### 7.0 **FITTINGS**

7.1 Fittings as listed in Annexure - I shall be provided. Any other fittings which may be necessary for the satisfactory operation of the transformer shall also be provided on each transformer.

7.2 All fittings shall conform to relevant Indian Standard Specifications.

7.3 Fittings such as conservator and associated pipes, explosion vent pipe etc. shall be designed to withstand vacuum as specified in Clause 6.2.1 against atmospheric pressure.

7.4 Fittings such as rating plate, dehydrating breather, off-circuit tapping switch, dial type thermometer etc. which need to be observed/ operated, shall be mounted at convenient heights of not more than 1.5 M from the base of the transformer and located so as to be clearly visible from the front.



- 7.5 All opening shall be provided with gasketted metallic covers for protection during transportation.
- 7.6 All valves shall be of globe/butterfly type provided with blanking plates. The valve body shall be made of either Carbon Steel with trim of 13 Cr. steel or gun metal.
- 7.7 The rating plate, the terminal diagram and terminal marking plates shall be made of Aluminium and shall contain relevant details as per IS: 2026. The Code No. of equipment shall be marked on a separate plate.
- 7.8 All terminals shall be anti loosening type and complete with connectors of required size. The earthing terminals shall have identification marks.
- 7.9 **Winding Temperature Indicator**
- Winding temperature indicator for measuring hot spot temperature of the winding shall comprise of current transformer image coil, temperature sensing element, capillary tube jacketed with PVC sleeve, 150 mm dia. local indicating instrument with two pairs of contacts one for alarm and other for trip and maximum point indicator capable of being reset by hand without tools.
- 7.10 **Oil Temperature Indicator**
- Oil temperature indicator for measuring top oil temperature shall comprise of 150 mm dial type thermometer, thermometer pocket and capillary tube jacketed with PVC sleeve. Thermometer shall have two pairs of contacts, one for alarm and other for trip and maximum point indicator capable of being reset by hand without tools.
- 7.11 **Buchholz Relay**
- The buchholz relay as per IS: 3637 shall be of double float type, provided with, two pairs of contacts, one for alarm and other for trip, facility for testing by injection of air by hand pump and with a cock for draining and venting of air. The relay shall be provided with shutoff valves on the conservator side as well as on the tank side.
- 7.12 The alarm and trip contacts of all protective devices shall be potential free and rated for 1 Amp at 110 V / 220 V D.C. as specified in Specification Sheet.
- 7.13 **Marshalling Box**
- 7.13.1 A marshalling box shall be provided to accommodate all auxiliary devices except those which are to be located directly on transformer or housed in a separate panel.
- 7.13.2 The marshalling box shall be dust, weather and vermin proof type made of sheet steel of not less than 2 mm thick. The box shall be rectangular in shape having sufficient space for easy termination of cables. The terminal block shall be pressure clamp type. 10% spare terminals shall be provided.



7.13.3 Suitable heavy duty double compression type rolled Aluminium cable glands for all incoming and outgoing cables shall be provided. The outgoing cables to Owner's panel shall be as indicated in Specification Sheet.

#### 7.14 **Current Transformers**

The current transformers, if specified in Specification Sheet, shall be provided and shall comply with IS: 2705. The C.T. terminals shall be accessible through a weatherproof removable cover for the purpose of testing etc. CT polarity shall be clearly marked. The C.T. for standby earth fault protection shall be 15 VA, 5P10. The C.T's for differential and restricted earth fault protection shall be of Class PS accuracy. The values of  $V_k$  and  $I_{mag}$  for these CTs shall be furnished at the order stage.

#### 7.15 **Wiring**

All controls, indication and protective devices provided on the transformer shall be wired upto the terminal block inside the marshalling box, by means of stranded copper heat resistant PVC insulated armoured cable of 1.1 KV grade and size not less than 2.5 sq. mm. Wiring shall be properly fixed on cable tray with at least 100 mm clearance from the transformer body. Suitable identification mark shall be provided on all wires.

7.16 All bought out items shall be of reputed make to be approved by Consultant/ Purchaser.

### **8.0 PAINTING**

8.1 The surface to be painted shall be shot or sand blasted to remove all dust, scale and foreign adhering matter. All traces of oil and greases should be removed by suitable treatment.

8.2 All steel surfaces in contact with insulating oil shall be painted with heat resistant oil insoluble insulating varnish.

8.3 All steel surfaces exposed to outside shall be painted with suitable anti-rust and anticorrosive paints. Epoxy paints shall be used, if indicated in Specification Sheet.

8.4 All paints shall be carefully selected to withstand tropical heat and extremes of weather. The paint shall not scale off, crinkle or be removed by abrasion due to normal handling.

8.5 Unless otherwise specified, the finishing shade shall be light grey Shade No. 631 as per IS: 5.

8.6 1 litre of paint per transformer shall be supplied for touch up at Site.

### **9.0 TESTS AND INSPECTION**

9.1 All transformers shall be routine tested as per IS: 2026. Transformer oil shall be tested as per IS: 335.



- 9.2 Additional tests, wherever specified, shall be carried out on one transformer of each rating.
- 9.3 All the above mentioned tests shall be carried out in the presence of Purchaser's representative. In addition, the transformers shall be subject to stage inspection at works and inspection at site for final acceptance.
- 9.4 These inspections shall, however, not absolve the Vendor from their responsibility for making good any defect which may be noticed subsequently.

**10.0 DRAWINGS AND DOCUMENTS**

- 10.1 The drawings and documents as per Annexure-III shall be furnished, unless otherwise specified.
- 10.2 All drawings and documents shall have the following descriptions written boldly:
- Name of Client
  - Name of Consultant
  - Enquiry / order number with plant / project name
  - Equipment Code No. and Description

**11.0 SPARES**

- 11.1 Spares for operation and maintenance
- Item wise unit prices of spare parts with recommended quantity shall be quoted along with the equipment as specified in Annexure-II.
- 11.2 Commissioning Spares
- Commissioning spares, as required, shall be supplied with the main equipment. Item wise list of recommended commissioning spares shall be furnished for approval.
- 11.3 Any other spare parts not specified, but required, shall also be quoted along with the offer.
- 11.4 All spare parts shall be identical to the parts used in the equipment.

**12.0 PACKING**

- 12.1 The transformer shall be suitably packed to avoid damage in transit and shall be properly sealed so as to completely exclude oxygen and moisture from coming in contact with oil. Bushing shall be wrapped in straw ropes or similar material and complete transformer shall be packed in wooden crates.
- 12.2 The packing box shall contain a copy of the installation, operation and maintenance manual.
- 12.3 All loose pieces shall be separately wrapped in moisture resistant paper and marked with identification mark of the corresponding transformer.



**ENGINEERING STANDARD****ES: 8043****2**

DOCUMENT NO.

REV.

**POWER TRANSFORMERS**

SHEET 11 OF 14

**13.0 DEVIATIONS**

- 13.1 Deviations, if any, from this standard shall be clearly indicated in the offer with reasoning.
- 13.2 Deviations, if any, from the data furnished in specification sheet shall be indicated therein beside the data by encircling it.

**ANNEXURE - I****LIST OF FITTINGS**

- I. The fittings as given below shall be provided for all the ratings of transformers.
1. Oil Sampling Valve.
  2. Filter valves with plug.
  3. Radiator shutoff valves on top and bottom for each unit.
  4. Buchholz relay shutoff valves.
  5. Winding temperature indicator for 1000 KVA and above.
  6. Oil temperature indicator.
  7. Oil level indicator with minimum marking.
  8. Oil conservator complete with drain plug and oil filling hole with cover.
  9. Buchholz relay with air release device and alarm and trip contacts.
  10. Silica gel breather with oil seal and connecting pipe.
  11. Explosion vent.
  12. Bi-directional rollers.
  13. Inspection holes with cover.
  14. Marshalling Box.
  15. Rating Plate.
  16. Diagram and Terminal marking plate.
  17. Lifting lugs.
  18. Jacking pad.
  19. Earthing Terminals.
  20. Air release device.
  21. Neutral bushing for earthing.
- II. The additional fittings as given below shall be provided, if specified in the specification sheet, indicating the Sl. Nos. only.
1. Magnetic oil level gauge with low oil level alarm contact.
  2. Hauling lugs for extra high voltage transformers.
  3. Protective CTs for
    - a) Stand-by earth fault.
    - b) Restricted earth fault.
    - c) Differential protection.
  4. Bi-directional wheels if already bi-directional rollers not considered.
  5. Skids.

**ANNEXURE - II****LIST OF SPARES**

The spare parts as given below shall be quoted for all the ratings of the transformers:

1. Bushings with accessories for all voltage grades.
2. Complete set of gaskets.
3. Explosion vent diaphragm.
4. Oil Level Gauge.
5. Complete charge of Silicagel.
6. Gland packing /O-rings for every valve.
7. Buchholz Relay.
8. Dial Type Thermometer.
9. One set of fixed and movable contacts for OLTC.
10. One set of fan and it's motor.
11. One set of pump and it's motor.
12. One set of switches, fuses and lamps etc. for Cooler Control Panel and OLTC panel.

**Note:**

1. Item 9 to 12 shall be quoted only where applicable.
2. All spare parts shall be identical to the parts used in the transformer.



## ANNEXURE - III

## DOCUMENTATION FOR POWER TRANSFORMERS

Sl. No.	Description	Documents Required (Y / N)		
		With Bid	For Approval	Final
1.	Specification Sheet, duly completed	N	Y	Y
2.	Technical Particulars, duly filled-in	N	Y	Y
3.	Dimensional drawing for complete Transformer, Marshalling Box, disconnecting chamber, terminal chambers etc.	N	Y	Y
4.	Schematic and Wiring Diagram	N	Y	Y
5.	Terminal arrangement drawing	N	Y	Y
6.	Installation, operation and maintenance manual	N	N	Y
7.	Catalogues and test certificates for bought out accessories	N N N	N	Y
8.	Type test certificates of similar transformer		N	Y
9.	Test Certificates	N	N	Y
10.	Guarantee Certificates	N	N	Y
11.	Spare parts list with identification marks	N	N	Y

**Note:**

- 1.
2. 4 hard copies & 1 soft copy shall be supplied for approval after order within 4 weeks from the date of LOI.
3. 8 hard copies & 2 soft copies in CD shall be submitted as final documents prior to despatch of the equipment. These shall be made in sets and supplied in fine plastic coated folder.

Y - Yes, N - No



## ENGINEERING STANDARD

### MEDIUM VOLTAGE SWITCH BOARDS

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**ENGINEERING STANDARD****ES: 8060****2****MEDIUM VOLTAGE SWITCH BOARDS**

DOCUMENT NO.

REV.

SHEET 2 OF 22

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**1.0 SCOPE**

- 1.1 This standard covers the technical requirements of design, manufacture, testing at works and delivery in well-packed condition of Medium Voltage Switchboards.
- 1.2 This standard shall be applicable for the Power Control Centres, Power cum Motor Control Centres and Motor Control Centres.
- 1.3 This standard shall be read in conjunction with relevant Specification Sheets, Feeder details, Schematic diagrams etc.

**2.0 STANDARDS TO BE FOLLOWED**

- 2.1 The design, manufacture and testing of the equipment shall comply with the latest issue of the following Indian Standards, unless otherwise Specified. Equipment complying with equivalent IEC standards shall also be acceptable.

- IS: 8623 - Specification for low voltage switchgear and control gear assemblies
- IS: 13947 - Low-voltage switchgear and control gear (General rates).
- IS: 5578 - Guide for marking of insulated conductors.
- IS: 10118 - Code of practice for selection, installation and maintenance of switchgear and control gear
- IS: 11353 - Guide for uniform system of marking and identification of conductors and apparatus terminals

Various components housed in the switchboards shall conform to the Indian Standard specifications as mentioned against the component details or IEC specifications.

- 2.2 The design and operational features of all the equipment offered shall also comply with the provisions of the latest issue of the Indian Electricity Rules and other Statutory Acts and Regulations, as applicable. The supplier shall, wherever necessary, make suitable modifications in the equipment to comply with the above.
- 2.3 Wherever any requirement, laid down in this standard, differs from that in Indian Standard Specification / IEC Specification, the requirement specified herein shall prevail.

**3.0 SERVICE CONDITIONS****3.1 Ambient Conditions**

These shall be as indicated in Specification Sheet.

**3.2 System Details**

These shall be as indicated in Specification Sheet.



## 4.0 OPERATING REQUIREMENTS

The Medium Voltage Switchboards shall be suitable for operating at the specified rating continuously, with the specified voltage and frequency variations under the ambient conditions indicated in Specification Sheet, without exceeding the permissible temperature rise and without any detrimental effect on any part.

## 5.0 DESIGN AND CONSTRUCTIONAL FEATURES

### 5.1 General

- 5.1.1 The switchboards shall consist of an assembly of a series of floor mounting, identical, metal clad, dead front type sheet steel panels of unitized design. The panels shall be placed side by side to form a compact assembly and shall be extensible on either side.
- 5.1.2 The complete assembly shall be dust, damp and vermin proof having minimum degree of protection equivalent to IP-52 as per IS: 13947.
- 5.1.3 The frame work of the cubicles shall be of bolted/welded construction. The minimum thickness of sheet steel shall be 2 mm for load bearing members, 1.6 mm for non-load bearing members and 3 mm for base channel. The doors and covers shall be fabricated from cold rolled sheets. Suitable reinforcement, wherever necessary, shall be provided.
- 5.1.4 The door hinges shall be concealed type.
- 5.1.5 All external hardwares shall be cadmium plated. The hardwares for fixing the removable parts shall be provided with retaining devices.
- 5.1.6 The doors and the removable covers shall be provided with non-deteriorating neoprene gaskets. Gaskets without any discontinuity shall be preferred. Gaskets shall be held in position in groove, in shaped sheet steel work or these shall be of U type. Adhesive cement, if used, shall be of good quality so that the gaskets do not come off during service.
- 5.1.7 All the components shall be accessible for inspection and maintenance without the necessity for removal of the adjacent ones.
- 5.1.8 The layout of the component inside the module shall be liberal to facilitate maintenance and interconnecting wiring between the components shall not be subjected to any undue stresses at the bends.
- 5.1.9 Mounting height of components requiring operations and observation shall not be lower than 300 mm and higher than 1800 mm.
- 5.1.10 Inter panel barriers shall be provided.
- 5.1.11 All the live parts which are accessible after opening of front cover/cable alley cover/back cover shall be properly insulated or provided with insulating barrier to prevent accidental contact. Removal facility shall be provided for all such parts.
- 5.1.12 Adequate arrangement for earthing shall be provided to safeguard the operator or other personnel from electric hazards under all conditions of operation.



## 5.2 Panel Arrangement

The Switchboards shall be in fixed/draw out, single front/ double front execution as specified in Specification Sheet, fully compartmentalised type and divided into distinct panels, each comprising of :

- i) A completely metal enclosed bus-bars compartment running horizontally the top.
- ii) Individual feeder modules.
- iii) Enclosed vertical bus-bars serving all modules, in case of multi-tier panels.
- iv) A vertical cable alley.
- v) Separate horizontal enclosure for all auxiliary power and control buses.

## 5.3 Circuit Breaker Controlled Feeders

5.3.1 The panels housing circuit breaker feeders shall be in single front draw out execution. The incoming and bus coupler circuit breaker feeders shall be in single tier formation while the outgoing circuit breaker feeders may be in double tier formation, unless otherwise specified in Specification Sheet

5.3.2 A suitable barrier shall be provided between the circuit breaker and the associated control, protective and indication devices including instrument transformers.

5.3.3 All the protective relays and meters shall be flush mounted type. The relays and meters pertaining to a particular circuit breaker shall be mounted on the same panel. Where it is not possible to accommodate all the relays and meters in the same panel, one metering panel shall be provided adjacent to the circuit breaker panel exclusively for that feeder. Location of these in the adjacent panel of other feeders shall not be acceptable.

5.3.4 A spacious cable chamber suitable for accommodation, support and termination of required number of power cables shall be provided at the back. No bare bus-bars or live connection shall intrude into the cabling space.

5.3.5 The switchboard shall be provided with following inter locks and safety features:

- i) It shall not be possible to open the compartment door unless the breaker is drawn to isolated position.
- ii) The withdrawn and engagement of a circuit breaker shall not be possible unless it is in open position.
- iii) The operation of a circuit breaker shall not be possible unless it is in fully service, test or isolated position.
- iv) It shall not be possible to close the circuit breaker in service position unless all auxiliary and control circuits are connected.
- v) A breaker of the lower rating shall be prevented from engaging with the stationary element of higher rating.
- vi) Insertion of the manual mechanism shall render the motorised mechanism in operation.



- vii) Circuit breaker 'ON', 'OFF' indication shall be provided at the back of each panel. Alternatively, alarm shall be provided in case panel back door is opened with breaker "ON".
- viii) Caution nameplate shall be provided at the back of incomer's panels where terminals are likely to remain live and isolation is possible only from remote end.
- ix) Automatic safety shutter, with Padlocking facility for locking in closed position, to completely cover the spouts for the bus-bars and cable connection when the breaker is withdrawn.

#### 5.4 **Switch/MCCB Controlled Feeders**

- 5.4.1 The panels housing motor starter or other feeders shall be either fixed or draw out type in single front or double front execution, as specified in Specification Sheet.
- 5.4.2 All components of one feeder shall be mounted on a rigid sheet steel chassis.
- 5.4.3 Each panel shall be divided into a number of modules in tier formation placed one above the other. These modules shall be closed on all sides.
- 5.4.4 The modules shall be so placed that largest one is placed at the bottom of the panel. Type modules shall be at least 300 mm from the base channel.
- 5.4.5 The number of modules shall be so decided that the cables in the cable alley are not over crowded. However the number of module in any panel shall not exceed six.
- 5.4.6 The minimum size of module shall be 300 mm and 200 mm for starter and switch fuse feeders respectively.
- 5.4.7 The minimum clear width of cable alley shall be 250 mm.
- 5.4.8 For MCC rated above 630 Amp. The incomer and bus coupler modules shall be located in individual single panel. For MCC rated for 630 Amp. and below the incomer and bus coupler modules shall be half the panel size.
- 5.4.9 The module door shall be so interlocked that it shall not be possible to open the door with switch in closed position and close the door unless the module is fully plugged in. Defeat interlock facility shall be provided.

#### 5.5 **Special Features of Draw out Modules**

- 5.5.1 The module shall be fully draw out type with sheet steel chassis moving freely on the guides. Chassis of the same size shall be fully interchangeable.
- 5.5.2 The module shall have the following distinct mechanical positions:
  - i) Service -- In which both power and control contacts shall be made.
  - ii) Test -- In which power contacts shall be isolated but control contacts shall be made.
  - iii) Isolated -- In which both power and control contacts shall be Isolated. Maintenance position shall be preferred.



- 5.5.3 Each position shall be clearly marked. Padlocking facility shall be provided to padlock the chassis in any of the position.
- 5.5.4 The movement of the chassis from one position to the other shall be controlled by using an appropriate racking mechanism. Stopper shall be provided to prevent over travel of the chassis beyond the isolated position.
- 5.5.5 The guiding system shall permit smooth movement of the module and the power and control contacts shall be self-aligning type so that accurate alignment of the contacts is ensured.
- 5.5.6 No wiring shall be taken to the door. Only the actuators of the push buttons and switches, lenses for the indicating lamps and Perspex cover for meters shall be mounted on the door.
- 5.5.7 The power contacts shall be of plug-in/stab-in type made of silver plated copper, spring loaded and of adequate current carrying capacity. The contacts shall be so designed that contact pressure is maintained both under normal and short circuit conditions.
- 5.5.8 The parting contacts, both on bus-bar side and outgoing cable side, shall always be copper to copper and both sides silver plated. A bimetallic strip shall be used where two dissimilar materials are in contact.
- 5.6 **Bus-Bars and Connections**
- 5.6.1 The bus-bars shall be for three phase and neutral. The main bus-bars and connections shall be made of high conductivity Aluminium alloy conforming to grade E 91 E of IS: 5082 / electrolytic grade copper of rectangular cross-section. Auxiliary bus-bars for control supply, space heater supply etc. shall be made of electrolytic copper.
- 5.6.2 The horizontal bus-bars shall be insulated with heat shrinkable PVC sleeves of reputed make to protect against approach to live parts. The vertical bus-bars shall be sleeved or shrouded by barriers. Removable type insulating shrouds shall be provided for all joints of horizontal bus-bars.
- 5.6.3 The bus-bars shall be amply sized to carry the rated continuous current under the specified ambient temperature without exceeding temperature limits specified in IS: 8084. The thermal rating of the bus-bars shall be designed to withstand the system fault current for 1 second without exceeding the limiting temperature of 200°C for bare Aluminium/Copper. Calculation for bus-bars sizing shall be furnished along with the offer.
- 5.6.4 Horizontal bus-bars shall be of the same cross-section through out. Stepped bus-bars shall not be acceptable.
- 5.6.5 The bus-bars shall be arranged and colour coded according to IS: 5578 / IS: 11353.
- 5.6.6 The bus-bar chamber shall be sufficiently spacious and shall have separate screwed covers for maintenance purpose.



- 5.6.7 The bus-bars shall be rigidly supported at equal intervals to withstand maximum short circuit stresses. The supports shall be of moulded construction with built-in anti-tracking barriers. The support materials shall be of DMC or fibreglass reinforced thermosetting plastic.
- 5.6.8 Bus-bar joints shall be between the two transporting sections only.
- 5.6.9 A minimum of two bolts shall be used in bus-bar joints. Only high tensile electric galvanized bolts, nuts and washers shall be used.
- 5.6.10 In case of Aluminium bus-bars, all joints shall be suitably treated to avoid oxidation of contact surfaces and bimetallic corrosion.

### 5.7 **Earth Bus**

A continuous earth bus of Aluminium, running along the entire length of the lower part of the switchboard shall be provided with lugs at two ends for external connections. The minimum size of earth bus shall be suitable for carrying three phase fault current for 1 sec.

### 5.8 **Bus Duct**

- 5.8.1 Suitable extension of bus-bars in proper phase sequence on the top or bottom as specified in Specification Sheet, with the connecting bolts shall be provided where connection of transformer to switchboard is specified to be through bus duct.
- 5.8.2 Bus duct between two halves of a switchboard, if required, shall be supplied by the switchboard manufacturer. The bus-bars of interconnecting bus duct shall be similar to the main bus-bars of the switchboard and as specified above.
- 5.8.3 Bus duct between transformer and incoming breaker panel, if included in Vendor's scope, shall conform to ES-8062.

### 5.9 **Clearances and Creepage Distances**

- 5.9.1 The clearances and creepage distances shall not be lower than the values specified below:
- i) Minimum clearance between two live conductors -- 20 mm
  - ii) Minimum clearance between live parts and accidentally dangerous part -- 20 mm
  - iii) Minimum creepage distance -- 28 mm
- 5.9.2 The clearances and creepage, as specified above, shall definitely be maintained in the bus-bar system. Provision of bus-bar insulation, separators or barriers shall not be considered to reduce the clearance from the values specified above.
- 5.9.3 At the termination points in the equipment e.g. switches, contactors, thermal relays etc. It is realized that above clearances may not always be possible to be maintained. All such points, where above clearances and creepage distances are not possible to be maintained, shall be insulated or taped.



**5.10 Insulation**

- 5.10.1 The insulation used shall be non-hygroscopic and may be of porcelain, epoxy resins or fibreglass moulded with plastic. It shall be of adequate electrical, mechanical and thermal strength to give trouble free service during normal operation and short circuit conditions.
- 5.10.2 The insulation shall be treated suitably to withstand the tropical conditions and atmospheric pollution, as specified in Specification Sheet.

**5.11 Power Wiring**

- 5.11.1 The connections from bus-bar to individual functional unit on the modules shall be of PVC insulated flexible copper cables or taped Copper/Aluminium strip.
- 5.11.2 The power wiring size shall be decided based on rating of the switch/breaker after using a rating factor of not more than 50% over the current rating in free air.
- 5.11.3 Power wiring size selected for breaker controlled module shall also be able to withstand full short circuit current for duration of 0.25 sec.
- 5.11.4 In any case minimum size of power wiring shall not be less than 4 sq. mm copper.
- 5.11.5 The size of connection from incomer to horizontal bus-bar and from horizontal bus-bar to bus-coupler shall not be less than the size adopted for horizontal bus-bar.

**5.12 Control Wiring**

- 5.12.1 The switchboard shall be completely factory wired and ready for external connections.
- 5.12.2 The wiring shall be carried out with flexible stranded PVC insulated copper conductor cables of 1100 Volt grade. The size of wires shall be as follows:
- |                           |    |            |
|---------------------------|----|------------|
| C.T. Circuit              | -- | 2.5 sq. mm |
| V.T. and Control Circuits | -- | 1.5 sq. mm |
- 5.12.3 All wiring shall be provided with dependent both ends marking as per IS: 5578. Numbered ferrules, reading from the terminals outwards, shall be provided at both ends of all wiring for easy identification. These shall be interlocking type plastic ferrules.
- 5.12.4 Control wiring circuits, fed from a supply common to a number of panels, shall be so protected that failure of a circuit in one panel does not effect the operation of the other panels.
- 5.12.5 The wiring to the equipment mounted on the doors shall be carried out with flexible multi strand copper conductor cable and so supported that on opening of the door there is no undue strain on wire leads.
- 5.12.6 The control cables shall be neatly arranged and property supported.

**5.13 External Cable Termination**

- 5.13.1 All power and control cables shall enter the switchboard from the bottom unless otherwise specified in Specification Sheet. Sufficient space shall be provided for ease of connection and termination of cables.
- 5.13.2 The type, number and sizes of cables shall be as indicated in Feeder details.
- 5.13.3 Compression type cable glands along with the cable lugs as required shall be provided for termination of cables.
- 5.13.4 The cable glands shall be of rolled Aluminium or nickel/cadmium plated brass heavy duty double compression type and shall be mounted on a removable gland plate, provided at a minimum height of 75 mm from the bottom of the switchboard. Two number spare knockouts of size 20 mm shall also be provided on the gland plates for future use. Gland for termination of single core cables shall be nonmagnetic type.
- 5.13.5 For all power cables, crimped type Aluminium lugs for Aluminium cables and tinned Copper lugs for Copper cables shall be provided.
- 5.13.6 The terminal blocks shall be pressure clamp type up to 35 sq. mm cable sizes and bolted lug type for higher sizes of cables. These shall be protected type and rated for 1100 Volts service. The minimum current rating of terminal block shall be 16 Amp. The construction shall be such that after the connection of cables by means of lugs, necessary clearance and creepage distance are available.
- 5.13.7 Where more than two cables in parallel are required to be terminated, a system of bus links shall be provided with adequate clearance and spacing.
- 5.13.8 Suitable clamps to support the vertical run of cables shall be provided.
- 5.13.9 The terminal block shall be grouped according to circuit functions and suitably numbered. 20% extra terminals shall be provided in the terminal block.
- 5.13.10 For power connections, suitable marking on the terminals shall be provided to identify the phases.

**5.14 Feeder Details**

- 5.14.1 The requirements of incomer, bus coupler and outgoing feeders shall be as indicated in the single line diagram, feeder details and corresponding schematic diagrams.
- 5.14.2 Interlocks shall be provided between incomers and bus section panels. The interlocks shall be either electrical or mechanical type. In addition, arrangement for defeating the interlock shall also be provided to facilitate manual changeover.
- 5.14.3 Auto changeover scheme, wherever specified, shall be provided.

**5.15 Dummy Panels**

Dummy panels complete with bus-bar system in 400 mm width may be required for which unit price shall be indicated.

**5.16 Control Power Supply**

- 5.16.1 D.C. Power required for closing, tripping and indication of circuit breaker feeders shall be supplied at the bus coupler panel through two completely separate circuits by owner, one for tripping and other for closing and indication.
- 5.16.2 For receiving each external control supply, a double pole miniature circuit breaker shall be provided. This power shall be distributed inside the switchboard for each circuit breaker feeder having its MCB unit.

**5.17 Space Heater Power Supply**

- 5.17.1 Panel space heater shall be fed from a separate bus common for the whole board. This bus shall be fed from owner's supply for which a double pole MCB shall be provided in bus section panel.
- 5.17.2 Power supply for space heaters of motors shall be tapped from this bus by means of a MCB located in the motor feeder compartment. These MCBs shall be of triple pole and rated for 15 Amp.

**6.0 COMPONENT DETAILS**

Components of the switchgear shall ensure type of coordination 'C' as per IS:13947 (Part 4/ Section 1). The make of the components shall be as specified in Specification Sheet.

**6.1 Circuit Breaker**

- 6.1.1 The circuit breakers shall comply with the requirement of IS: 13118.
- 6.1.2 All circuit breakers shall be of P2 (0-3 min - CO - 3 min - CO) category, capable of carrying the specified current at the site conditions and making/breaking of the system fault current.
- 6.1.3 Type test certificates from an independent testing authority shall be furnished along with the offer for each circuit breaker rating and type.
- 6.1.4 The circuit breakers controlling motors shall be suitable for DOL starting and stopping of induction motor a number of times.
- 6.1.5 The circuit breakers controlling capacitors shall be suitable for energizing and de-energizing the rated capacitor bank.
- 6.1.6 The circuit breakers shall be of the 3 phase, 4 pole horizontal draw out, horizontal isolation, air break type.
- 6.1.7 The circuit breaker shall be suitable for electrical or manual closing as specified. Manual operated breakers shall have independent manual spring closing mechanism. In case of electrically operated breaker, it shall have motor wound spring mechanism. In all cases tripping shall be by means of shunt trip coil, unless other wise specified in Specification Sheet.
- 6.1.8 All circuit breaker units of the same rating shall be physically and electrically interchangeable.
- 6.1.9 The circuit breakers shall be electrically and mechanically trip free and provided with anti-pumping feature.



- 6.1.10 Provision shall be made for slow closing for maintenance purposes. A suitable handle shall be provided one for each board for this purpose.
- 6.1.11 The circuit breakers shall have three positions i.e. service, test and isolated with the cubicle door closed. Necessary stoppers shall be provided to prevent the excessive movement of the breaker cradle than desired for the position. Service and test positions of the breaker shall have monitoring switch having 1NO+1NC contacts.
- 6.1.12 The circuit breaker shall be provided with emergency manual trip device, mechanical 'ON', 'OFF' and 'ISOLATED' position indicators and operation counter.
- 6.1.13 A maintenance truck/device for raising, lowering and withdrawal of the circuit breaker shall be supplied for each switch board.
- 6.1.14 The arc interrupting devices shall be capable of interrupting satisfactorily current from zero to the rated interrupting current when used on predominantly capacitive or inductive circuits, without requiring excessive maintenance of the contacts. The arc shall be restricted within the interrupting chamber and no emission of flame shall be allowed which may cause electrical breakdown or damage to insulation on the apparatus.
- 6.1.15 The main contacts shall be self aligning, adjustable and replaceable type.
- 6.1.16 The arcing contacts shall be easily accessible for maintenance and inspection and shall be easily replaceable type. They shall be provided with, contact face of special arc-resisting and non-pitting metal.
- 6.1.17 Mechanical safety interlock shall be provided for safe operation and movement of the breaker.
- 6.1.18 The circuit breakers shall be provided with minimum of four normally open and four normally closed auxiliary switch contacts, over and above those required for its own control scheme, for Owner's use. The contacts shall be wired separately to the terminal board.
- 6.2 Moulded Case Circuit Breakers**
- 6.2.1 The circuit breaker shall conform to IS: 13118 and shall be of P2 category having rupturing capacity as specified in Specification Sheet and mounted on a draw out chassis.
- 6.2.2 The circuit breaker shall be provided with spring assisted quick make quick break type manually operated trip free mechanism, mechanical 'ON', 'OFF' position indicators, thermal tripping devices of inverse characteristics, instantaneous short circuit tripping devices and necessary auxiliary and alarm switches. The MCCB Chassis shall be provided with service, test and isolated position and automatic safety shutter.
- 6.2.3 The thermal and short circuit tripping devices shall be adjustable type.
- 6.2.4 When used for motor circuits, shunt trip device shall be provided and the let through power of controlling MCCB shall be lower than the respective contactor.
- 6.2.5 In addition, under voltage trip shall be provided, if specified in Specification Sheet.

**6.3 Switches**

- 6.3.1 The switches shall be motor duty type AC 23 Category and shall comply with the requirements laid down in IS: 13947. Switches up to 63 Amps shall be rotary type and those of 100 Amps. & above, link type.
- 6.3.2 'ON' and 'OFF' position of the switches shall be indicated on the module. Provision shall be made to lock the switch in the 'OFF' position.
- 6.3.3 The fixed contacts shall be shrouded type. All contacts shall be silver plated.

**6.4 Fuses**

- 6.4.1 The fuses shall be of non-deteriorating HRC cartridge link type and shall conform to IS: 13703. They shall be suitable for the load and service required in the circuit.
- 6.4.2 One fuse puller shall be supplied along with each board.

**6.5 Air Break Contactors**

- 6.5.1 The Air Break Contactors shall be of Category AC3/AC4, unless otherwise specified, conforming to IS: 13947 and flapper type.
- 6.5.2 The dropout voltage shall not exceed 65% of rated voltage.
- 6.5.3 Each contactor shall be provided with auxiliary contacts as required. The rating of the auxiliary contacts shall be 5 Amps. AC or 1 Amp DC at the specified control voltages. The spare auxiliary contacts shall also be wired up to the terminal blocks.

**6.6 Bimetal Thermal Overload Relays**

- 6.6.1 The contactor shall be provided with three pole bimetal thermal overload relays, unless other-wise specified. The bimetal relays shall be of suitable range, ambient temperature compensated and shall be separate mounting type. They shall be adjustable through graduated scale and shall be provided with changeover contact. Thermal relays having long time/current characteristics, operated through saturated C.T.s shall be supplied, wherever required.
- 6.6.2 Bimetal thermal relays shall conform to IS: 3231 and IS: 13947 and shall have built-in single phasing preventor.
- 6.6.3 The bimetal relays shall be provided with a manual resetting device resetable after opening module door. Auto reset thermal relays are not acceptable.

**6.7 Current Transformers**

- 6.7.1 The current transformers shall conform to IS: 2705.
- 6.7.2 C.T.s shall be Class F insulated and vacuum impregnated or resin cast. The C.T.s shall be rigidly mounted and shall be easily accessible for maintenance and testing.
- 6.7.3 The short time thermal withstand ratings of C.T.s shall be same as the thermal withstand rating of the breakers.



- 6.7.4 The C.T.s output shall be minimum 15VA for breaker feeders and 7.5 VA for the other feeders per phase and in any case, the output shall be adequate for the protection and metering duties involved with sufficient margin. The C.T.s shall have the following accuracies for the various applications:

**Application****Class of accuracy as per  
IS: 2705**

- |  |      |
|--|------|
| i) For metering service  | - 1  |
| ii) For use with protective relays                               | - 5P |
| iii) For use with restricted earth fault and differential relays | - PS |

- 6.7.5 The C.T. cores for metering and protection shall be separate.

- 6.7.6 The ratio of C.T.s shall be as specified in Feeder details.

- 6.7.7 All the C.T.s shall be provided with terminals and shorting links. One of the terminals of the C.T. shall be earthed. The polarity of the C.T.s shall be clearly marked.

- 6.7.8 Provision of Interposing C.T.s is not acceptable.

- 6.7.9 The C.T.s shall be capable of withstanding momentary open circuit on the secondary side without injurious effects.

**6.8 Voltage Transformers**

- 6.8.1 The V.T.s shall be Class F insulated and vacuum impregnated or resin cast conforming to IS: 3156.

- 6.8.2 The primary nominal voltage shall be equal to the system nominal voltage. The secondary terminal voltage shall be 110 V.

- 6.8.3 The primary and secondary winding shall be protected by HRC fuses in each phase except in the ground phase of the secondary side.

- 6.8.4 The V.T.s shall be mounted on separate withdrawable carriage. The accuracy Class of V.T.s shall be 1.

- 6.8.5 The rated output of each V.T. shall be adequate for the relays, meters and associated wiring connected to it and shall not be less than 50 VA per phase.

**6.9 Control Transformers**

These shall be air cooled Class F insulated and vacuum impregnated. The rating of control transformer shall be twice the hold on VA of all contactor/relays or 2.5 KVA whichever is high. It shall be free from hum and rigidly mounted. Epoxy cast transformers shall be preferred.

**6.10 Transformers for Kondorffer Starting**

These shall be three phase core type, Class F insulated and vacuum impregnated. Tapping at 90%, 80%, 70% & 60% shall be provided and terminals shall be brought out for easy change of tapping at site. The operating





temperature shall not exceed 80°C. The transformers shall be suitable for taking 7.5 times the specified full load current of the motor continuously for 120 secs.

### 6.11 Relays

- 6.11.1 All protective relays shall conform to IS: 3231 and shall be provided in draw out and dust proof cases and shall be flush mounted type. Auxiliary relays may be fixed type. The relays shall be fully tropicalised.
- 6.11.2 IDMTL over current relays shall generally have adjustable plug settings ranging from 50% to 200%. IDMTL earth fault relays shall have setting range of 20% to 80%. All IDMTL relays shall have extremely inverse characteristics similar to GECA make CDG 14 relay.
- 6.11.3 The restricted earth fault relays shall be high impedance and high speed type and shall be complete with required stabilising resistor. The relays shall be stable under through faults and magnetic inrush currents.
- 6.11.4 Motor protection relays shall be suitable to cater wide range of motor characteristics. This should include elements for over current, high set instantaneous, earth fault, negative sequence and stalling protection. Stalling protection relay contact shall be connected across other relay contact and left free in the terminal block of the relays for external looping.
- 6.11.5 Under voltage relays for motor protection shall be IDMTL type having setting range 50% to 90%. All other relays shall have a setting range of as specified in Specification Sheet.
- 6.11.6 The DC relay operating coils shall be so placed in the circuit that they are not connected to the positive pole of the battery except through contact which are normally open.
- 6.11.7 Mechanical/self power flag indicators shall be provided for all protective relays and for auxiliary relays, where required. All relays directly tripping the breakers shall be provided with hand reset contacts.
- 6.11.8 The flag indicator shall be suitable for external hand resetting and shall be mechanically interlocked to prevent it from falling when the relay is subjected to vibration. Access to the setting device shall be possible only after the front covers are removed. Access to resetting device shall be external to the case.
- 6.11.9 All relays shall be provided with test plug.
- 6.11.10 All relays shall be suitably marked as per relevant ISS.
- 6.11.11 Where relays are required to operate, with a time delay, the delaying attachment shall not be of dash pot type.
- 6.11.12 All relays and other protective devices shall be properly coordinated.
- 6.11.13 Necessary auxiliary relays shall be provided, where required.
- 6.11.14 The VA burden of all the relays and instruments shall be clearly indicated in Technical Particulars.
- 6.11.15 All contacts of the relays, whether utilized or not, shall be wired up to the terminal board of the panel.
- 6.11.16 Static/numerical relays, if provided, shall be suitable for installation condition.

**6.12 Timers**

The timers shall be electronic pneumatic or synchronous type with manual/auto reset features as per the functional requirements. The time delay shall be 'ON' delay or 'OFF' delay type as specified. The repeat accuracy shall be 0.5% or better.

**6.13 Single Phasing Preventor**

6.13.1 Single phasing preventor relay shall be of the current operated type, suitable for the system voltage. The relay shall not operate for normal system voltage but operate positively in the event of unbalanced voltage more than the normal. The relay shall not operate in case of total interruption of power.

6.13.2 The relay shall be fail safe, self reset type and provided with flag indication. The relay operation shall be independent of the motor rating, loading and speed.

**6.14 Instruments and Meters**

6.14.1 All instruments shall be flush mounting type with square/round face and shall be tropicalised and dust tight.

6.14.2 The size of the instruments shall be 96 mm x 96 mm for incomer and bus coupler and 72 mm x 72 mm for lower size modules.

6.14.3 Dials shall be parallax free with scale marked in black on white background and shall be suitable for direct reading.

6.14.4 Zero adjusters shall be provided for operation from the front of the cases.

6.14.5 All ammeters and voltmeters shall have 0 - 240° scale and shall be moving iron spring controlled type of Class 1.5 accuracy as per IS: 1248. The scale range of the ammeter and voltmeters shall be as indicated in the feeder details.

6.14.6 In case of motor feeders the ammeter, shall be graduated uniformly up to C.T. primary current and with a compressed end scale up to 6 times the C.T. primary current. Red pointer shall be provided which can be adjusted at site for indicating full load current.

6.14.7 KWH meter shall be 3 phase 4 wire type. These shall be C.T. operated. The current coil shall be rated for 5 Amp.

6.14.8 All KWH meters shall be provided with test blocks for current and voltage coils for testing them at site without interrupting their recording while in service.

**6.15 Push Buttons and Control Switches**

6.15.1 The switches and push buttons shall conform to utilization category AC11/DC11 as per IS: 13947. The contact shall be rated to make, break and carry inductive current of 5 Amp at 415 V AC and 1 Amp at 220 V DC.

6.15.2 The control switches shall be spring return rotary type, unless otherwise specified and provided with pistol grip type handle. The control switches for circuit breakers shall be additionally fitted with lost motion devices and sequencing devices.



- 6.15.3 The selector switches shall be stay put rotary type and provided with oval shape handles.
- 6.15.4 The push buttons shall be of momentary contact spring loaded type with a set of normally close and open contacts. The push button for 'Start' shall be shrouded type and coloured green, stop push button shall be un-shrouded type and coloured red and other push buttons shall be un-shrouded type coloured black. The fixing ring shall be metallic white.
- 6.15.5 Emergency stop push buttons, if specified, shall be lockable in pushed position.

#### 6.16 **Miniature Circuit Breakers**

- 6.16.1 The miniature circuit breakers shall conform to IS: 8828 and shall be of duty category M-9.
- 6.16.2 It shall be provided with overload and short circuit protective devices in a heat resistant housing.
- 6.16.3 A certificate for short circuit rating and Current-Time tripping curve shall be furnished along with the offer.

#### 6.17 **Signal Lamps**

- 6.17.1 Signal lamps shall be provided to indicate the various circuit conditions as shown in scheme drawings. The colour of the lamps for various functions shall be as follows :

Red	--	Circuit breaker/switch/contactor closed.
Green	--	Circuit breaker/switch/contactor open.
White	--	Trip circuit healthy.
Amber	--	Alarm and auto trip.
Blue	--	Non-Trip

- 6.17.2 All lamps shall be of LED type with lumen output of 200 mili candela in axial direction.

### 7.0 **ACCESSORIES**

- 7.1 The supply shall include the following accessories:

- Maintenance truck/device for raising, lowering and withdrawal of circuit breaker, if required.
- Fuse puller.
- Test plug for relays.
- Test plug for kWh meters.

#### 7.2 **Space Heater**

Each vertical section shall be provided with a thermostatically controlled space heater, rated for 240 V, 50 Hz and controlled through double pole miniature circuit breaker.

**7.3 Name Plates**

- 7.3.1 The switchboard shall have large name plate on the top indicating its Name, Designation and Code No.
- 7.3.2 Each feeder shall be provided with name plate. Each single front panel shall have name plate indicating panel number both in front and back.
- 7.3.3 All control switches, push buttons, lamps etc. shall have functional identification labels.
- 7.3.4 Name plate shall be of black Perspex with white engraving and of minimum 3mm thick.
- 7.4 Any other accessories required, but not specified, shall also be supplied to make the switchboard complete in all respects and ensure safe and proper operation.

**8.0 PAINTING**

- 8.1 The enclosure, after degreasing, pickling in acid, cold rinsing, phosphatising, passivating etc. shall be painted with two coats of anti-rust paint followed by two coats of anticorrosive paint.
- 8.2 Epoxy based paint shall be used, if indicated in Specification Sheet.
- 8.3 All paints shall be carefully selected to withstand tropical heat and extremes of weather. The paint shall not scale off, crinkle or be removed by abrasion due to normal handling.
- 8.4 Unless otherwise specified, the finishing shade shall be light grey having Shade No.631 as per IS: 5.
- 8.5 One litre of paint shall be supplied along with each board for touch up at site.

**9.0 TESTS AND INSPECTION**

- 9.1 All the switchboards shall be subjected to routine test as per IS: 8623 and their components as per relevant standards.
- 9.2 Additional tests, wherever specified, shall be carried out.
- 9.3 All the above tests shall be carried out in presence of Purchaser's representative. In addition, the equipment shall be subjected to stage inspection during process of manufacture at works and site inspection.
- 9.4 These inspections shall however, not absolve the vendor from their responsibility for making good any defect which may be noticed subsequently.

**10.0 DRAWINGS AND DOCUMENTS**

- 10.1 Drawings and documents as per Annexure-I shall be supplied, unless otherwise specified.
- 10.2 All drawings and documents shall have the following description written boldly:

**ENGINEERING STANDARD****ES: 8060****2**

DOCUMENT NO.

REV.

**MEDIUM VOLTAGE SWITCH BOARDS**

SHEET 19 OF 22

- Name of Client
- Name of Consultant
- Enquiry / Order Number with Project / Plant Name
- Code No. & Description

**11.0 SPARES****11.1 Spares for operation and maintenance**

Item wise unit prices of spare parts with recommended quantity shall be quoted along with the main equipment as listed in Annexure-II.

**11.2 Commissioning Spares**

Commissioning spares, as required, shall be supplied with the main equipment. Item wise list of recommended commissioning spares shall be furnished for approval.

**11.3 Any other spare parts not specified, but required, shall also be quoted along with the offer.****11.4 All spare parts shall be identical to the parts used in the motors.****12.0 PACKING****12.1 The board shall be properly packed before despatch to avoid damage during transport, storage and handling.****12.2 The packing box shall contain a copy of the installation, operation and maintenance manual.****12.3 A sign to indicate the upright position of the panels to be placed during transport and storage shall be clearly marked. Also proper arrangement shall be provided to handle the equipment.****13.0 DEVIATIONS****13.1 Deviations, if any, from this standard shall be clearly indicated in the offer with reasoning.****13.2 Deviations, if any, from the data furnished in specification sheet shall be indicated therein beside the data by encircling it.**



## ANNEXURE - I

## DOCUMENTATION FOR MEDIUM VOLTAGE SWITCHBOARDS

Sl.No.	Documentation Description	Documents Required (Y / N)		
		With Bid	For Approval	Final
1.	Specification Sheets, duly completed	N N	Y	Y
2.	Technical Particulars, duly filled in	N	Y	Y
3.	Feeder Details		Y	Y
4.	General arrangement and Foundation Drgs.	N	Y	Y
5.	Schematic and Wiring Diagrams	N	Y	Y
6.	Calculation for Bus-bar sizing	N	Y	N
7.	Terminal Arrangement Drgs.	N	Y	Y
8.	Illustrative and Descriptive Literature	N	N	Y
9.	Catalogues for bought out accessories.	N	N	Y
10.	Installation, Operation and maintenance manual.	N	N	Y
11.	Test Certificates	N		
	i) Type -- Switchboard	N	N	N
	-- Circuit Breaker		N	N
	-- MCCB's	Y	N	N
	ii) Routine	N	N	Y
12.	Guarantee Certificates	N	N	Y
13.	Spare Parts List	N	N	Y

**Note:**

- 1.
2. 4 hard copies & 1 soft copy shall be supplied for approval after order within 4 weeks from the date of LOI.
3. 8 hard copies & 2 soft copies in CD shall be submitted as final documents prior to despatch of the equipment. These shall be made in sets and supplied in fine plastic coated folder.

Y - Yes, N - No



**ANNEXURE - II****LIST OF SPARES**

The following spare parts shall be quoted along with the offer:

- A. Panels with Bus-bars.
- B. Modules of various motor ratings and types of outlets.
- C. **BREAKERS (OF EACH RATING)**
  - i) Fixed Arcing Contact Assembly
  - ii) Moving Arcing Contact Assembly
  - iii) Mechanism Reset Spring
  - iv) Trip bar spring and any other spring used in the circuit breaker mechanism
  - v) Cluster Contacts
  - vi) Arc Chute Assembly
  - vii) Shunt trip Coil
  - viii) Closing Coil
  - ix) Motors for MWS operated breakers
  - x) Secondary Isolating Contact Blocks
  - xi) Release Devices, if any
  - xii) Shutter Assembly
- D. **SWITCHES ( OF EACH RATING)**
  - i) Assembled Switch in Open Execution
  - ii) Single Pole moving Blade Assembly
  - iii) Single Pole Base Assembly
- E. **FUSES (OF EACH RATING)**
  - i) Fuse Link
  - ii) Fuse Fittings
- F. **CONTROL SWITCHES**
  - i) Trip-Neutral-Close Control Switch
  - ii) Local-Remote Selector Switch
  - iii) Thermostat



- iv) Ammeter Selector Switch
- v) Voltmeter Selector Switch
- vi) Push Button Element
- vii) Push Button actuator of each type

**G. CONTACTOR (OF EACH RATING)**

- i) Contactor with Auxiliary Contacts
- ii) Operating Coil
- iii) Auxiliary Contact Block

**H. RELAYS**

- i) Relays of each type
- ii) Glass cover of each case.

**I. INDICATION LAMPS**

- i) Indicating Lamp Globes of each colour.
- ii) Indication Lamp Fittings
- iii) Indicating Lamp Bulbs

**J. METERS**

- i) Ammeter
- ii) Voltmeter

**K. TRANSFORMERS**

- i) Current Transformer of each rating.
- ii) Potential Transformers

**L. MCB (OF EACH RATING)****M. MISCELLANEOUS**

- i) Alarm Bell
- ii) Alarm Buzzer



## ENGINEERING STANDARD

### SHEET STEEL DISTRIBUTION BOARDS

2	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	<i>AV</i> AV	<i>SC</i> BKC / SC	<i>BB</i> BB
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	AV	BKC	BB
0	OCT. '97	--	ISSUED FOR IMPLEMENTATION	RNS/JKT/SC	JKT	HSW
<b>REV</b>	<b>REV DATE</b>	<b>EFF DATE</b>	<b>PURPOSE</b>	<b>PREPD</b>	<b>REVWD</b>	<b>APPD</b>

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**1.0 SCOPE**

- 1.1 This standard covers the technical requirements of design, manufacture, testing at works and delivery in well-packed condition of Sheet Steel Distribution Boards.
- 1.2 This standard shall be read in conjunction with relevant Specification Sheets and Feeder details.

**2.0 STANDARDS TO BE FOLLOWED**

- 2.1 The design, manufacture and testing of the equipment shall comply with the latest issue of the following Indian Standards, unless otherwise specified. Equipment complying with equivalent IEC standards shall also be acceptable.

- IS: 8623 - Specification for low voltage switchgear and control gear assemblies.
- IS: 13947 - Specification for Low-voltage Switchgear and Control gear
- IS: 5578 - Guide for marking of insulated conductors.
- IS: 11353 - Guide for uniform system of marking and identification of conductors and apparatus terminals.
- IS: 10118 - Code of practice for selection, installation and maintenance of switchgear and control gear.

Various components housed in the distribution board shall conform to the Indian Standard Specification as mentioned against the component details.

- 2.2 The design and operational features of the equipment offered shall also comply with the provisions of the latest issue of the Indian Electricity Rules and other Statutory Acts and Regulations. The supplier shall, wherever necessary, make suitable modifications in the equipment to comply with the above.
- 2.3 Wherever any requirement, laid down in this standard, differs from that in Indian Standard Specification the requirement specified herein shall prevail.

**3.0 SERVICE CONDITIONS****3.1 Ambient Conditions**

These shall be as indicated in Specification Sheet.

**3.2 System Details**

These shall be as indicated in Specification Sheet.

**4.0 OPERATING REQUIREMENTS**

The distribution board shall be suitable for operating at the specified rating continuously with the specified voltage and frequency variations under the



ambient conditions indicated in Specification Sheet, without exceeding the permissible temperature rise and without any detrimental effect on any part.

## **5.0 DESIGN AND CONSTRUCTIONAL FEATURES**

### **5.1 General**

- 5.1.1 The distribution board shall consist of an assembly of a series of floor mounting, identical, metal clad, dead front type panels of unitized design. The panels shall be placed side by side to form a compact assembly and shall be extensible on either side.
- 5.1.2 The complete assembly shall be dust, damp and vermin proof having minimum degree of protection equivalent to IP-52 as per IS: 13947.
- 5.1.3 The frame work of the cubicles shall be of bolted/welded construction. The minimum thickness of steel shall be 2 mm for load bearing members, 1.6 mm for non-load bearing members and 3 mm for base channel. The doors and covers shall be fabricated from cold rolled sheet steel. Suitable reinforcement, wherever necessary, shall be provided.
- 5.1.4 The door hinges shall be concealed type.
- 5.1.5 All external hardware shall be cadmium plated/zinc passivated. The hardware for fixing the removable parts shall be provided with retaining devices.
- 5.1.6 The doors and the removable covers shall be provided with non-deteriorating neoprene gaskets. Gaskets without any discontinuity shall be preferred. Gaskets shall be held in position in groove of shaped sheet steel work or these shall be of U type. Adhesive cement, if used, shall be of good quality so that the gaskets do not come off during service.
- 5.1.7 All the components shall be accessible for inspection and maintenance without the necessity for removal of the adjacent ones. In case of single front design all components shall be accessible from the front for maintenance and back opening doors/ openable covers for maintenance shall not be acceptable.
- 5.1.8 The layout of the components inside a module shall be liberal to facilitate maintenance and the interconnection of wiring between the components shall not be subjected to any undue stress at the bends.
- 5.1.9 Mounting height of components requiring operation and observation shall not be lower than 300 mm and higher than 1800 mm.
- 5.1.10 Inter panel barriers shall be provided.
- 5.1.11 Adequate arrangement for earthing shall be provided to safeguard the operator or other personnel from electric hazards under all conditions of operation.

### **5.2 Panel Arrangement**

- 5.2.1 The distribution board shall be drawout / non-drawout type in single front/double front configuration as specified in Specification Sheet.
- 5.2.2 Each Panel shall have its horizontal bus-bar chamber running on the top with multi-tier module units in the centre and having vertical bus-bar chamber and cable alley on either side.





- 5.2.3 The modules shall be enclosed on all sides and shall be so arranged that larger ones are placed at the bottom portion of the panel. Fixed type modules shall be at least 300 mm from the base channel.
- 5.2.4 The number of modules in the panel shall not exceed six for motor starter feeders and eight for switch fuse/MCB/MCCB feeders. The minimum size of module shall be 300 mm and 200 mm for starter and switch fuse feeders. The incomer and bus coupler module sizes for ratings up to 400 A shall be half the panel size. For higher ratings they shall be housed in single panel.
- 5.2.5 The module door shall be so interlocked that it shall not be possible to open the door with switch in closed position. Defeat interlock facility shall be provided.
- 5.2.6 The relay, meters, switches and lamps shall be flush mounted. All components of one module shall be mounted on the same module on a rigid sheet steel chassis. A 20 mm dia. rotating knob on the door shall be provided for closing and opening.
- 5.3 **Bus Bars and Connections**
- 5.3.1 The bus-bar shall be suitable for the supply system specified in the Specification Sheet. The bus-bar and connections shall be made of electrolytic copper or high conductivity aluminium alloy conforming to Grade E91E of IS: 5082.
- 5.3.2 The bus-bar shall be amply sized to carry the rated continuous current under the specified ambient temperature without exceeding the temperature of 90°C. The bus-bars shall also be designed to withstand the system fault current for 1 second without exceeding the temperature of 200°C for bare aluminium and 250°C for bare copper. The minimum acceptable size of bus-bars shall be 250 sq. mm (Al). Calculation for the bus-bar sizing shall be furnished along with the offer.
- 5.3.3 In case of double front arrangement of distribution boards, different sets of vertical bus-bars shall be provided. The vertical bus-bars shall be PVC sleeved or shrouded by insulating barriers which shall have cut-outs to permit entry of power wires. It shall be possible to remove the shroud for inspection and maintenance. Neutral-bars shall be provided in this chamber.
- 5.3.4 Horizontal bus-bars shall be of same cross-section through out. Stepped bus-bars shall not be acceptable.
- 5.3.5 All bus-bars shall be arranged and colours coded according to IS: 5578/11353.
- 5.3.6 The horizontal bus-bar shall run in a separate bus chamber located at the top shall have separate screwed cover for inspection purpose.
- 5.3.7 The bus-bars shall be rigidly supported at equal intervals to withstand maximum short circuit stresses. The supports shall be of moulded construction with built in anti tracking barriers. The support material shall be of fibre glass reinforced thermosetting plastic.
- 5.3.8 All joints shall be suitably treated to avoid oxidation of contact surfaces and bimetallic corrosion. A minimum of two bolts with spring washers shall be used for horizontal bus-bar joints.



5.3.9 Horizontal bus bars shall be insulated with heat shrinkable PVC sleeves of reputed makes. Insulating shrouds shall be provided for all joints of insulated bus-bars.

#### 5.4 Clearance and Creepage Distances

5.4.1 The clearance and creepage distances shall not be lower than the values specified below :

- |   |    |       |
|---|----|-------|
| i) Minimum clearance between two live conductors                        | -- | 20 mm |
| ii) Minimum clearance between live part and accidentally dangerous part | -- | 20 mm |
| iii) Minimum creepage distance  | -- | 28 mm |

5.4.2 The clearances and the creepage, as specified above, shall definitely be maintained in the bus-bar system. Provision of bus-bar insulations, separator or barriers shall not be considered to reduce the clearance from the values specified above.

5.4.3 At the termination points in the equipment, e.g. switches, contactors, thermal relays, etc. it is realized that above clearance shall not always be possible to be maintained. All such points where above clearance are not possible to be maintained shall, therefore, be insulated or taped.

#### 5.5 Insulation

5.5.1 The insulation used shall be non-hygroscopic and shall be of porcelain, Epoxy-resins or fibre glass moulded with plastic. It shall be of adequate electrical and mechanical strength to give trouble free service during normal operation and short circuit conditions.

5.5.2 The insulation shall be treated suitably to withstand the tropical conditions and atmospheric pollution as specified in Specification Sheet.

#### 5.6 Power Wiring

5.6.1 The connections from bus-bar including neutral to individual units on the modules shall consist of PVC insulated flexible copper cable or tapped copper strip.

5.6.2 The power wiring size shall be decided based on the rating of the switch, after using a rating factor of not more than 50% over the current rating in free air. In any case the minimum size of power wiring shall not be less than 4 sq. mm copper.

5.6.3 The size of connection from incomer to horizontal bus-bar and from horizontal bus-bar to bus coupler shall not be less than the size adopted for horizontal bus-bar.

#### 5.7 Control Wiring

5.7.1 The switch board shall be completely factory wired and ready for external connections.



5.7.2 The wiring shall be carried out with flexible stranded PVC insulated copper conductor cables of 1100 Volt grade. The size of wires shall be as follows:

C.T. Circuit -- 2.5 sq. mm

V.T. and Control Circuits -- 1.5 sq. mm

5.7.3 All wiring shall be provided with dependent both end marking as per IS: 5578. Numbered ferrules, reading from the terminals outwards, shall be provided at both ends of all wiring for easy identification. These shall be interlocking type plastic ferrules.

5.7.4 Control wiring circuits, fed from a supply common to a number of feeders, shall be so protected that failure of a circuit in one feeder does not affect the operation of the other feeders.

5.7.5 The wiring to the equipment mounted on the doors shall be carried out with flexible multi strand copper conductor cable and supported so that opening of the door, there is no undue strain on wire leads.

5.7.6 The control cables shall be neatly arranged and properly supported.

## 5.8 External Cable Termination

5.8.1 All power and control cables shall enter the distribution board from the bottom unless otherwise specified in Specification Sheet. Sufficient space shall be provided for ease of connection and termination of cables.

5.8.2 All cables shall be of 1.1 KV grade PVC insulated armoured and PVC sheathed except for single core cable which shall be unarmoured. The number and sizes of cable shall be as indicated in Feeder details.

5.8.3 Compression type cable glands along with the cable lugs as required shall be provided for termination of cables.

5.8.4 The cable glands shall be of rolled Aluminium or Nickel/Cadmium plated brass heavy duty double compression type and shall be mounted on a removable gland plate, provided at a minimum height of 75 mm from the bottom of the distribution board. Two numbers spare knockouts of size 20 mm shall also be provided on the gland plates for future use.

5.8.5 For all power cables crimped type aluminium lugs for aluminium cables and tinned copper lugs for copper cables shall be provided.

5.8.6 The terminal blocks shall be pressure clamp type up to 35 sq. mm cable and bolted lug type for higher sizes of cables. These shall be protected type and rated for 1100 Volts service. The minimum current rating of terminal block shall be 16 Amp. The construction shall be such that after the connection of cables by means of lugs, necessary clearance and creepage distance are available.

5.8.7 Where more than two cables in parallel are required to be terminated, a system of bus links shall be provided with adequate clearance and spacing.

5.8.8 Suitable clamps to support the vertical run of cables shall be provided.

5.8.9 The terminal block shall be grouped according to circuit functions and suitably numbered. 20% extra terminals shall be provided in the terminal block.



5.8.10 For power connections, suitable marking on the terminals shall be provided to identify the phases.

### 5.9 Feeder Details

5.9.1 The requirements of incomer, bus coupler and outgoing feeders shall be as indicated in the single line diagram, feeder details and corresponding schematic diagram.

5.9.2 The bus coupler shall be so located that it is possible to maintain half of the bus-bars while the other half is still alive. Complete segregation of bus-bar connections to bus coupler shall be provided.

5.9.3 Castle key type mechanical interlocks shall be provided between incomers and bus section modules to avoid paralleling of incomers. In addition padlocking facilities shall be provided in OFF position.

5.9.4 Single phase loads shall be distributed as far as possible on all the three phases.

### 6.0 COMPONENT DETAILS

6.1 The make of the components shall be as specified in Specification Sheet and shall conform to type of co-ordination C as per IS: 13947.

#### 6.2 Moulded Case Circuit Breakers

6.2.1 The circuit breaker shall conform to IS: 13947 (Part 2) and shall be of P2 category having rupturing capacity as specified in Specification Sheet.

6.2.2 The circuit breaker shall be provided with spring assisted quick make quick break type manually operated trip free mechanism, mechanical ON/OFF position indicators, thermal tripping devices of inverse characteristics, instantaneous short circuit tripping devices and necessary auxiliary and alarm switches. The MCCB cubicle shall be provided with service, test and isolated position and automatic safety shutter.

6.2.3 The thermal and short circuit tripping device shall be adjustable type.

6.2.4 When used for motor circuit shunt trip devices shall be provided and the let through power of controlling MCCB shall be lower than the respective contactor.

6.2.5 In addition, under voltage trip shall be provided, if specified.

#### 6.3 Switches

6.3.1 The switches shall be Motor duty type AC23 category and shall comply with the requirements laid down in IS: 13947 (Part 3). Switches up to 63 Amps shall be rotary type and those of 100 Amp and above shall be link type.

6.3.2 'ON' and 'OFF' positions of the switches shall be indicated on the panel. Provision shall be made to lock the switch in the 'OFF' position.

6.3.3 The fixed contacts shall be shrouded and the contacts shall be silver plated.

6.3.4 Two Pole switches shall also isolate the neutral circuit along with phase circuit. 4 Pole / 2 Pole switches shall be used for 3 Phase/1 Phase circuits respectively.

**6.4 Fuses**

The fuses shall be of non-deteriorating HRC cartridge link type and conform to IS: 13703. They shall be suitable for the load and the service required in the circuit.

**6.5 Air Break Contactors**

6.5.1 The Air Break Contactor shall be of AC3 category unless otherwise specified, conforming to IS: 13947 (Part-4) and flapper type. Gravity operated contactors are not acceptable.

6.5.2 The dropout voltage shall not exceed 65% of rated voltage.

6.5.3 Each contactor shall be provided with auxiliary contacts as required. The rating of the auxiliary contacts shall be 5 Amps. AC or 1 Amp DC at the specified control voltages. The spare auxiliary contacts shall also be wired terminal block.

**6.6 Bimetal Thermal Overload Relays**

6.6.1 The contactor shall be provided with three pole bimetal thermal overload relays unless otherwise specified. The bimetal relays shall be of suitable range, ambient temperature compensated and shall be separate mounting type. They shall be adjustable through graduated scale and shall be provided with changeover contact.

6.6.2 Bimetal relays shall conform to IS: 3231 and shall have built in single phasing preventor.

6.6.3 The bimetal relays shall be provided with a manual reset device resetable after opening the cubicle door. Auto reset thermal relays are not acceptable.

**6.7 Current Transformers**

6.7.1 The current transformers shall conform to IS: 2705.

6.7.2 Current Transformers shall be Class-F insulated and vacuum impregnated. The Current Transformers shall be rigidly mounted and shall be easily accessible for maintenance and testing.

6.7.3 The Current Transformers shall be of 7.5 VA output. The output shall be adequate for the instrument and metering duties involved with sufficient margin. The Current Transformers shall have the accuracy Class-1 for the metering duty.

6.7.4 All the Current Transformers shall be provided with terminals and shorting links. One of the terminals of C.T. shall be earthed. The polarity of the C.T. shall be clearly marked.

6.7.5 The C.T.s shall be capable of withstanding momentary open-circuit on the secondary side without injurious effects.

**6.8 Instruments and Meters**

6.8.1 All instruments shall be flush mounting type with square face and shall be tropicalized and dust tight.

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**SHEET STEEL DISTRIBUTION BOARDS**

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- 6.8.2 The size of the instruments shall be 96 mm x 96 mm for full and half size modules and 72 mm x 72 mm for lower size modules.
- 6.8.3 Dials shall be parallax free with scale marked in black on white background and shall be suitable for direct reading.
- 6.8.4 Zero adjusters shall be provided for operation from the front of the cases.
- 6.8.5 All ammeters and voltmeters shall have 0 - 240° scale moving iron spring controlled type and of Class 1.5 accuracy as per IS: 1248. The scale range of the ammeter and voltmeter shall be as indicated in the feeder details.
- 6.8.6 In case of motor feeders, the ammeter shall be graduated uniformly upto C.T. primary current and with a compressed end scale upto 6 times the C.T. primary current. Red pointer shall be provided, which can be adjusted at site for indicating full load current.
- 6.8.7 KWH meter shall be 3 phase 4 wire type. These shall conform to the requirements of relevant IS and shall be C.T. operated. The current coil shall be rated for 5 Amp.
- 6.8.8 All kWh meters shall be provided with test blocks for current and voltage coils for testing them at site without interrupting their recording while in service.
- 6.9 Push Button and Control Switches**
- 6.9.1 The switches and push buttons shall conform to utilization category AC 11/DC 11 as per IS: 13947 (Part-5). The contact shall be rated to make, break and carry inductive current of 5 Amp. at 415 V AC and 1 Amp at 220 V DC.
- 6.9.2 The control switches shall be spring return rotary type unless otherwise specified and provided with pistol grip type handle. The control switches for circuit breakers shall be additionally fitted with lost motion devices and sequencing devices.
- 6.9.3 The selector switches shall be stay-put rotary type and provided with oval shape handles.
- 6.9.4 The push buttons shall be of momentary contact spring loaded type with a set of normally close and open contacts. The push button for 'Start' shall be shrouded type and coloured green, stop push button shall be un-shrouded type and coloured red and other push buttons shall be un-shrouded type coloured black. The fixing ring shall be metallic white.
- 6.9.5 Emergency stop push buttons, if specified, shall be lockable in pushed position.
- 6.10 Miniature Circuit Breakers**
- 6.10.1 The miniature circuit breakers shall conform to IS: 13032 and shall be of duty category M-9.
- 6.10.2 It shall be provided with overload and short circuit protective devices in a heat resistant housing.
- 6.10.3 A certificate of short circuit rating and current time tripping curve shall be furnished alongwith the offer.



**6.11 Signal Lamps**

6.11.1 Signal lamps shall be provided to indicate the various circuit conditions as shown in scheme drawings. The colour of the lamps for various functions shall be as follows:

- Red -- Switch/Contactor closed.
- Green -- Switch/Contactor open.

6.11.2 The lamps shall be LED type having lumen output 200 milli candela in axial direction.

6.11.3 It shall be possible to remove the globe from outside for replacement of lamps.

**7.0 ACCESSORIES**

7.1 The supplier shall include the following accessories.

- Fuse Puller.
- Test plug for kWh meters.

**7.2 Space Heater**

Each vertical section shall be provided with a thermostatically controlled space heater, rated for 240 V, 50 Hz and controlled through double pole miniature circuit breaker.

**7.3 Name Plates**

7.3.1 The distribution board shall have large name plate on the top to indicate its name and designation.

7.3.2 Each feeder shall be provided with name plate. Each single front panel shall have name plate both in front and back.

7.3.3 All control switches, push buttons, lamps etc. shall have functional identification labels.

7.3.4 Name plate shall be of black perspex with white engraving and of minimum 3 mm thick.

7.3.5 Any other accessories required, but not specified shall also be supplied to make the distribution board complete in all respects to ensure safe and proper operation.

**8.0 PAINTING**

8.1 The enclosure after degreasing, pickling in acid, cold rinsing phosphatising, passivating etc. shall be painted with two coats of anti-rust paint followed by two coats of anticorrosive paint.

8.2 Epoxy based paint shall be used, if indicated in Specification Sheet.

8.3 All paints shall be carefully selected to withstand tropical heat and extremes of weather. The paint shall not scale off, crinkle or be removed by abrasion due to normal handling.



8.4 Unless otherwise specified, the finishing shade shall be light grey Shade No.631 as per IS: 5.

8.5 One litre of paint shall be supplied along with each board for touch up at site.

### **9.0 TESTS AND INSPECTION**

9.1 The distribution boards shall be subjected to routine test as per IS: 8623.

9.2 Additional tests, wherever specified, shall be carried out.

9.3 All the above tests shall be carried out in presence of purchaser's representative. In addition, the equipment shall be subjected to stage inspection during process of manufacture at works and site inspection.

9.4 These inspections shall however, not absolve the vendor from his responsibility for making good any defect which shall be noticed subsequently.

### **10.0 DRAWINGS AND DOCUMENTS**

10.1 Drawings and documents as per Annexure-I shall be supplied unless otherwise specified.

10.2 All drawings and documents shall have the following description written boldly:

- Name of client
- Name of consultant
- Enquiry / Order Number with plant / project name
- Code No. and Description

### **11.0 SPARES**

11.1 Spares for operation and maintenance

Item wise unit prices of spare parts with recommended quantity shall be quoted along with the equipments as listed in the Annexure-II for the period as stipulated in specification sheet.

11.2 Commissioning Spares

Commissioning spares, as required, shall be supplied with the main equipment. Item wise list of recommended commissioning spares shall be furnished for approval.

11.3 Any other spare parts not specified, but required, shall also be quoted along with the offer.

11.4 All spare parts shall be identical to the parts used in the equipments.

### **12.0 PACKING**

12.1 The distribution board shall be properly packed before despatch to avoid damage during transport, storage and handling.

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**SHEET STEEL DISTRIBUTION BOARDS**

SHEET 13 OF 15

- 12.2 The packing box shall contain a copy of the installation, operation and maintenance manual.
- 12.3 A sign to indicate the upright position of the panels to be placed during transport and storage shall be clearly marked. Also proper arrangement shall be provided to handle the equipment.
- 13.0 DEVIATIONS**
- 13.1 Deviations, if any, from this standard shall be clearly indicated in the offer with reasoning.
- 13.2 Deviations, if any, from the data furnished in specification sheet shall be indicated therein beside the data by encircling it.



## ANNEXURE - I

## DOCUMENTATION FOR SHEET STEEL DISTRIBUTION BOARDS

Sl.No.	Documents	Documents Required (Y / N)		
		With Bid	For Approval	Final
1.	Specification Sheet, duly completed	N	Y	Y
2.	Technical Particulars, duly filled-in	N	Y	Y
3.	Feeder Details	N	Y	Y
4.	General Arrangement and Foundation Drawings	N	Y	Y
5.	Schematic Diagrams with Terminal arrangement drawings	N	Y	Y
6.	Calculation for Bus-bar sizing	N	Y	N
7.	Illustrative and Descriptive literature	N	N	Y
8.	Catalogues for bought out accessories	N	N	Y
9.	Installation, Operation and Maintenance Manual	N	N	Y
10.	Test Certificates			
	-- Type (for MCCB & MCB)	N	N	N
	-- Routine	N	N	Y
11.	Guarantee Certificates	N	N	Y
12.	Spare Parts List	N	N	Y

**Note:**

- 1.
2. 4 hard copies & 1 soft copy shall be supplied for approval after order within 4 weeks from the date of LOI.
3. 8 hard copies & 2 soft copies in CD shall be submitted as final documents prior to despatch of the equipment. These shall be made in sets and supplied in fine plastic coated folder.

Y - Yes, N - No

**ANNEXURE - II****LIST OF SPARES**

The following spare parts shall be quoted along with the offer.

**A MOULDED CASE CIRCUIT BREAKER (OF EACH RATING)**

- i) Complete Breaker Assembly
- ii) Complete Breaker Assembly.

**B SWITCHES (OF EACH RATING)**

- i) Assembled switch in open execution
- ii) Single pole moving blade assembly
- iii) Single pole base assembly

**C FUSES (OF EACH RATING)**

- i) Assembled switch in open execution
- ii) Single pole moving blade assembly
- iii) Single pole base assembly

**D CONTROL SWITCHES**

- i) Trip-Neutral-Close Control Switch
- ii) Local-Remote Selector Switch
- iii) Heater Switch
- iv) Thermostat
- v) Ammeter Selector Switch
- vi) Voltmeter Selector Switch
- vii) Push Button
- viii) Push Button Element
- ix) Push Button Actuator of each type

**E CONTACTOR (OF EACH RATING)**

- i) Contactor with Auxiliary Contacts
- ii) Operating Coil
- iii) Auxiliary Contact Block

**F INDICATING LAMPS**

- i) Indicating lamps globes of each colour
- ii) Indicating lamp fittings
- iii) Indicating lamp bulbs

**G METERS**

- i) Ammeter
- ii) Voltmeter

**H PROTECTIVE RELAYS**

- i) Relays
- ii) Thermal overload relay of each type

**NOTE:** 1. All spare parts shall be identical to the parts used in the distribution boards.



**ENGINEERING STANDARD**  
**LIGHTING SUB DISTRIBUTION BOARDS**

REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD
2	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	<i>Chunaf</i> AV	<i>SC</i> BKC /SC	<i>BB</i>
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	AV	BKC	BB
0	DEC. '97	--	ISSUED FOR IMPLEMENTATION	RNS/JKT/SC	JKT	HSW



**ENGINEERING STANDARD****ES: 8083****2****LIGHTING SUB DISTRIBUTION BOARDS**

DOCUMENT NO.

REV.

SHEET 2 OF 8

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5.0	GENERAL DESIGN AND CONSTRUCTIONAL FEATURES	3
6.0	SPECIAL FEATURES FOR FLAME PROOF LIGHTING SUB DISTRIBUTION BOARDS	4
7.0	COMPONENT DETAILS	5
8.0	PAINTING	5
9.0	TESTS AND INSPECTION	5
10.0	DRAWINGS AND DOCUMENTS	6
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12.0	PACKING	6
13.0	DEVIATIONS	7
ANNEXURE - I	DOCUMENTATION FOR LIGHTING SUB DISTRIBUTION BOARDS	8

**1.0 SCOPE**

- 1.1 This standard covers the technical requirements of design, manufacture, testing at works and delivery in well packed condition of lighting sub distribution boards.
- 1.2 This standard shall be read in conjunction with relevant specification sheets.

**2.0 STANDARDS TO BE FOLLOWED**

- 2.1 The design, manufacture and testing of the equipment covered by this standard shall comply with the latest issue of the following Indian Standards. Equipment complying with equivalent IEC standards shall also be acceptable

IS: 13947 - Low voltage switchgear and control gear

IS: 8623 - Specification for low voltage switchgear and control gear assemblies

- 2.2 The design and operational features of the equipment offered shall also comply with the provisions of latest issue of the Indian Electricity Rules and other relevant statutory acts and regulations. The supplier shall, wherever necessary, make suitable modification in the equipment to comply with the above.
- 2.3 Wherever any requirement, laid down in this standard, differs from that in Indian Standard Specifications, the requirement specified herein shall prevail.

**3.0 SERVICE CONDITIONS****3.1 Ambient Conditions**

These shall be as indicated in specification sheet.

**3.2 System Details**

These shall be as indicated in specification sheet.

**4.0 OPERATING REQUIREMENTS**

The lighting sub-distribution boards shall be suitable for operating continuously under the ambient conditions and with the voltage and frequency variations indicated in specification sheet, without exceeding the specified temperature rise and without any detrimental effect on any part.

**5.0 GENERAL DESIGN AND CONSTRUCTIONAL FEATURES**

- 5.1 The lighting sub distribution boards shall be fabricated out of 2.5 mm thick cold rolled sheet steel and shall be suitable for mounting on wall/structure. These shall have dust and vermin proof construction conforming to IP-54 as per IS: 13947. For outdoor installation, the enclosure shall conform to IPW-55. Where specified in specification sheet, suitable canopy made out of 2 mm thick Aluminium sheet shall be supplied along with the board.



- 5.2 The miniature circuit breakers shall be so mounted inside the enclosure that their operating knobs project outside for easy operation. The cut-out for the knobs on the enclosure shall be lined with gasket for dust proofness. For further protection against ingress of dust, the portion where the knobs have protruded out, shall be provided with another external front cover, internally hinged at the top, gravity operated and with a knurled knob at the bottom. The external cover shall be flushed with the main cover. Continuous neoprene gasket shall be provided to make the board completely dust and weather proof.
- 5.3 All external hard ware of diameter less than 8 mm shall be of stainless steel and those of diameter 8 mm and above shall be of mild steel cadmium plated or zinc passivated.
- 5.4 The sub-distribution boards to be located indoors shall have top entry arrangement for outgoing cables and bottom entry for incoming cable. However for outdoor locations, all cable entries shall be from the bottom only.
- 5.5 Three phase and neutral bus bar system of adequate size shall be provided to which all outgoing and incoming MCB's shall be connected.
- 5.6 The internal wiring shall be carried out by means of single core PVC insulated 2.5 sq. mm stranded copper conductor cables.
- 5.7 Two earthing terminals outside the board shall be provided.
- 5.8 Suitable label inscription consisting of black perspex with engraving for the board and circuit nos. of all outgoing feeders shall be provided. The label inscription of the board shall contain description and code no. as indicated in specification sheet. The circuit nos. of outgoing feeders shall be serially indicated as 1L, 2L.....17L, 18L.
- 5.9 The board shall be complete with terminal block, cable glands, cable lugs and other accessories as specified.
- 6.0 SPECIAL FEATURES FOR FLAME PROOF LIGHTING SUB DISTRIBUTION BOARDS**
- 6.1 The enclosure shall be in addition of flame proof execution as per IS: 2148.
- 6.2 The enclosure group and temperature class shall be as indicated in specification sheet.
- 6.3 The enclosure shall be of cast iron/cast Aluminium alloy (4600 as per IS: 617).
- 6.4 Cables shall enter the terminal chamber through flame proof compression type cable glands. From terminal chamber to the main enclosure connection shall be made through bushings. Direct entry of external cables into the main enclosure shall not be accepted.
- 6.5 The sub-distribution board shall be of 6 way type.



6.6 Individual earth terminals shall be provided for the earth conductor of the outgoing cables beside the phase and neutral terminals.

6.7 The sub-distribution board must be certified by Central Mining Research Institute, Dhanbad or other statutory authority for use in specified hazardous area.

## **7.0 COMPONENT DETAILS**

7.1 The lighting sub-distribution board shall be wired and have components as per SD-8083 (copy attached). The type of board shall be as indicated in specification sheet.

### **7.2 Miniature Circuit Breaker (MCB)**

7.2.1 The MCB shall be of duty category M-9 and shall conform to IS-8828. It shall be provided with overload and short circuit protective devices.

7.2.2 The incoming MCB's or switches shall be of triple pole and switched neutral type and outgoing MCB's of single pole and switched neutral type, single phase earth leakage protection in each phase of the incomer shall be provided.

### **7.3 Terminal Block**

Pressure clamp type terminal blocks shall be provided both for incoming and outgoing cables. The rating of the terminal block shall be at least 1.5 times the rating of the MCB.

### **7.4 Cable Glands**

Heavy duty double compression type Aluminium cable glands suitable for PVC insulated, armoured and PVC sheathed 1.1 KV grade incoming and outgoing cables of sizes as indicated in specification sheet shall be provided.

## **8.0 PAINTING**

8.1 The enclosure after suitable pre-treatment shall be painted with two coats of anti rust paint followed by two coats of anticorrosive paint.

8.2 Where indicated in specification sheet epoxy based paint shall be used.

8.3 All paints shall be carefully selected to withstand tropical heat and extremes of weather. The paint shall not scale off, crinkle or be removed by abrasion due to normal handling.

8.4 The finishing shade shall be light grey shade no.631 as per IS: 5, unless specified otherwise in specification sheet.

## **9.0 TESTS AND INSPECTION**

9.1 All the lighting sub-distribution boards shall be subjected to routine tests as per IS: 8623.



9.2 Additional tests, wherever specified, shall be carried out on one lighting sub-distribution board of each type.

9.3 The above mentioned tests shall be carried out in the manufacturer's works in the presence of purchaser's representative. In addition, the equipment shall be subjected to stage inspection at works and inspection at site for final acceptance.

9.4 The purchaser's inspection shall, however, not absolve the vendor from his responsibility for making good any defects which may be noticed subsequently.

## **10.0 DRAWINGS AND DOCUMENTS**

10.1 Drawings and documents as per Annexure-I shall be supplied, unless otherwise specified.

10.2 All drawings and documents shall have the following description written boldly.

- Name of client
- Name of consultant
- Enquiry / Order Number with plant / project name
- Code No. and Description

## **11.0 SPARES**

11.1 Spares for operation and maintenance

Item wise unit prices for the following items, along with recommended quantity for the period as indicated in specification sheet, shall be quoted along with the main equipment.

- i) MCB
- ii) Terminal blocks
- iii) Terminal bushings

11.2 Commissioning Spares

Commissioning spares, as required, shall be supplied with the main equipment. Item wise list of recommended commissioning spares shall be furnished for approval.

11.3 Any other spare parts not specified, but required, shall also be quoted along with the offer.

11.4 All spare parts shall be identical to the parts used in the equipment.

## **12.0 PACKING**

12.1 The equipment shall be properly packed to safeguard against weather conditions and handling during transit. It shall be wrapped in polythene bags and an additional wrapping of bitumen paper shall also be provided to make it completely water proof before the equipment is packed in wooden crates.

**ENGINEERING STANDARD****ES: 8083****2**

DOCUMENT NO.

REV.

**LIGHTING SUB DISTRIBUTION BOARDS**

SHEET 7 OF 8

12.2 The packing box shall contain a copy of the installation, operation and maintenance manual.

**13.0 DEVIATIONS**

13.1 Deviations, if any, from this standard shall be clearly indicated in the offer with reasoning.

13.2 Deviations, if any, from the data furnished in specification sheet shall be indicated therein beside the data by encircling it.





## ANNEXURE - I

## DOCUMENTATION FOR LIGHTING SUB DISTRIBUTION BOARDS

SL. NO.	Description	Documents Required (Y / N)		
		With Bid	For Approval	Final
1.	Specification Sheet, duly completed	N	Y	Y
2.	Technical particulars, duly filled-in	N	Y	Y
3.	General arrangement Drgs.	N	Y	Y
4.	Certificate for flameproofness from statutory testing authority wherever applicable	N	N	Y
5.	Schematic diagram	N	Y	Y
6.	Descriptive literature of Various equipment	N	N	Y
7.	Guarantee certificate	N	N	Y
8.	Test certificate	N	N	Y

**Note:**

- 1.
2. 4 hard copies & 1 soft copy shall be supplied for approval after order within 4 weeks from the date of LOI.
3. 8 hard copies & 2 soft copies in CD shall be submitted as final documents prior to despatch of the equipment. These shall be made in sets and supplied in fine plastic coated folder.

Y - Yes, N - No



## ENGINEERING STANDARD

### CABLES

REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD
2	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	<i>Shurup</i> AV	<i>Roh</i> BKC/SC	<i>Shurup</i> BB
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	AV	BKC	BB
0	JAN'98	--	ISSUED FOR IMPLEMENTATION	RNS/ JKT/ SC	JKT	HSW
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

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**CABLES****1.0 SCOPE**

- 1.1 This standard covers the technical requirements of design, manufacture, testing at works and dispatch in well packed condition of power and control cables.
- 1.2 The standard shall be read in conjunction with relevant specification sheets and other relevant references as specified therein.

**2.0 STANDARDS TO BE FOLLOWED**

- 2.1 The design, manufacture and testing of cables covered by this standard shall comply with the latest issue of following Indian Standards, unless otherwise specified. Equipment complying with equivalent IEC standards shall also be acceptable.

- IS: 1554 Part (I) -- PVC insulated (heavy duty) electric cables for working voltages upto and including 1100 volts.
- IS: 1554 Part (II) -- PVC insulated (heavy duty) electric cables for working voltages from 3.3 KV upto and including 11 KV.
- IS: 7098 Part (I) -- Cross linked polyethylene insulated PVC sheathed cables for working voltages upto and including 1100 volts.
- IS: 7098 Part (II) -- Cross linked polyethylene insulated PVC sheathed cables for working voltages from 3.3 KV upto and including 33 KV
- IS: 7098 Part (III) -- Cross linked polyethylene insulated thermoplastic sheathed cables for working voltages from 66 KV upto and including 220 KV
- IS: 692 -- Paper insulated lead sheathed cables for rated voltages upto and including 33KV
- IS: 694 -- PVC insulated cables for working voltages upto and including 1100 volts
- IS: 5831 -- PVC insulation and sheath of electric cables

- 2.2 The design and operational features of the cables offered shall also comply with the provisions of latest issue of the Indian Electricity Rules and other relevant Statutory Rules & Regulations. The supplier shall, whenever necessary, make suitable modification in the cables to comply with the above mentioned rules.

- 2.3 Wherever any requirement, laid down in this standard, differs from that in Indian Standard Specifications, the requirement specified herein shall prevail.

**3.0 SERVICE CONDITIONS****3.1 Ambient Conditions**

These shall be as indicated in specification sheet.

**3.2 System Details**

These shall be as indicated in specification sheet.

**4.0 OPERATING REQUIREMENTS**

The cables shall be suitable for operating continuously at the rated capacity as specified in relevant I.S. under the ambient conditions in specification sheet without exceeding the permissible temperature rise and without any detrimental effect on any part.

**5.0 GENERAL DESIGN AND CONSTRUCTIONAL FEATURES**

5.1 The design, manufacture and workmanship of cables shall be in accordance with the latest practice.

5.2 All materials to be used shall be new, unused and of the best quality.

**5.3 Conductors**

The power cables shall be of stranded Aluminium / copper round or shaped conductors and control cables shall be of annealed high conductivity stranded copper round conductors. The conductors shall comply with the requirements of IS: 8130.

**5.4 Insulation**

The conductor insulation shall be type A/C as indicated in specification sheet and shall comply with relevant IS.

**5.5 Fillers**

The cables shall have suitable fillers wherever required, laid up with conductors to provide substantially circular cross section before the inner sheath is applied.

**5.6 Inner Sheath**

Inner sheath, wherever applicable shall be ST1/ ST2 type compound applied by extrusion process except for paper cables for which it shall be of lead or lead alloy.

**5.7 Armouring**

All power and control cables shall be armoured as specified in specification sheet. The single core cables shall be armoured with hard drawn Aluminium



taps/ wires or any other suitable nonmagnetic material. All other cables shall have galvanized steel wire / strip armouring.

### 5.8 Outer Sheath

The outer sheath shall be ST1/ ST2 type compound applied by extrusion process and suitable to withstand atmospheric pollution, resistance to termites, fire retardant and coloured black.

### 5.9 Screening

Screening over conductor and insulation shall be provided as per relevant standard unless specified otherwise. The screening for control cables if specified shall be of aluminium, mylor or equivalent and provided with tinned drain wire which shall be continuous and permanently connected to the screen.

### 5.10 Identification

The individual cores of cables shall be coloured as per relevant IS. Where it is not possible to distinguish the cores by colour, coloured strip shall be applied on the cores or core nos. shall be marked on each core at regular intervals. All cables shall carry the manufacturer's name or trade mark, the cable size, voltage rating and year of manufacture at intervals not exceeding 100 meters. Running meter markings shall also be provided throughout the length of the cable.

### 5.11 Dimension

The overall dia. and dia. under armour of the cables shall be indicated by the vendor in the technical particulars. These shall be guaranteed with a tolerance of  $\pm 5\%$  but not exceeding 2 mm.

5.12 The cut ends of the cables shall be sealed by means of non-hygroscopic materials.

## 6.0 SPECIAL PURPOSE CABLES

### 6.1 Flame Retardant Low Smoke Cables

Flame retardant low smoke cables, where specified in specification sheet, shall have outer sheath of PVC having following values.

- |                                |   |       |
|--------------------------------|---|-------|
| - Minimum oxygen index         | - | 29%   |
| - Minimum temperature index    | - | 250°C |
| - Maximum acid gas generation  | - | 20%   |
| - Maximum smoke density rating | - | 60%   |

### 6.2 Heat Resistant Cables

Heat resistant cables, where specified in specification sheet, shall be of silicon rubber insulated laid circular with asbestos worming and overall glass fibre



**CABLES**

braided and varnished. Silicon rubber insulating compound shall conform to IS:6380 and the constructional features shall conform generally to IS:9968.

**7.0 CABLE DRUM**

7.1 The cables shall be supplied in non-returnable wooden drums (or steel drums if specified) of heavy construction. The wood used for construction of the drums shall be properly seasoned, sound and free from defects.

7.2 Cables shall be supplied in specified drum lengths. Where no such indication is given, standard drum lengths may be offered.

7.3 The tolerance on each drum of cable shall not exceed  $\pm 2.5\%$ . However, no negative tolerance on HV cables is acceptable.

7.4 All cable drums shall have stencilled data as per relevant IS as well as the purchaser's order no., item no. & drum no.

**8.0 TESTS AND INSPECTION**

8.1 The following tests shall be carried out on the cables as per relevant IS.

- i) Routine Tests - On all cables
- ii) Acceptance tests - On representative length of each size
- iii) Type tests - Wherever specified on one cable drum of each size

8.2 In addition, the following tests shall be carried out on all fire retardant low smoke cables as per IS or as per the following standards:

- i) Oxygen and temperature index test as per ASTM-D-2863
- ii) Acid gas emission test as per IEC-754 Part-I
- iii) Smoke density test as per ASTM-D-2843
- iv) Flammability test as per IEC-332 Part-I or IS-10810

8.3 All the above mentioned tests shall be carried out in the presence of purchaser's representative. In addition, the cables shall be subjected to stage inspection at works and inspection at site for final acceptance.

8.4 These tests and inspections shall, however, not absolve the vendor from their responsibility for making good any defect which may be noticed subsequently.

**9.0 DRAWINGS AND DOCUMENTS**

9.1 Drawings and documents as per Annexure-I shall be supplied, unless otherwise specified.

9.2 All drawings and documents shall have the following descriptions written boldly.

- Name of client

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**CABLES**

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- Name of consultant
- Enquiry / Order Number with plant / project name
- Code No. and Description

**10.0 DEVIATIONS**

10.1 Deviations, if any, from this standard shall be clearly indicated in the offer with reasoning.

10.2 Deviations, if any, from the data furnished in specification sheet shall be indicated therein beside the data by encircling it.



## ANNEXURE - I

## DOCUMENTATION FOR CABLES

Sl. No.	Document Description	Documents Required (Y / N)		
		With Bid	For Approval	Final
1.	Specification Sheet, duly completed	N	Y	Y
2.	Technical Particulars, duly filled-in	N	Y	Y
3.	Illustrative and Descriptive catalogues	N	N	Y
4.	Installation, Termination and Jointing Instructions	N	N	Y
5.	Test certificates			
	a) Routine	N	N	Y
	b) Type	N	N	Y
6.	Guarantee Certificates	N	N	Y

**Note:**

- 1.
2. 4 hard copies & 1 soft copy shall be supplied for approval after order within 4 weeks from the date of LOI.
3. 8 hard copies & 2 soft copies in CD shall be submitted as final documents prior to despatch of the equipment. These shall be made in sets and supplied in fine plastic coated folder.

Y - Yes, N - No



## ENGINEERING STANDARD

### BATTERY CHARGER

REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD
2	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	<i>[Signature]</i> AV	<i>[Signature]</i> BKC / SC	<i>[Signature]</i> BB
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	AV	BKC	BB
0	DEC'97		ISSUED FOR IMPLEMENTATION	SC/SC/RNS/JKT	JKT	HSW

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## BATTERY CHARGER

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### 1.0 SCOPE

- 1.1 This standard covers the technical requirements of design, manufacture, testing at works and delivery in well packed condition of Battery Charger Units.
- 1.2 The standard shall be read in conjunction with relevant specification sheets.

### 2.0 STANDARDS TO BE FOLLOWED

- 2.1 The design, manufacture and testing of the equipment covered by this specification shall comply with the latest issue of IS: 8623 Specification for low voltage switchgear and control gear assemblies and other relevant Indian Standards, unless otherwise specified. Equipment complying with equivalent IEC standards shall also be acceptable.
- 2.2 The design and operational features of the equipment shall also comply with provisions of the latest issue of the Indian electricity Rules and other relevant Statutory Acts and Regulations. The supplier shall, wherever necessary, make suitable modifications to comply with the above.
- 2.3 Wherever any requirement, laid down in this standard, differs from that in Indian Standard Specifications, the requirement specified herein shall prevail.

### 3.0 SERVICE CONDITIONS

#### 3.1 Ambient Conditions

These shall be as indicated in Specification Sheet.

#### 3.2 System Details

These shall be as indicated in Specification Sheet.

### 4.0 DESIGN AND OPERATIONAL REQUIREMENTS

- 4.1 The Battery Charger Unit and its components shall be suitable for operating at the specified rating continuously with the specified voltage and frequency variations under the ambient conditions indicated in Specification Sheet, without exceeding the temperature rise limits specified in relevant standards and without any detrimental effect on any part.
- 4.2 The battery charger board shall consist of two units as follows:
- (a) Float cum load cum Boost Charger -- To supply continuous load and keep the battery in state in float mode. In Boost mode, for Initial charging of Battery and after power restoration subsequent to failure, to recharge the battery while simultaneously supplying load current.
  - (b) A stand by unit for (a) above, unless otherwise specified in Specification Sheet



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**BATTERY CHARGER**

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- 4.3 The rated voltage of the float charger for lead acid battery shall be 2.2 Volt/ Cell and final charging voltage of the boost charger shall be 2.75 Volt/ Cell. The rated output voltage of the charger under 4.2 (a) above shall be adjustable by  $\pm 5\%$  of the rated value manually.
- 4.4 Charging unit stated under 4.2 (a) above shall be fully automatic using silicon controlled rectifiers (SCR) common for Float and Boost service. Charger D.C. output voltage shall be maintained within  $\pm 2\%$  irrespective of the input supply variations as indicated in Specification Sheet and load variation of 0 to 100% by closed loop voltage feed back control system. The charger shall be provided with current limit feature.
- 4.5 The output voltage of the float charger shall be monitored and in case voltage falls below 90% of the rated voltage the stand by charger shall be automatically switched 'ON' with audio-visual alarm and annunciation. Time delay features shall be incorporated to avoid spurious changeover.
- 4.6 Boost charging shall be achieved through the same silicon controlled rectifier (SCR) which shall regulate the charger output automatically by current control closed loop system. Provision for manual adjustment of charger output shall also be made. Charger shall maintain its output current constant at starting rate/ finishing rate of battery charging current irrespective of variation in input supply and battery condition.
- 4.7 Transfer from float charging to boost charging and vice versa shall be automatic as per the battery charge condition.
- 4.8 During boost charging operation, arrangement shall be made so that DC power to load is not interrupted even if AC power fails during this operation. During Boost charge period, battery backup to load shall be arranged by a tapping from suitable point of the battery.
- 4.9 Suitable dropper diodes shall be provided to reduce the voltage across the load to 105% of the rated voltage at rated load current. When power supply to the charger fails, the dropper diodes shall be by-passed automatically through contactor so that full battery output voltage is available to the load.
- 4.10 Provision of suitable filters shall be made so that the ripple in output voltage shall not exceed 3% and 10% for float and boost charger respectively.
- 4.11 It shall be ensured that during boost charging, no over/under charging of cells takes place.
- 4.12 All the automatic features specified above shall also have provision of manual arrangement for control of charging rates and transfer from one charger to others.
- 4.13 Charger unit shall be provided with all required indication, metering, protection, control and alarm annunciation devices for safe and reliable operation and shall include at least as indicated in Annexure-I.

**5.0 CONSTRUCTIONAL FEATURES**

- 5.1 Each of the charger units shall be housed in separate metal clad cubicles of identical size suitable for floor mounting and arranged to form a compact switchboard.
- 5.2 The complete assembly shall be dust, damp and vermin proof type equivalent to IP-43 as per IS: 12063/13947. In case it is necessary to provide openings for ventilation, these shall be closed from inside by fine wire mesh. Forced ventilated panel shall not be acceptable.
- 5.3 The frame work of cubicles shall be of bolted/welded construction, fabricated out of cold rolled sheet steel of not less than 2 mm thickness. The thickness of base channel shall not be less than 3 mm, suitable reinforcement, wherever necessary, shall be provided.
- 5.4 Hinged doors shall be provided on both the front and back side for easy access. The door hinges shall be concealed type.
- 5.5 The doors and the removable covers shall be provided with non-deteriorating neoprene gaskets. Gaskets without any discontinuity shall be preferred. Gaskets shall be held in position in groove in shaped steel work or these shall be 'U' type. Only one joint per gasket shall be permitted. Adhesive cement, if used, shall be of good quality so that the gaskets do not come off during service.
- 5.6 The mounting of the components shall be such that these are accessible for checking and replacement without the necessity of removing the adjacent ones, at the same time ensuring necessary degree of safety.
- 5.7 It shall be possible to carry out maintenance of one charger when the other is in operation.
- 5.8 The meters, switches and lamps shall be flush mounted type. All components of one unit shall be mounted on the same unit.
- 5.9 All the live parts shall be insulated. Parts which can not be insulated shall be provided with insulating barriers. These barriers shall provide shielding of all live parts to prevent accidental contact when the door is open. However, for the parts requiring handling normally, such as fuses/lamps etc., separate barriers shall be provided. The barriers in all cases shall cover the cable lug portions and shall be firmly secured, stable and durable. It shall, however, be possible to remove such barriers, if required.
- 5.10 At the equipment termination points, insulated phase barriers, PVC bolt caps, PVC hoses or insulating ribs shall be provided.
- 5.11 The outgoing terminal blocks shall be shrouded type or provided with insulating barriers.
- 5.12 Adequate arrangement for earthing shall be provided to safeguard the Operator or other personnel from electric hazards under all conditions of operation.



### 5.13 Clearances and Creepage

The clearances and creepage distances shall not be lower than the values specified below:

- i) Minimum clearance between two live parts : 20 mm
- ii) Minimum clearance between a live part & earth : 20 mm
- iii) Minimum creepage distance : 28 mm

### 5.14 Insulation

5.14.1 The insulation used shall be non-hygroscopic and may be of porcelain, epoxy resin or glass fibre moulded with plastic. It shall be of adequate electrical and mechanical strength to give trouble free service during normal operation and short circuit conditions.

5.14.2 The insulation shall be treated suitably to withstand the tropical conditions and atmospheric pollution as specified.

### 5.15 Wiring

5.15.1 The switch board shall be completely factory wired and ready for external connections.

5.15.2 The wiring shall be complete in all respect so as to ensure proper functioning of control, protection, interlocking and measurement.

5.15.3 The wiring shall be carried out with flexible stranded PVC insulated copper conductor cables of 1100 V grade of minimum 1.5 Sq.mm size.

5.15.4 All wiring shall be marked with dependent both ends marking as per IS: 5578. Numbered ferrules, reading from the terminals outwards, shall be provided at both ends for easy identification. These shall be interlocking type plastic ferrules.

5.15.5 The control cables shall be neatly arranged and properly supported on PVC wiring channel.

### 5.16 Cable Termination

5.16.1 The boards shall be designed for bottom entry of the power and control cables unless otherwise specified in Specification Sheet. Sufficient space shall be provided for ease of connection and termination of cable.

5.16.2 Provision for receiving one 415 V, 3 phase 4 wire incoming supply lines, one for each charger shall be made. However, DC output for battery and load shall be looped inside the panel and only one outgoing supply each for battery and load shall be provided.

5.16.3 The termination of cables shall be done through cable glands which shall be suitable for the cables as indicated in Specification Sheet.

5.16.4 Heavy duty double compression type rolled Aluminium or nickel plated brass cable glands shall be provided. The cable glands shall be mounted on a removable gland plate, provided at a minimum height of 75 mm from the bottom



of the switchboard. Two spare knockouts of size 20 mm shall also be provided on the gland plate for future addition of control cables.

- 5.16.5 For all power cables, crimped type cable lugs of same material as of conductor shall be provided.
- 5.16.6 The internal power wiring shall be terminated in the terminal blocks for connection to the outgoing cables, These terminal blocks shall be pressure clamp type up to 35 Sq.mm, cable and bolted lug type for higher sizes of cables, These shall be protected type and rated for 1100 V service. The minimum current rating of terminal block shall be 16 Amp. The construction shall be such that after the connection of cables by means of lugs, necessary clearances and creepage distances are available.
- 5.16.7 Not more than two wires shall be connected to any terminal. If necessary a number of terminals shall be jumpered together to provide wiring points.
- 5.16.8 Wherever necessary, suitable clamps to support the vertical run of cables shall be provided.
- 5.16.9 The terminal blocks shall be grouped according to circuit functions and suitably numbered. 20% extra terminals shall be provided in the terminal block.
- 5.16.10 For power connection, suitable marking on the terminals shall be provided to identify the phases.

## 5.17 **Earth Bus**

- 5.17.1 A continuous earth bus of Aluminium of suitable size minimum 32 x 6 mm shall be run all over the length in the lower part of the board with two ends connected to the external earth terminals of the board.

## 6.0 **COMPONENT DETAILS**

### 6.1 **Rectifier Transformer**

This shall be double wound, air cooled, 3 phase type. Class 'F' insulating materials shall be used, with temperature rise limited to Class 'B'. The windings shall be vacuum impregnated.

### 6.2 **Thyristors and Diodes**

The thyristors and diodes shall be properly selected to have adequate safety margin. A factor of safety of minimum 4 shall be taken for voltage surges and 2 for current ratings. The thyristors and diodes shall be mounted on their respective heat sinks which shall preferably be made of extruded Aluminium properly machined and providing intimate contact with the stud for heat dissipation. Each thyristor/ diode shall be protected with properly designed snubber circuit.

### 6.3 **Air Break Switches**

The switches shall be heavy duty quick make, quick break type conforming to IS:13947. Switches shall be snap action rotary type. 'ON'-'OFF' position of the



switch shall be boldly indicated. The handle of switches shall remain fastened to the door even when the door is opened after turning the switch 'OFF'. The AC input switch shall not be directly mounted on the door.

#### 6.4 **Fuses**

For protection of thyristors/ diodes, semi-conductor fuses shall be provided. All other fuses shall be HRC cartridge link type. They shall be suitable for the load and service required.

#### 6.5 **Contactors**

The contactor shall be air break type of category AC-3/ DC-1 as per IS: 13947. DC contactor shall be provided with arc chutes and magnetic blow out coil. The contactors shall not drop out even when the coil voltage drops to 65% of rated voltage.

#### 6.6 **Thermal Overload Relays**

Adjustable bimetal thermal overload relays shall be provided. The bimetal relays shall be ambient temperature compensated. The thermal relays shall be provided with a manual resetting device on the door.

6.7 All ammeters and voltmeters shall be class 1.5 as per IS:1248 and shall be flush mounted type of minimum size 96 x 96 mm. Ammeters and Voltmeters for A.C. service shall be of moving iron type and that for D.C. service shall be moving iron or moving coil type. Zero adjuster shall be provided for operation from the front of the cases.

#### 6.8 **Printed Circuit Boards (PCBs)**

The PCBs shall conform to IS: 7405. These shall be of fibre or epoxy glass moulded of minimum thickness 1.5 mm and shall have gold plated contacts and silver or nickel plated tracks. All PCBs shall be of plug-in type contained in a dust proof box. PCBs shall be self diagnostic type and shall be provided with status indication. Metering points shall be provided on each PCB and the PCBs shall be clamped in position so that vibration or long usage does not result in loose contacts.

#### 6.9 **Timers**

The timers shall be electronic, pneumatic or synchronous type conforming to IS: 5834 with manual/auto reset features as per the functional requirements. The repeat accuracy shall be within 5%.

#### 6.10 **Control and Selector Switches**

6.10.1 All the control and selector switches shall be of rotary type with thermal utilization category of AC 11 or DC 11 as per IS: 6875.

6.10.2 The control switches shall be spring return type and provided with pistol grip type handles.



6.10.3 The selector switches shall be stay-put type and provided with oval handle.

### 6.11 Signal Lamps

6.11.1 Signal lamps shall be provided to indicate the various circuit conditions and these shall be placed at a suitable height. The colour of the lamps for various functions shall be as follows:

Red	--	Circuit 'ON'
Green	--	Circuit 'OFF'
Amber	--	Alarm and auto trip.

6.11.2 The lamps shall be LED type having lumen output of 200 millicandella in axial direction.

### 6.12 Audio Visual Alarm Annunciation

6.12.1 A solid state audio-visual alarm annunciation system shall be provided for the board. Audible annunciation shall be provided by means of hooter with provision of remote alarm and acknowledgment. Visual annunciation shall be provided by flashing of the respective facia window. The facia window shall have translucent glass or plastic cover with inscription in black letters. Each facia window shall be provided with two lamps connected in parallel. The cover plate of the facia window shall be flush with the panel and shall be capable of easy removal to facilitate replacement of lamps.

6.12.2 The following operating sequence shall be adopted for audio visual alarm and indication:

<b>System Condition</b>	<b>Visual Signal</b>	<b>Audible Signal</b>
Normal	OFF	OFF
Abnormal	Flashing	ON
Acknowledge	Steady ON	OFF
Return to normal	OFF	OFF
Test	Steady ON	ON

## 7.0 ACCESSORIES

7.1 The supply shall include the following accessories:

### 7.1.1 Space Heater

Each cubicle of the board shall be provided with a thermostatically controlled space heater, rated for 240 V, 50 Hz and controlled through double pole miniature circuit breaker. The space heater supply shall be tapped from incomer power supply.

### 7.1.2 Name Plates

7.1.2.1 The board shall have a large name plate on the top to indicate its name and designation.





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- 7.1.2.2 Each cubicle shall be provided with a name plate.
- 7.1.2.3 All control switches, push buttons, lamps etc. shall have function identification labels.
- 7.1.2.4 Name plate shall be of black perspex with white engraving of minimum 3 mm thickness.
- 7.1.3 Fuse Puller
- 7.2 Any other accessories required but not specified shall also be supplied to make the board complete in all respects and ensure its safe and proper operation.

### 8.0 PAINTING

- 8.1 The enclosure after suitable pre-treatment shall be painted with two coats of anti-rust paint followed by two coats of anti-corrosive paint.
- 8.2 Epoxy based paint shall be used if indicated in Specification Sheet.
- 8.3 All paints shall be carefully selected to withstand tropical heat and extremes of weather. The paint shall not scale off, crinkle or be removed by abrasion due to normal handling.
- 8.4 Unless otherwise specified the finishing shade shall be light grey having Shade No.631 as per IS: 5.

### 9.0 TESTS AND INSPECTION

- 9.1 The board shall be subjected to routine tests as per IS: 8623 and other relevant standards. Heat run test, if specified, in specification sheet shall be carried out.
- 9.2 Additional tests, wherever specified shall be carried out on one board of each rating.
- 9.3 All the above tests shall be carried out in presence of purchaser's representative. In addition, the equipment shall be subjected to stage inspection during process of manufacture at works and site inspection.
- 9.4 These inspections shall however, not absolve the vendor from his responsibility for making good any defects which may be noticed subsequently.

### 10.0 DRAWINGS AND DOCUMENTS

- 10.1 Drawings and documents as per Annexure-II shall be supplied unless otherwise specified.
- 10.2 All drawings and documents shall have the following description written boldly:
- Name of client
  - Name of consultant
  - Enquiry / Order Number with plant / project name



- Code No. and Description

**11.0 SPARES****11.1 Spares for operation and maintenance**

Item wise unit prices of spare parts with recommended quantity shall be quoted along with the equipments as listed in Annexure-III for the period as indicated in the specification sheet.

**11.2 Commissioning Spares**

Commissioning spares, as required, shall be supplied with the main equipment. Item wise list of recommended commissioning spares shall be furnished for approval.

**11.3 Any other spare parts not specified, but required, shall also be quoted along with the offer.****11.4 All spare parts shall be identical to the parts used in the equipments.****12.0 PACKING****12.1 The board shall be properly packed before despatch to avoid damage during transport, storage and handling.****12.2 The packing box shall contain a copy of the installation, operation and maintenance manual along with one set of drawings.****12.3 A sign to indicate the upright position of the panels to be placed during transport and storage shall be clearly marked. Also proper arrangement shall be provided to handle the equipment.****13.0 DEVIATIONS****13.1 Deviations, if any, from this standard shall be clearly indicated in the offer with reasoning.****13.2 Deviations, if any, from the data furnished in specification sheet shall be indicated therein beside the data by encircling it.**



## ANNEXURE - I

REQUIREMENT OF PROTECTIONS, METERING, CONTROL AND INDICATIONS /  
ANNUNCIATIONS FOR BATTERY CHARGER

Sl. No.	Description	To be mounted on		
		Float cum Load Charger	Standby Float cum Load Charger	Boost Charger
1	2	3	4	5
1.	<b>A.C. Input Side</b>			
	i) ON/OFF Switch	Yes	Yes	Yes
	ii) HRC Fuses	Yes	Yes	Yes
	iii) Contactor	Yes	Yes	Yes
	iv) Thermal O/L Relay	Yes	Yes	Yes
	v) Single phasing and Phase Reversal	Yes	Yes	Yes
	vi) Voltmeter with SS	Yes	Yes	Yes
	vii) Ammeter with SS	Yes	Yes	Yes
	viii) Signal Lamp (ON/OFF)	Yes	Yes	Yes
2.	<b>Rectifiers</b>			
	i) Semiconductor fuses	Yes	Yes	Yes
	ii) Filters with fuses	Yes	Yes	Yes
	iii) Surge Suppressors	Yes	Yes	Yes
3.	<b>DC Output Side</b>			
	i) ON/OFF Switch	Yes	Yes	Yes
	ii) HRC Fuses	Yes	Yes	Yes
	iii) Blocking Diodes	Yes	Yes	Yes
	iv) Voltmeter	Yes	Yes	Yes
	v) Ammeter	Yes	Yes	Yes
	vi) Signal Lamp (ON/OFF)	Yes	Yes	Yes
	viii) Charging Ammeter (on demand type)	Yes	Yes	Yes

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**BATTERY CHARGER**

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Sl. No.	Description	To be mounted on		
		Float cum Load Charger	Standby Float cum Load Charger	Boost Charger
1	2	3	4	5
4.	<b>Common Items</b> i) Drooper Diodes ii) Solid State facia annunciator for : -- Automatic changeover from one charger to another -- Rectifier fuse failure in float/standby float/boost -- Incoming supply failure float/standby float/boost -- DC output under voltage -- Earth fault -- Single phasing and phase reversal -- Filter fuse failure float/standby float/boost iii) Battery isolating switch and HRC fuses iv) Battery under voltage relay v) Battery earth fault relay vi) DC Contactor	Yes Yes	Yes	Yes         Yes  Yes Yes Yes

**NOTE:** Any other components as required for satisfactory operation of the battery charger shall be provided.



## ANNEXURE - II

## DOCUMENTATION FOR BATTERY CHARGER

Sl.No.	Description	Documents Required (Y / N)		
		With Bid	For Approval	Final
1.	Specification Sheet, duly completed	Y	Y	Y
2.	Technical Particulars, duly filled-in	Y	Y	Y
3.	General arrangement drawings showing overall dimensions of the charger board and mounting details of various equipment inside the charger panel	Y	Y	Y
4.	Foundation plan indicating certified dimensions, floor openings, weight, clearance etc.	N	Y	Y
5.	Schematic and Wiring Diagrams	N	Y	Y
6.	Descriptive literature of the charger and various components mounted in the panel.	Y	N	Y
7.	Characteristics curves for the charger and all other static and control devices, relays etc.	N	N	Y
8.	Installation, Operation and Maintenance manual	N	N	Y
9.	Guarantee Certificates	N	N	Y
10.	Test Certificates	N	N	Y
11.	Spare parts list with identification marks	Y	N	Y

**Note:**

1. 4 hard copies & 1 soft copy shall be supplied with bid.
2. 4 hard copies & 1 soft copy shall be supplied for approval after order within 4 weeks from the date of LOI.
3. 8 hard copies & 2 soft copies in CD shall be submitted as final documents prior to despatch of the equipment. These shall be made in sets and supplied in fine plastic coated folder.

Y - Yes, N - No



## ANNEXURE - III

## LIST OF SPARES

The following spare parts shall be quoted along with the offer:

		Float	Boost
i)	Fuse links and fuse bases of each type & rating		
a)	AC Input HRC fuses	-- 3 Nos.	3 Nos.
b)	Semiconductor fuse	-- 6 Nos.	6 Nos.
c)	Filter condenser fuse	-- 1 No.	1 No.
d)	DC Output HRC fuse	-- 2 Nos.	2 Nos.
e)	Control fuse	-- 5 Nos.	--
ii)	Contactor coils of each type & rating		
a)	AC Input mains contactor coils	-- 1 No	1 No
b)	Aux. Contactor coils	-- 1 No	1 No
c)	DC Contactor coil	-- 1 No.	--
iii)	Control Switches of each type		
a)	AC Voltmeter switch	-- 1 No	
b)	AC Ammeter switch	-- 1 No	
c)	AC Input switch	-- 1 No	
d)	DC Output switch	-- 1 No	
e)	Triple pole switch common for all chargers	-- 1 No	
iv)	Push button element with actuator	-- 1 No	
v)	Indicating lamps		
a)	AC Input lamp	-- 3 Nos.	3 Nos.
b)	DC Output lamp	-- 1 No	1 No
vi)	Globes of Indication lamps (1 No. of each colour)	--	3 Nos.
vii)	PCB's of each type -- (1Set)		
a)	DC U/V	-- 1 No.	1 No.
b)	DC O/V	-- 1 No.	1 No.
c)	Battery earth fault	--	1 No
d)	HV/Phase fail/Reversal	-- 1 No.	1 No.
e)	SCR Controller card	-- 1 No.	1 No.
viii)	SCR of each type	-- 3 Nos.	3 Nos.
ix)	Diode of each type	-- 3 Nos.	3 Nos.
x)	Tap Diode	--	1 No

**NOTE:** - All spare parts shall be identical to those used in the equipment offered.





## ENGINEERING STANDARD

### BATTERY

REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD
2	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	<i>[Signature]</i> AV	<i>[Signature]</i> BKC / SC	<i>[Signature]</i> BB
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	AV	BKC	BB
0	OCT'97	--	ISSUED FOR IMPLEMENTATION	SC/SC/RNS/JKT	JKT	HSW
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

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**BATTERY**

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**1.0 SCOPE**

- 1.1 This standard covers the technical requirements of design, manufacture, testing at works and despatch in well packed condition of batteries and accessories.
- 1.2 This standard shall be read in conjunction with the relevant Specification Sheet.

**2.0 STANDARDS TO BE FOLLOWED**

- 2.1 The design, manufacture and testing of the battery shall conform to the latest issue of the following standards:

IS: 1651 -- Stationary cells & batteries, lead-acid type (with tubular positive plate)

IS: 1652 -- Stationary cells & batteries, lead-acid type with plate positive plates.

IS: 10918 -- Vented type nickel cadmium batteries

All accessories shall also conform to the relevant Indian Standard. Equipment complying with equivalent IEC standards shall also be acceptable.

- 2.2 The design and operational features of the equipment offered shall comply with the provisions of the latest issue of the Indian Electricity Rules and other Statutory Acts and Regulations. The supplier shall, wherever necessary, make suitable modifications in the equipment to comply with the above.
- 2.3 Wherever any requirement, laid down in this standard, differs from that in Indian Standard specifications, the requirement specified herein shall prevail.

**3.0 SERVICE CONDITIONS****3.1 Ambient Conditions**

These shall be as indicated in Specification Sheet.

**3.2 System Details**

These shall be as indicated in Specification Sheet.

**4.0 OPERATING REQUIREMENTS**

The battery shall be able to deliver rated ampere hours when discharged at the 10 hours rate of discharge to a final voltage of 1.85 V per cell for Lead Acid and at the 5 hours rate of discharge to a final voltage of 1.1 V per cell for Ni-Cd battery under the ambient conditions indicated in Specification Sheet.

**5.0 GENERAL DESIGN AND CONSTRUCTIONAL FEATURES**

- 5.1 The battery shall be of lead acid/ Ni-Cd type as indicated in Specification Sheet and rated for specified voltage. Each battery bank shall consist of a specified number of cells.



- 5.2 Each cell shall be contained in a closed top container preferably transparent and unbreakable and shall incorporate positive plates, negative plates and separators of adequate dimensions. Lead acid battery shall be of Tubular/ plante plate type (positive plate) and Nickel-Cadmium battery of plante plate type (positive plate).
- 5.3 The battery bank shall be complete with all necessary components such as lids, plugs, separators and buffers, inter-cell connectors, lead coated bolts and nuts, cell insulators etc.
- 5.4 The required quantity of electrolyte plus 10% extra quantity shall be supplied in suitable non-returnable containers along with the battery.

## 6.0 ACCESSORIES

The following accessories shall be supplied with each battery bank:-

- (a) 1 Set -- Battery Stand constructed out of teak wood without the use of any metal fastenings and coated with 3 coats of anti-acid paint. The stand shall be properly designed so that each cell shall be easily accessible for inspection, topping up etc. However, for Ni-Cd battery mild steel stand with alkali resistant paint may also be accepted
- (b) 1 Set -- Inter-row, inter-tier and inter-stand connectors and takeoffs. These shall be sized suitably to have adequate current carrying capacity and mechanical strength
- (c) 1 Set -- Cell Insulators
- (d) 1 Set -- Stand Insulators
- (e) 1 No. -- Centre zero cell testing voltmeter scaled 3-0-3 volts
- (f) 2 Nos. -- Syringe type Hydrometers for measuring the specific gravity of the electrolyte
- (g) 2 Nos. -- Gravity correction thermometers, mercury-in-glass type
- (h) 1 Set -- Connecting bolt wrenches
- (i) 1 No. -- Rubber syringe for tapping cells
- (j) 1 No. -- Wall mounting type teak wood holder for Hydrometer and Thermometer.
- (k) 1 No. -- Acid/Alkali resisting funnel.
- (l) 1 No. -- Acid/Alkali resisting jug.
- (m) 1 Pair -- Rubber gloves.
- (n) 1 No. -- Rubber Apron.

All other accessories, not specified above, but required for satisfactory operation and maintenance shall also be supplied.

**7.0 TESTS AND INSPECTION**

- 7.1 Type tests shall be carried out as per relevant standards on two cells in the presence of Purchaser's representative, if specified in Specification Sheet.
- 7.2 Acceptance tests, if specified in Specification Sheet, shall be carried out as per relevant standards on each cell after installation at site.
- 7.3 In addition, the battery shall be subjected to stage inspection at works and inspection at site for final acceptance.
- 7.4 These inspections shall, however, not absolve the vendor from his responsibilities for making good any defect which may be noticed subsequently.

**8.0 DRAWINGS AND DOCUMENTS**

- 8.1 Drawings and documents as per Annexure-I shall be furnished by the Vendor unless otherwise specified.
- 8.2 All drawings and documents shall have following description written boldly:
- Name of client
  - Name of consultant
  - Enquiry / Order Number with plant / project name
  - Code No. and Description

**9.0 SPARES**

- 9.1 Item wise unit prices for the following items with recommended quantity for the period as indicated in Specification Sheet shall be quoted along with the main equipment.
- i) Vent Plugs
  - ii) Float Guide
  - iii) Float
  - iv) Cell lid.
  - v) Cell Box
  - vi) Inter-cell connections
  - vii) Fasteners
  - viii) Complete Cell
- 9.2 Any other spare parts required, but not specified, shall also be quoted.

**10.0 PACKING**

The battery cells and accessories shall be properly packed to safeguard against weather conditions and rough handling. It shall be wrapped in polythene bags with an additional wrapping bitumen paper to make it completely water proof

**ENGINEERING STANDARD****ES: 8142**

2

DOCUMENT NO.

REV.

**BATTERY**

SHEET 6 OF 7

before it is packed in crates. The packing box shall contain a copy of the installation operation and maintenance manual.

**11.0 DEVIATIONS**

- 11.1 Deviations, if any, from this standard shall be clearly indicated in the offer with reasoning.
- 11.2 Deviations, if any, from the data furnished in specification sheet shall be indicate therein beside that data by encircling it.





## ANNEXURE – I

## DOCUMENTATION FOR BATTERY

Sl. No.	Description	Documents Required (Y / N)		
		With Bid	For Approval	Final
1.	Specification Sheet	Y	Y	Y
2.	Technical Particulars	Y	Y	Y
3.	Dimensional drawings showing the cell arrangement on stand (Plan, front and side elevation) for each type of battery.	Y	Y	Y
4.	Illustrative and descriptive literature giving the complete details of construction of battery	Y	N	Y
5.	Operation and maintenance instructions	N	N	Y
6.	Test Certificates			
	-- Type	Y	N	N
	-- Acceptance	N	N	Y
7.	Guarantee Certificates	N	N	Y
8.	Spare Parts lists	Y	N	Y

**Note:**

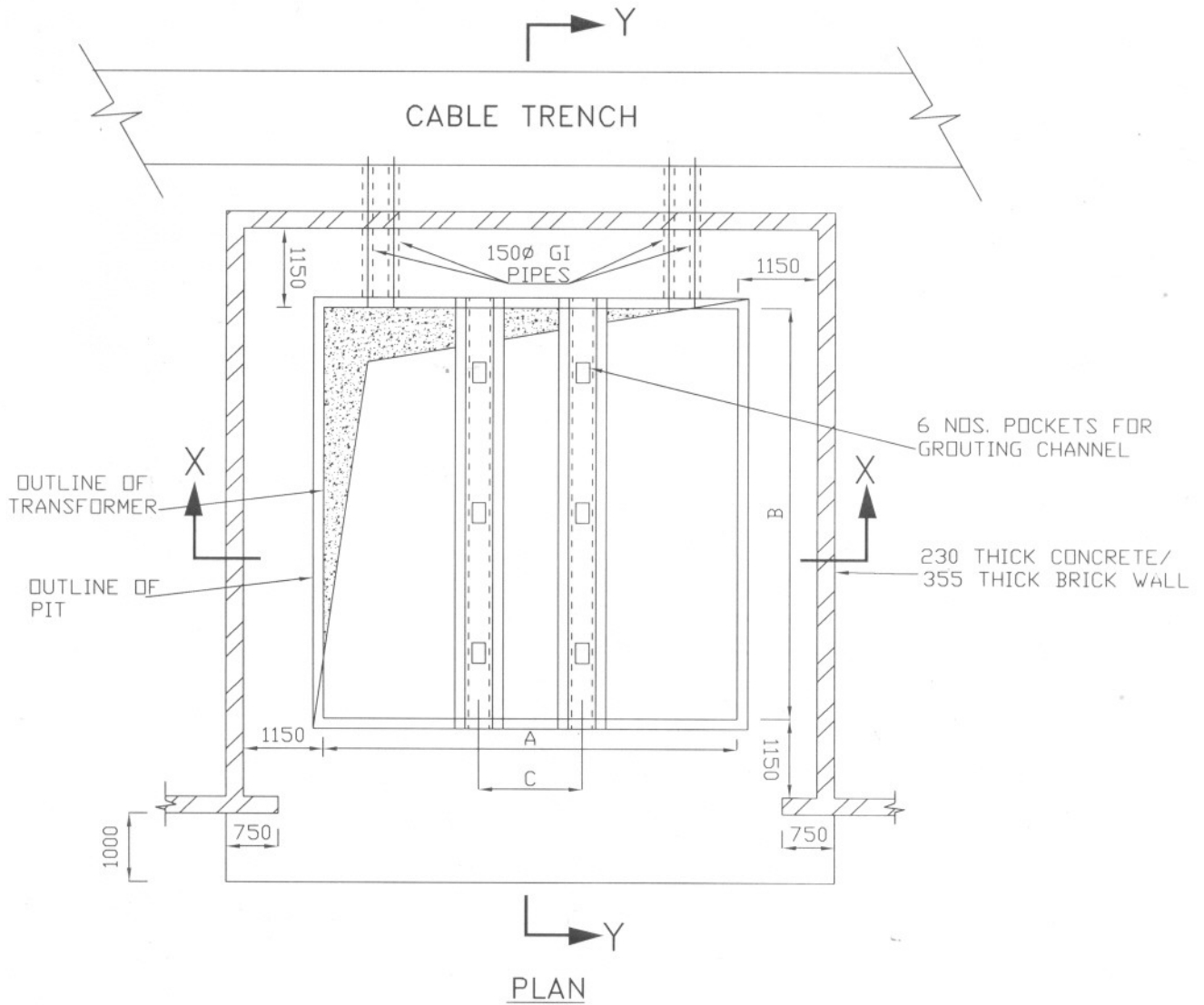
1. 4 hard copies & 1 soft copy shall be supplied with bid.
2. 4 hard copies & 1 soft copy shall be supplied for approval after order within 4 weeks from the date of LOI.
3. 8 hard copies & 2 soft copies in CD shall be submitted as final documents prior to despatch of the equipment. These shall be made in sets and supplied in fine plastic coated folder.

Y - Yes, N - No

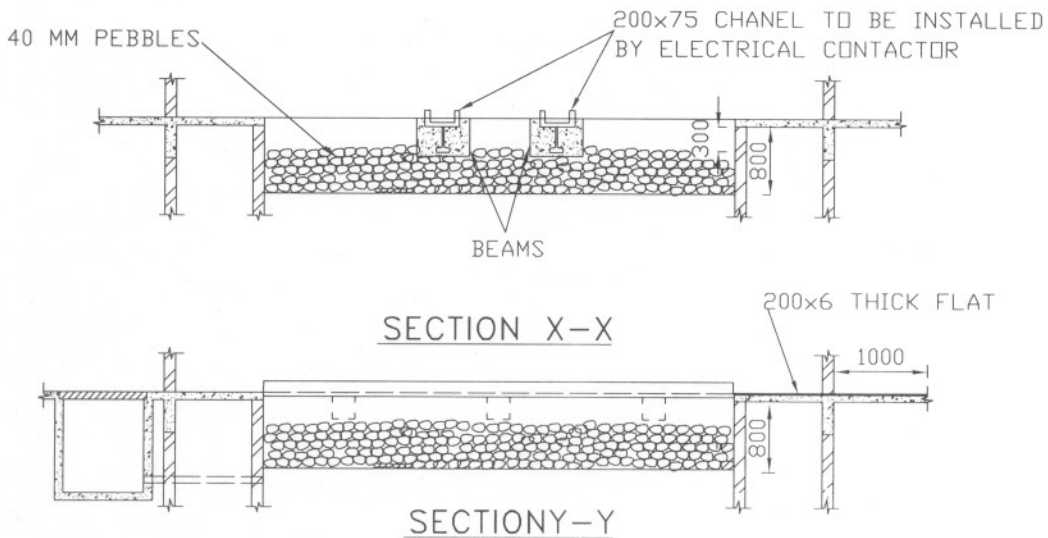


# FOUNDATION DETAIL OF 11/.433 KV TRANSFORMER

PDS:E 113	0
DOCUMENT NO.	REV
SHEET 1 OF 1	



## TYPICAL DETAIL OF 11/.433KV T/F



**NOTE :**

TRANSFORMERS RATED ABOVE 10MVA SHALL BE MOUNTED ON 200MM x 8MM THICK PLATES.

0	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	RUNDA/AV	SC	BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



# SUMP PIT FOR TRANSFORMER OIL

PDS:E 116

1

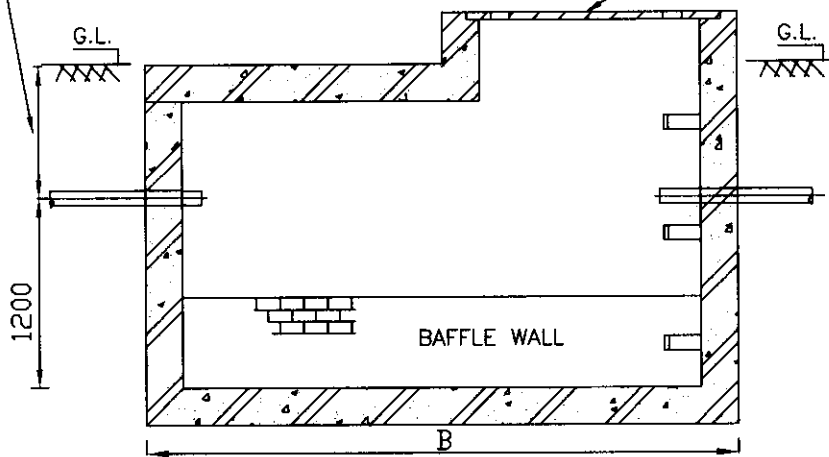
DOCUMENT NO.

REV

SHEET 1 OF 1

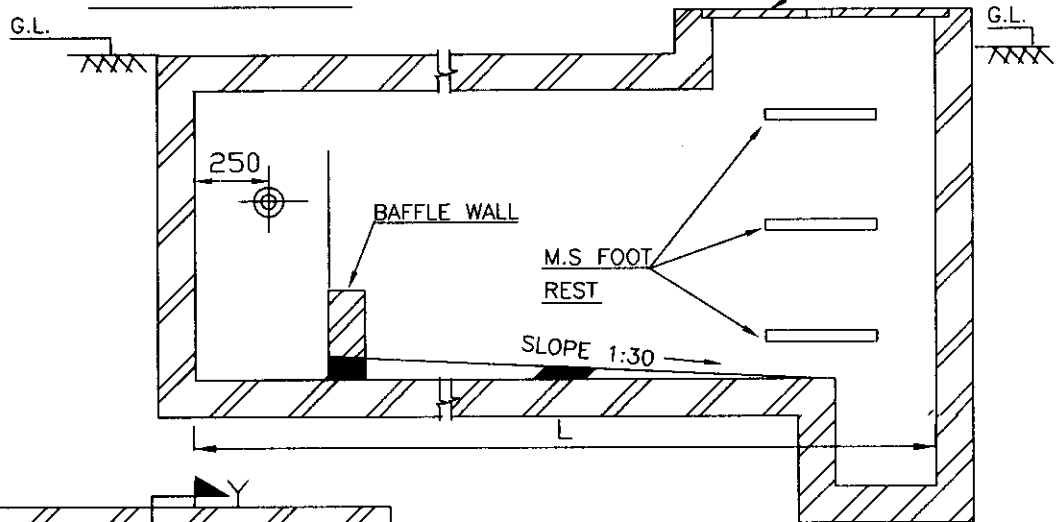
DIMENSION TO BE DECIDED  
BY CIVIL DEPT.

MAN HOLE WITH REMOVABLE  
C.I. COVER

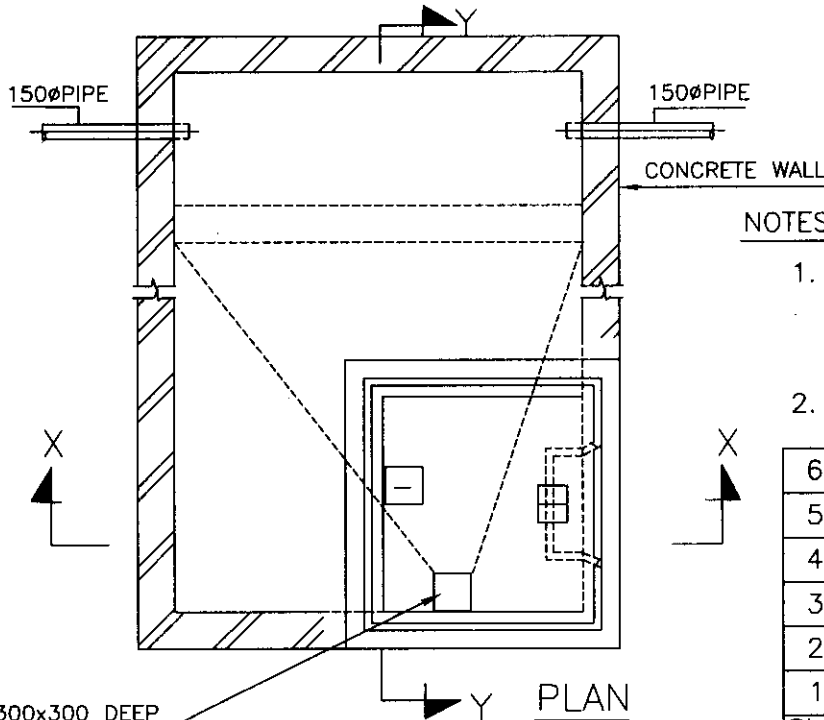


SECTION X-X

MAN HOLE WITH REMOVABLE  
C.I. COVER



SECTION Y-Y



300x300x300 DEEP  
SUMP PIT

PLAN

NOTES:-

1. DIMENSION 'L' AND 'B' SHALL BE DECIDED BASED ON OIL VOLUME OF HIGHEST RATED TRANSFORMER.
2. ALL DIMENSIONS ARE IN mm

6	2000	1.5	1.5
5	3000	1.5	2
4	5000	2.5	2
3	7000	3.0	2.5
2	8000	3.5	2.5
1	10000	4.0	2.5
SL. No.	OIL CAPACITY	L	B

1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	RUNDA	AV	BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



# GENERAL NOTES ON EARTHING AND LIGHTNING PROTECTION

PDSE: 601	0
DOCUMENT NO.	REV
SHEET 1 OF 2	

## A. GENERAL

1. EARTHING AND LIGHTNING PROTECTION SHALL BE CARRIED OUT IN ACCORDANCE WITH IS : 3043 AND IS : 2309 RESPECTIVELY AND SHALL ALSO CONFORM TO THE REQUIREMENTS OF INDIAN ELECTRICITY RULES.
2. THESE NOTES SHALL BE READ IN CONJUNCTION WITH EARTHING & LIGHTNING PROTECTION LAYOUT DRGS. AND RELEVANT EARTHING STANDARDS (PDSE)
3. THE SIZE OF EARTH CONDUCTORS & SYMBOLS SHOWN IN THE LAYOUT DRGS. SHALL AS PER PDSE: 602
4. AS FAR AS POSSIBLE, THE EARTH CONDUCTORS SHALL BE TAKEN ALONG POWER & CONTROL CABLE ROUTES.
5. EARTHING CONDUCTORS BURIED UNDER THE GROUND SHALL BE LAID ATLEAST 500 MM BELOW THE GROUND LEVEL UNLESS REQUIRED OTHERWISE, e.g FOR CROSSING ANY UNDER GROUND PIPE OR TRENCH ETC. WHERE THE EARTHING CONDUCTORS SHALL RUN AT A MINIMUM DEPTH 300 MM BELOW THE BOTTOM OF THE PIPE/TRENCH.
6. BARE ALUMINIUM CONDUCTORS SHALL NOT BE BURIED DIRECTLY UNDER THE GROUND.
7. TAPPING FROM THE UNDER GROUND EARTH GRID SHALL BE TAKEN ONLY FROM EARTH PIT OR A PIT WITHOUT ELECTRODE PROVIDED FOR THIS PURPOSE.
8. JOINTING OF UNDERGROUND EARTHING STRIPS SHALL BE AVOIDED TO THE EXTENT POSSIBLE. HOWEVER, IF JOINTING IS TO BE DONE DUE TO UNAVOIDABLE REASONS, THIS SHALL BE DONE BY ELECTRIC ARC WELDING.
9. TERMINAL JOINTING & CLAMPING ARRANGEMENT SHALL BE AS SHOWN IN PDSE:603. ALL WELDED OR BOLTED JOINTS SHALL BE PAINTED WITH EPOXY RESIN PAINT OR BITUMINOUS PAINT.
10. EARTH BUSES, AS PER CONVENIENCE, SHALL BE PROVIDED IN PLANTS FOR EARTHING GROUPS OF EQUIPMENT TO EARTHING GRID. THESE EARTH BUSES, SHALL BE AS SHOWN IN PDSE: 615.
11. DETAILS OF EARTH PIT CONNECTIONS & ACCESSORIES FOR EARTH ELECTRODES SHALL BE AS SHOWN IN PDSE :604, 605 , 610 AND 611.
12. EARTH PITS FOR EQUIPMENT EARTHING, SYSTEM NEUTRAL EARTHING & LIGHTNING PROTECTION SHALL BE SEPARATE. HOWEVER, THESE PITS SHALL BE INTERCONNECTED.
13. SPACING BETWEEN TWO EARTH PITS SHALL NOT BE LESS THAN 10 M & THESE MAY BE LOCATED ABOUT 4M AWAY FROM THE BUILDING / STRUCTURE.
14. TYPICAL ARRANGEMENT OF NEUTRAL & EQUIPMENT EARTHING SHALL BE AS SHOWN IN PDSE: 617.

## B. SYSTEM NEUTRAL EARTHING

1. THE NEUTRALS OF H.T & L.T SYSTEMS SHALL BE EARTHED BY USING 2 NOS. 150 SQ. MM ALUMINIUM CABLE OF RESPECTIVE VOLTAGE GRADE. EACH EARTH CONNECTION SHALL BE TERMINATED ON SEPERATE EARTH PITS. HOWEVER, FOR ECONOMY REASONS, 2 EARTH CONNECTIONS OF 2 DIFFERENT EQUIPMENT CAN BE TERMINATED ON THE SAME EARTH PIT AS SHOWN IN PDSE: 617.
2. THE NEUTRAL OF H.T. SYSTEM SHALL BE CONNECTED TO EARTH PIT AS ABOVE THROUGH THE NEUTRAL EARTHING RESISTOR (N.E.R.) AS REQUIRED, WHERE AS THE NEUTRAL OF L.T. SYSTEM SHALL BE SOLIDLY EARTHED THROUGH RESPECTIVE L.T. SWITCH BOARD.
3. FOR D.C. SYSTEM, POSITIVE POLE SHALL BE EARTHED THROUGH HIGH IMPEDANCE IN BATTERY CHARGER.

## C. ELECTRICAL EQUIPMENT EARTHING

1. ALL EQUIPMENT RATED ABOVE 250V SHALL HAVE TWO EXTERNAL EARTH CONNECTIONS & THOSE RATED 250V & BELOW SHALL HAVE ONE EXTERNAL EARTH CONNECTION.  
FLAME PROOF EQUIPMENT, IN ADDITION, SHALL HAVE ONE INTERNAL EARTH CONNECTION THROUGH ADDITIONAL CORE OF POWER / CONTROL CABLE.

0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION			
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



# GENERAL NOTES ON EARTHING AND LIGHTNING PROTECTION

PDSE: 601	0
DOCUMENT NO.	REV
SHEET 2 OF 2	

- EARTHING CONNECTION TO INDIVIDUAL EQUIPMENT SHALL BE TAPPED ONLY FROM THE EARTHING GRID / RING OR EARTH BUS EXCEPT FOR EQUIPMENT RATED 250V & BELOW, FOR WHICH THE CONNECTION MAY BE TAKEN FROM THE NEAR BY EARTH CONDUCTOR OF A LARGER EQUIPMENT OR FROM THE BODY OF THE LARGER EQPT.
- EARTHING ARRANGEMENT OF MOTOR AND ASSOCIATED LOCAL CONTROL STATION SHALL BE AS SHOWN IN PDSE: 608.
- EARTHING ARRANGEMENT OF RAILS SHALL BE AS SHOWN IN PDSE: 609 WITH BOTH ENDS EARTHED.
- CABLES RACKS/RISERS/TRAYS SHALL BE ELECTRICALLY CONTINUOUS BY BONDING THE JOINTS BETWEEN THE RUNNER MEMBERS OF THE ADJACENT SECTIONS. THE CABLE RACKS SHALL BE CONNECTED TO THE EARTHING GRID AT SUITABLE INTERVALS.
- EARTHING ARRANGEMENT OF LIGHTING FIXTURES & PLUG SOCKETS RATED 250V AND BELOW SHALL NOT BE SHOWN IN THE EARTHING LAYOUT DRGS. HOWEVER, PLUG SOCKETS SHALL BE EARTHED BY 10 SWG SIZE G.I./AL. CONDUCTOR TAKEN FROM THE NEAREST EARTHING GRID/CONDUCTOR AND LIGHTING FIXTURES SHALL BE PROVIDED EARTHING THROUGH CABLE ARMOURS.
- IN SWITCH YARD AND GENERATING STATIONS SUITABLE EARTHING MAT SHALL BE PROVIDED TO REDUCE THE VALUE OF STEP/TOUCH POTENTIAL TO PERMISSIBLE VALUE.
- SWITCH YARD FENCE SHALL BE CONNECTED TO EARTH AT A REGULAR INTERVAL, NOT EXCEEDING 10 M.

## D. STATIC EARTHING

- ALL PROCESS EQUIPMENT WHICH ARE LIKELY TO GET STATICALLY CHARGED, e.g. STORAGE TANKS, HIGH PRESSURE & MEDIUM PRESSURE VESSELS/PIPES, HIGH PRESSURE COMPRESSORS. HIGH PRESSURE STEAM EJECTORS ETC. SHALL BE EARTHED AGAINST STATIC CHARGE ACCUMULATION.
- EARTHING ARRANGEMENT ACROSS PIPE JOINTS/VALVES SHALL BE AS SHOWN IN PDSE: 612
- DETAILS OF EARTHING OF VESSELS SHALL BE AS SHOWN IN PDSE: 613.
- MOBILE EQUIPMENT, REQUIRING EARTHING AGAINST STATIC CHARGE, SHALL BE TEMPORARILY EARTHED AS SHOWN IN PDSE: 608.
- PIPE TRESTLE CARRYING PIPES WITH HYDRO CARBONS SHALL BE CONNECTED TO EARTH GRID AT REGULAR INTERVALS, NOT EXCEEDING 25 M.
- WHEREVER PROCESS EQUIPMENT ARE MOUNTED ON STEEL STRUCTURE, THE BASE OF THE STRUCTURES SHALL BE EARTHED INSTEAD OF EARTHING THE INDIVIDUAL EQUIPMENT.

## E. LIGHTNING PROTECTION

- FIXING ARRANGEMENT ON AIR TERMINATION AND ROOF/DOWN CONDUCTOR FOR LIGHTNING PROTECTION SYSTEM SHALL BE AS SHOWN IN PDSE: 614.
- FOR LIGHTNING PROTECTION OF TALL STEEL STRUCTURES/VESSELS/TANKS, DOWN CONDUCTOR SHALL BE TAKEN FROM THE BASE AND CONNECTED TO EARTH PITS. AIR TERMINATION ROD SHALL NOT BE REQUIRED.
- LIFT SHAFT SHALL NOT BE USED FOR FIXING THE DOWN CONDUCTOR.
- IN CASE EARTH PITS FOR CONNECTING THE DOWN CONDUCTORS ARE NOT AVAILABLE IN THE BEGINNING OF FABRICATION/ERECTION OF SUCH STRUCTURES/VESSELS / TANKS. THEIR BASES SHALL TEMPORARILY BE CONNECTED TO NEAR BY STEEL COLUMN. ELECTRICAL CONTINUITY OF THE STRUCTURES, HOWEVER, SHALL BE CHECKED AND ENSURED.
- FOR ALL HIGH RISE CONCRETE STRUCTURES, TEMPORARY LIGHTNING PROTECTION NEED BE PROVIDED DURING CONSTRUCTION AND MAINTAINED TILL PERMANENT LIGHTNING PROTECTION IS INSTALLED. FOR THIS PURPOSE THE VERTICAL REINFORCEMENT, PROJECTING OVER EACH LIFT, SHALL BE CONNECTED TO EARTH PITS BY MEANS OF 2 NOS. FLEXIBLE COPPER CONDUCTOR CABLES. EACH OF THE FLEXIBLE CABLE SHALL BE OF 95 Sq. mm SIZE HAVING ONE END PERMANENTLY CONNECTED TO EARTH PIT AND OTHER END PROVIDED WITH A CLAMP FOR CONNECTING TO THE EXPOSED REINFORCEMENT.

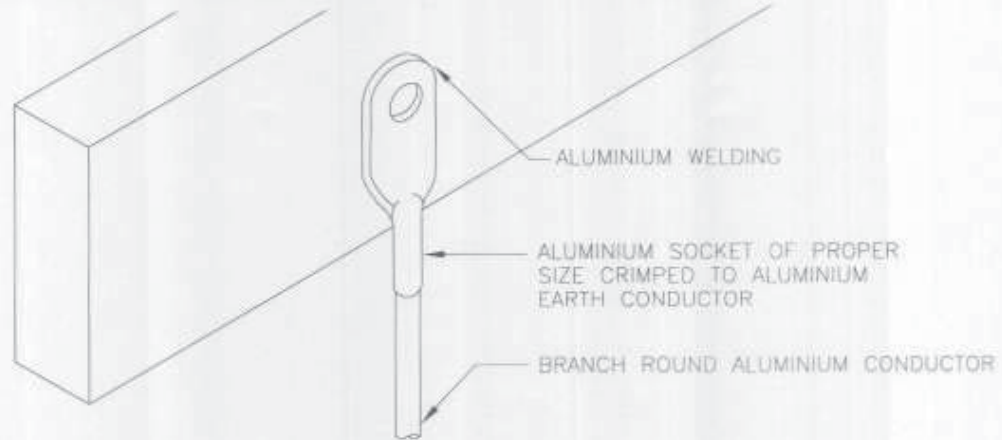
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	<i>USN</i> NKR	<i>Amul</i> AV	<i>BB</i> BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



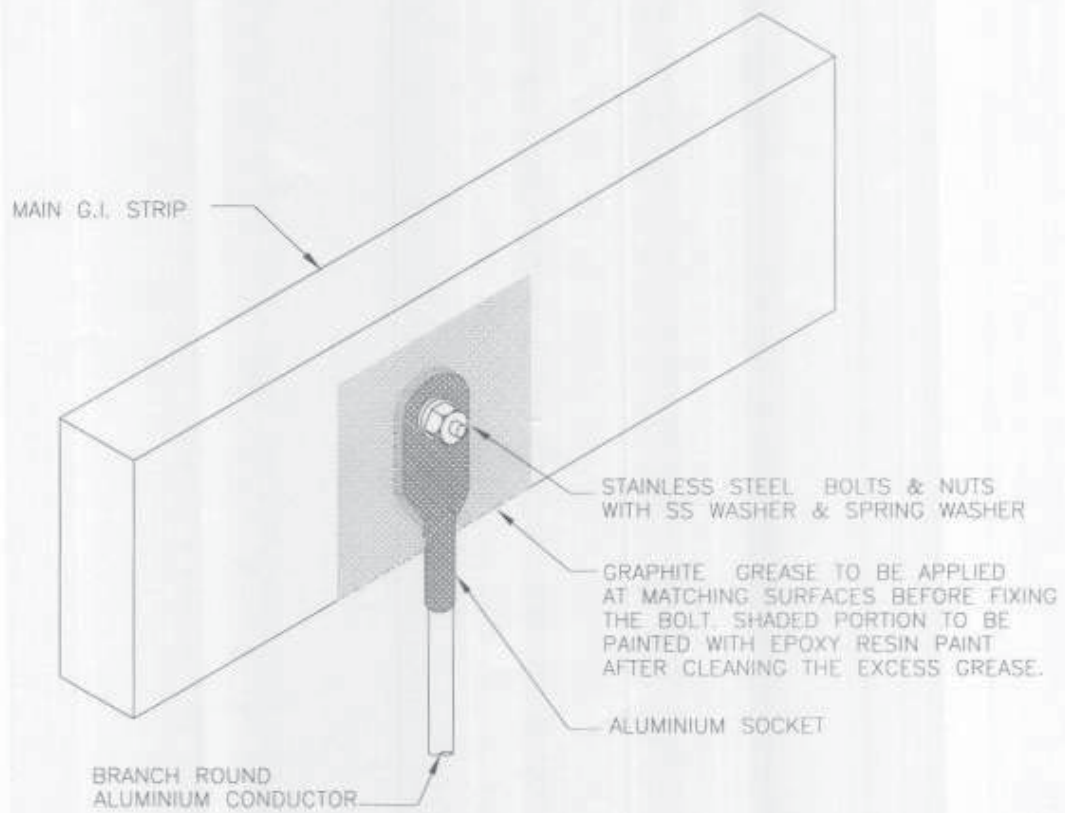


ARRANGEMENT OF CONNECTIONS  
OF EARTH CONDUCTORS  
(T-JOINT AL STRIP & GI STRIP TO ROUND AL CONDUCTOR)

PDS:E 603	0
DOCUMENT NO.	REV
SHEET 1 OF 6	



' T ' JOINT ALUMINIUM STRIP TO ROUND ALUMINIUM CONDUCTOR



' T ' JOINT G.I. STRIP TO ROUND ALUMINIUM CONDUCTOR

0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	<i>[Signature]</i> NKR	<i>[Signature]</i> AV	<i>[Signature]</i> BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD





ARRANGEMENT OF CONNECTIONS OF EARTH CONDUCTORS

( TERMINATION OF ROUND EARTH CONDUCTOR AT EQUIPMENT)

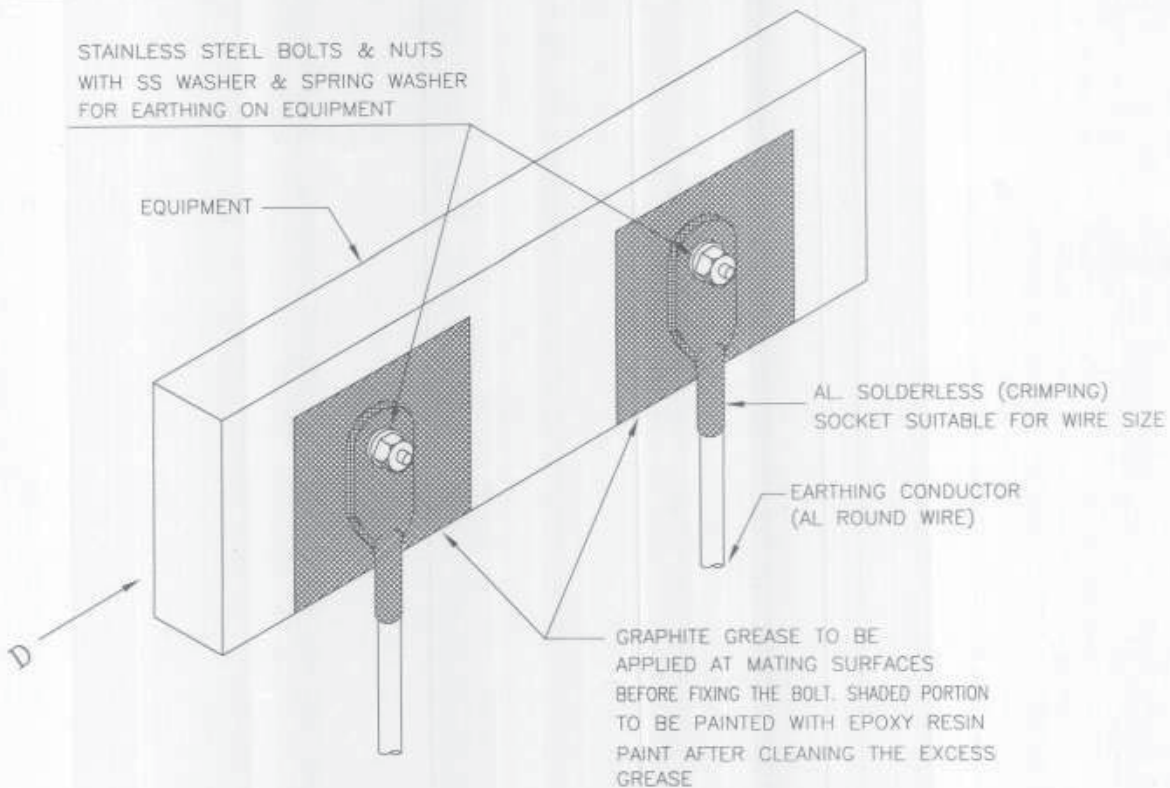
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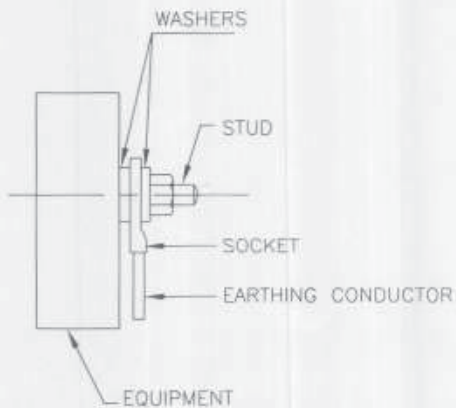
DOCUMENT NO.

REV

SHEET 2 OF 6



ARRANGEMENT OF DOUBLE EARTH CONNECTIONS TO EQUIPMENT



V I E W F R O M - D

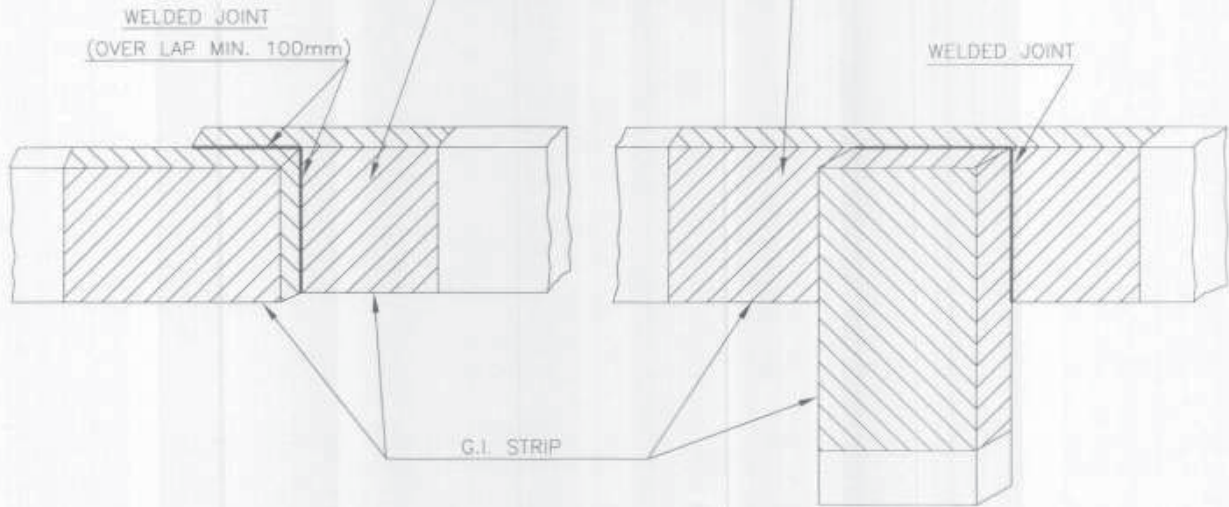
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REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



ARRANGEMENT OF CONNECTIONS OF EARTH CONDUCTORS  
(STRAIGHT & T - JOINT G.I. & AL. STRIP)

PDS:E 603	0
DOCUMENT NO.	REV
SHEET 3 OF 6	

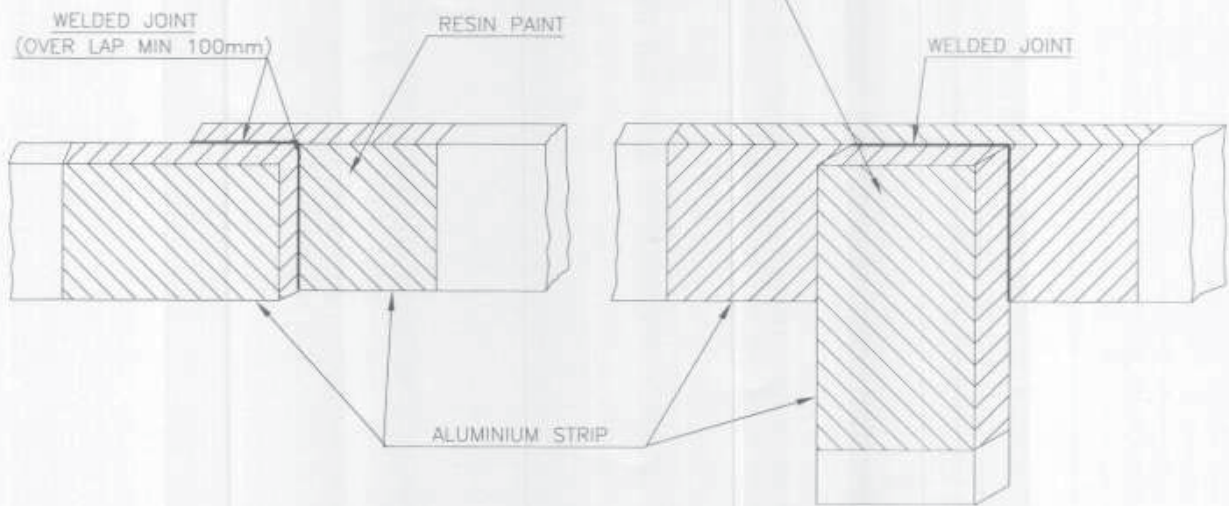
HATCHED PORTION TO BE PAINTED  
WITH BITUMINOUS PAINT AND TAPPED  
WITH BITUMINOUS HESIAN TAPE AFTER  
WELDING TO PREVENT CORROSION



STRAIGHT JOINT G.I. TO G.I. STRIP

" T " JOINT G.I. TO G.I. STRIP

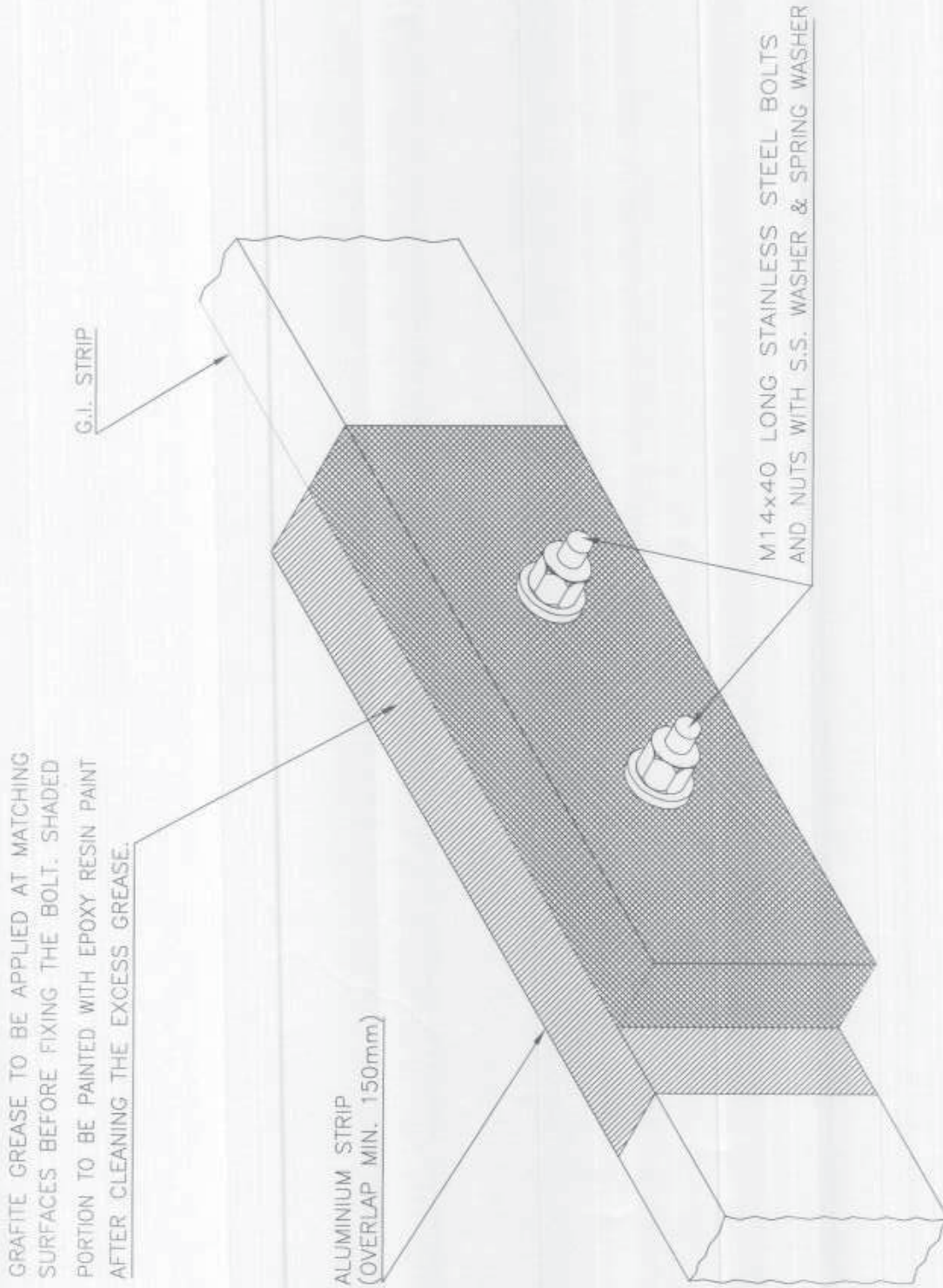
ALUMINIUM STRIP SHOULD BE CLEANED  
BEFORE WELDING THE COMPLETED JOINT  
SHOULD BE PAINTED WITH EPOXY



STRAIGHT JOINT AL. TO AL. STRIP

" T " JOINT AL TO AL STRIP

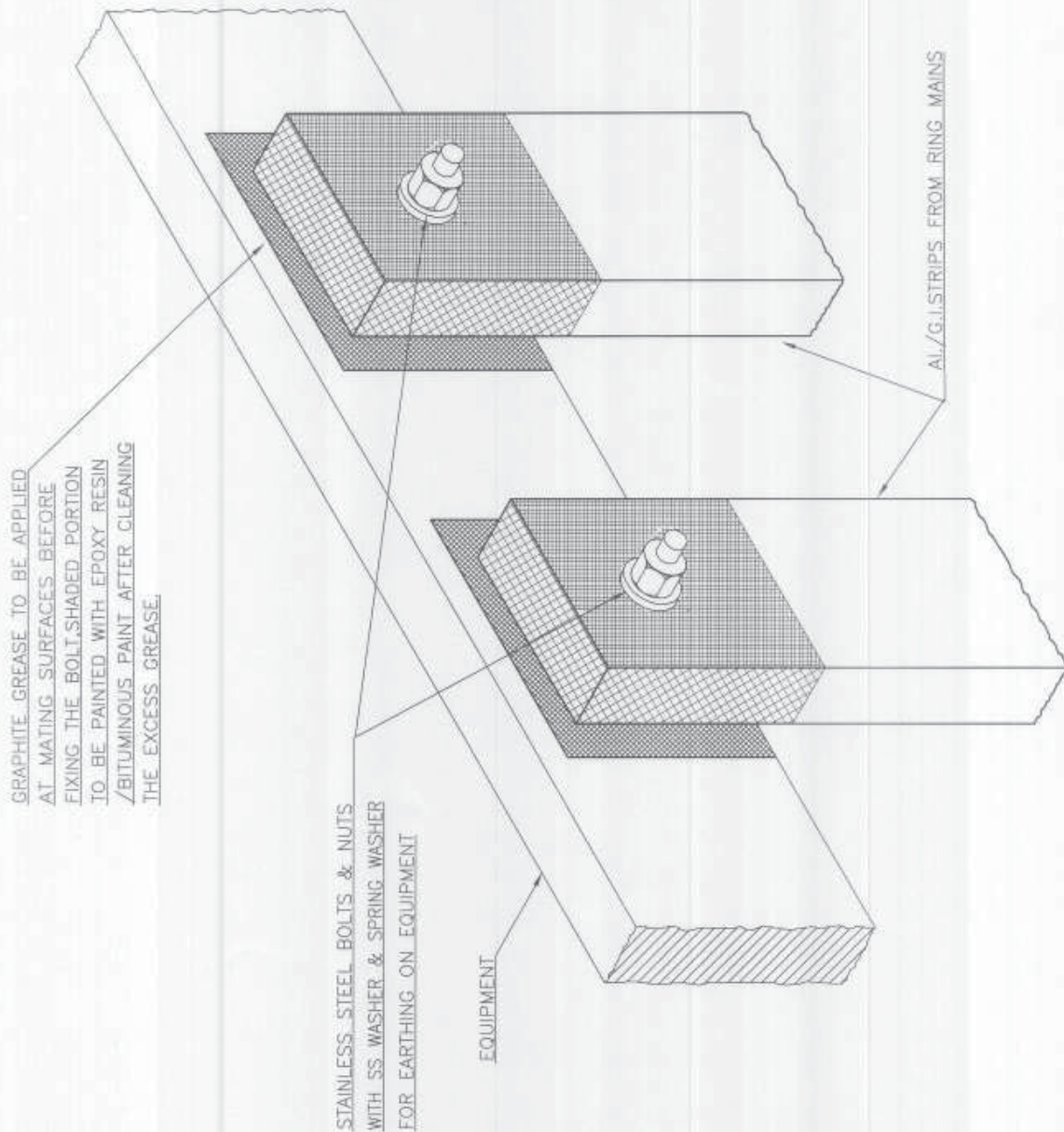
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REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



ARRANGEMENT OF LAP JOINT BETWEEN  
AL. EARTH STRIP TO G.I. EARTH STRIP

0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	<i>[Signature]</i> NKR	<i>[Signature]</i> V	<i>[Signature]</i> BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD





ARRANGEMENT OF DOUBLE EARTH CONNECTION ON EQUIPMENT

NOTE:-

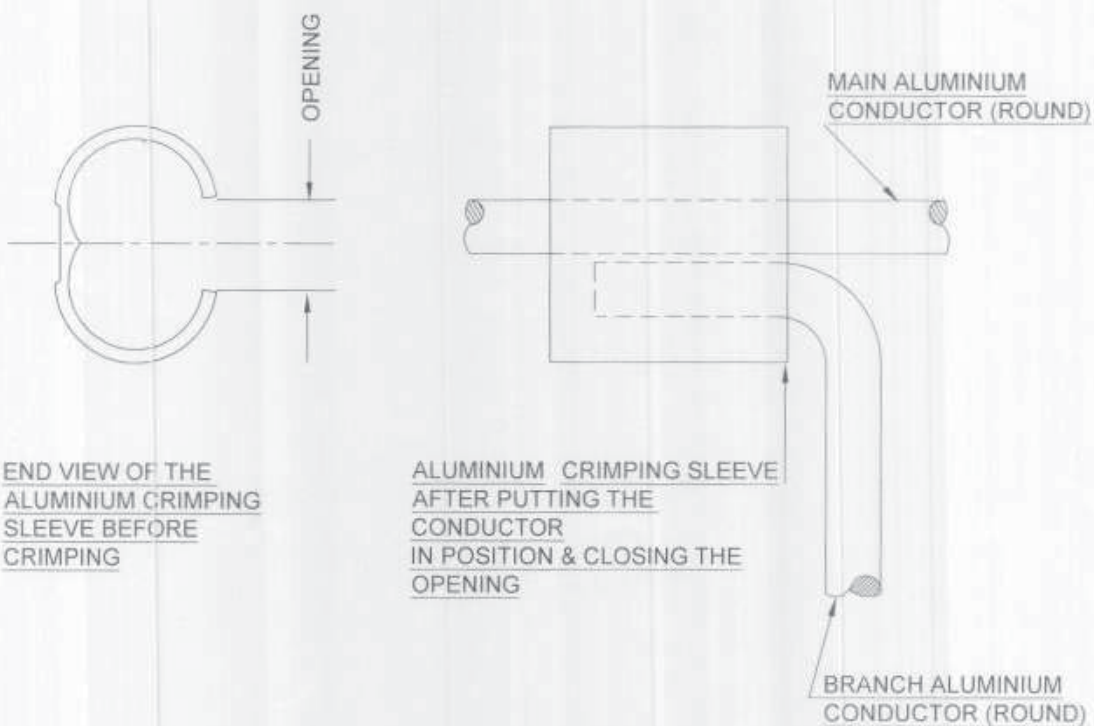
EPOXY RESIN PAINT SHALL BE USED FOR AL STRIP AND BITUMINOUS PAINT FOR G.I. STRIP.

0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION		NKR		AV		BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD			



ARRANGEMENT OF CONNECTIONS OF EARTH CONDUCTORS  
(CRIMPING OF ROUND TO ROUND ALUMINIUM CONDUCTORS)

PDS:E 603	0
DOCUMENT NO.	REV
SHEET 6 OF 6	



"T" JOINT ROUND ALUMINIUM CONDUCTOR TO ROUND ALUMINIUM CONDUCTOR ( CRIMPING TYPE )

NOTE :-

USE CORRECT SIZE OF COMPRESSION DIES.

0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR		BB
REV.	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



# TYPICAL DETAILS OF CONNECTIONS IN EARTH PIT

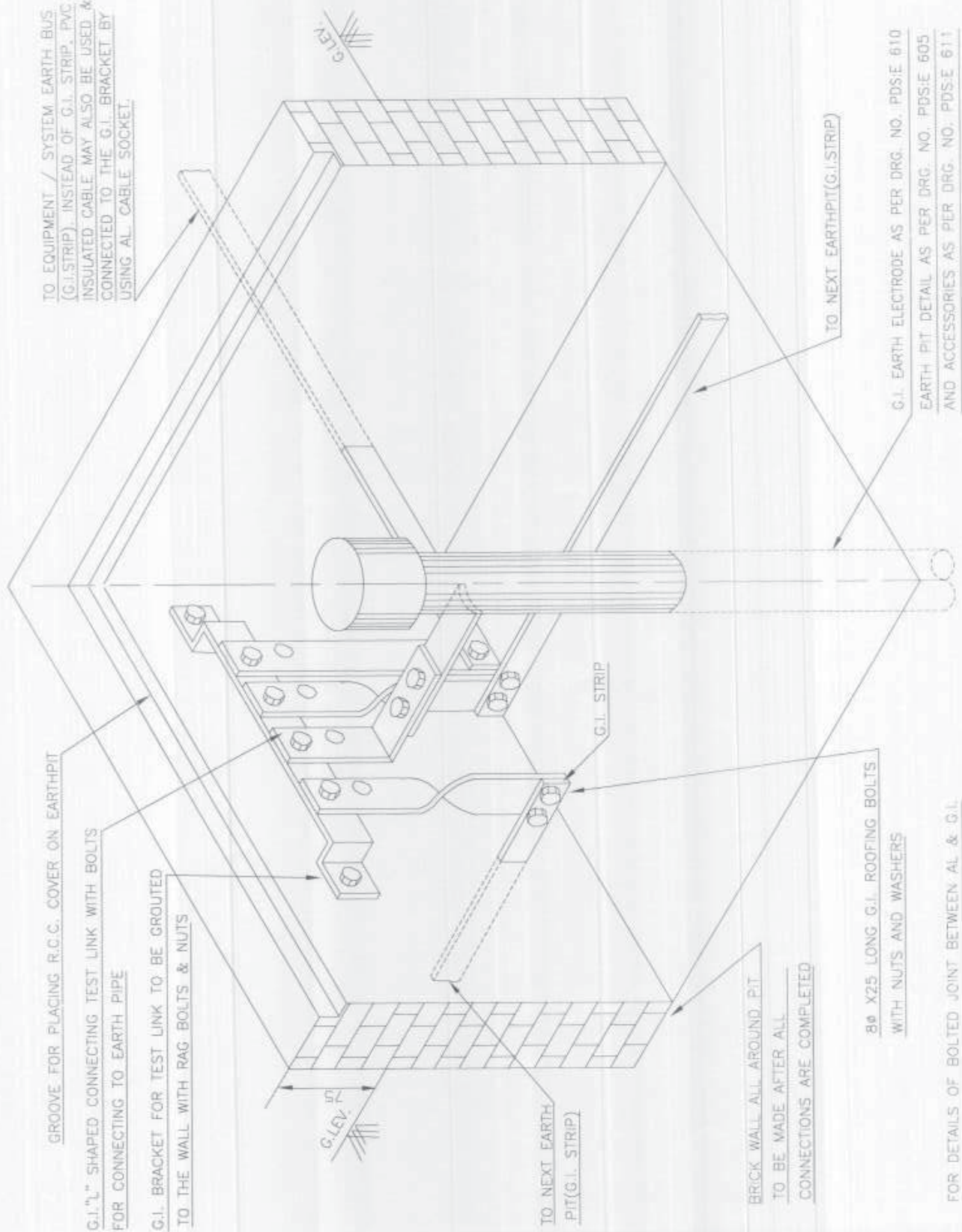
PDS:E 604

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DOCUMENT NO.

REV

SHEET 1 OF 1



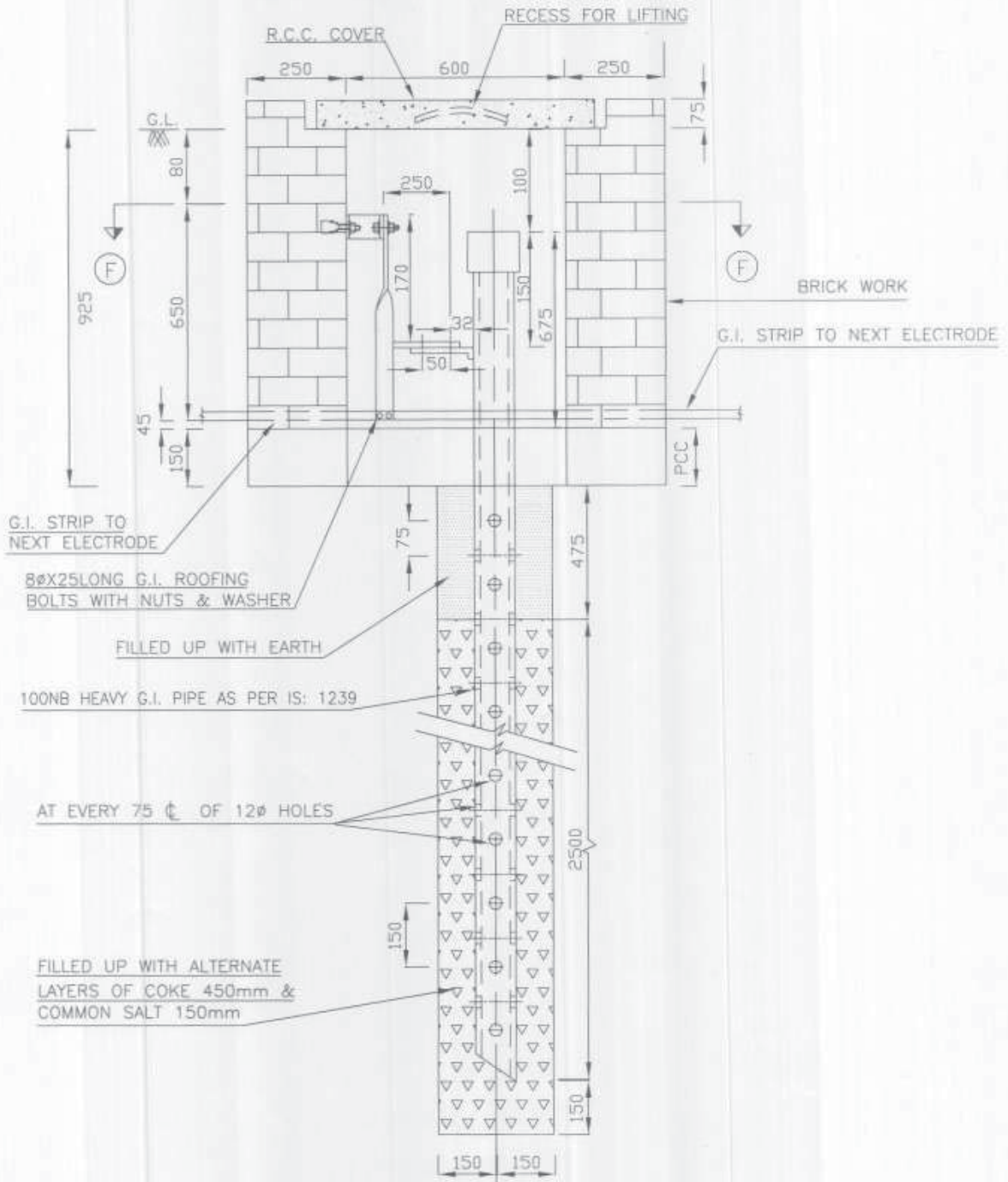
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REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD





# EARTH PIT DETAILS

PDS:E 605	0
DOCUMENT NO.	REV
SHEET 1 OF 2	



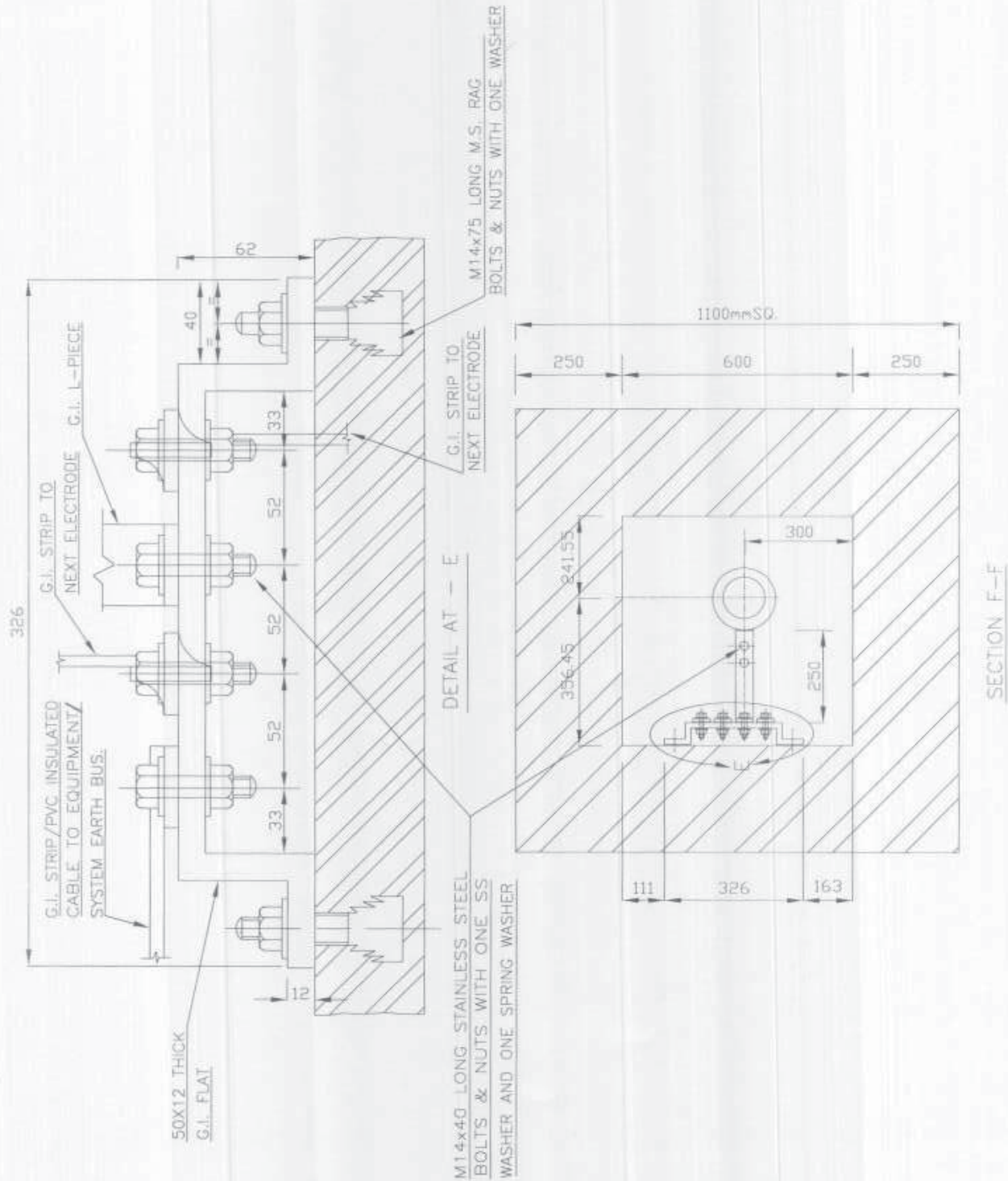
SECTIONAL ELEVATION OF EARTH PIT

0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	<i>NKR</i>	<i>AV</i>	<i>BB</i>
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



# EARTH PIT DETAILS

PDS:E 605	0
DOCUMENT NO.	REV
SHEET 2 OF 2	



0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	<i>NKR</i>	<i>AV</i>	<i>BB</i>
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



# 3.8M G.I. ELECTRODE FOR EARTHING

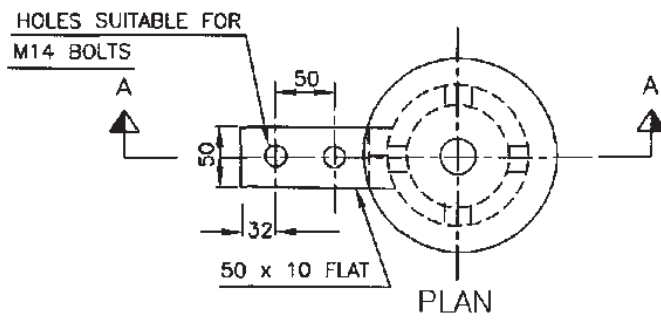
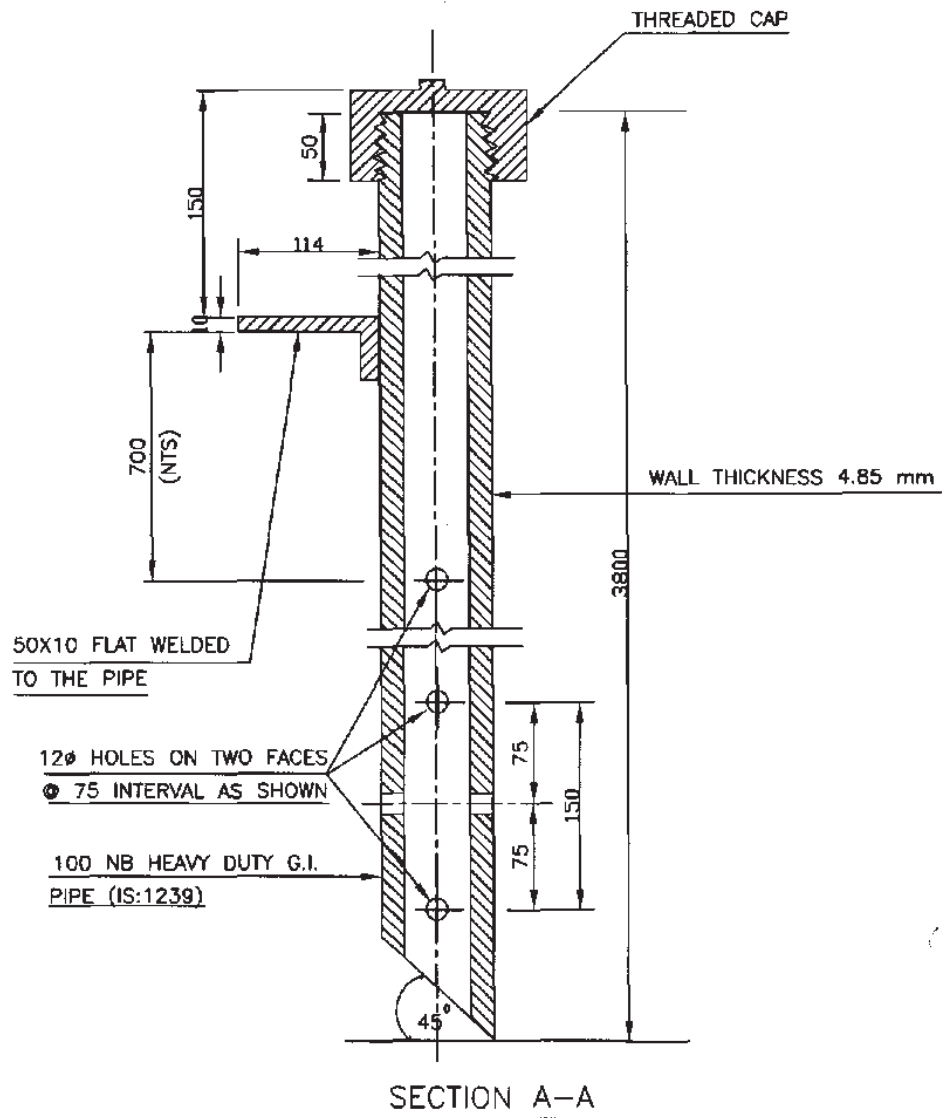
PDS:E 610

1

DOCUMENT NO.

REV

SHEET 1 OF 1



**NOTE:-**

- 12 $\phi$  HOLES WILL BE PROVIDED AT 75mm INTERVAL ON TWO FACES THROUGHOUT THE LENGTH OF PIPE. THE FIRST ONE SHALL START 700mm BELOW THE WELDED FLAT.
- ALL DIMENSIONS ARE IN mm.

1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	RUNDA	AV	BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



GI / AL. ACCESSORIES FOR  
EARTH PIT

PDS:E 611	0
DOCUMENT NO.	REV
SHEET 1 OF 2	



ELEVATION

326

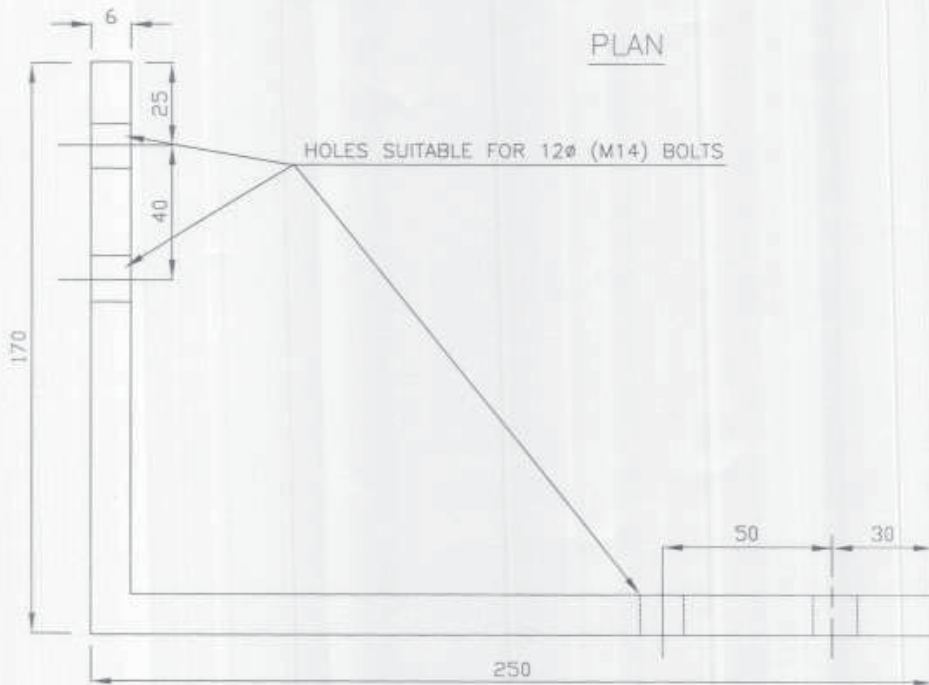
PLAN

G.I. TEST LINK

HOLES SUITABLE FOR 12Ø (M14) BOLTS



PLAN



ELEVATION

G.I. 'L' PIECE

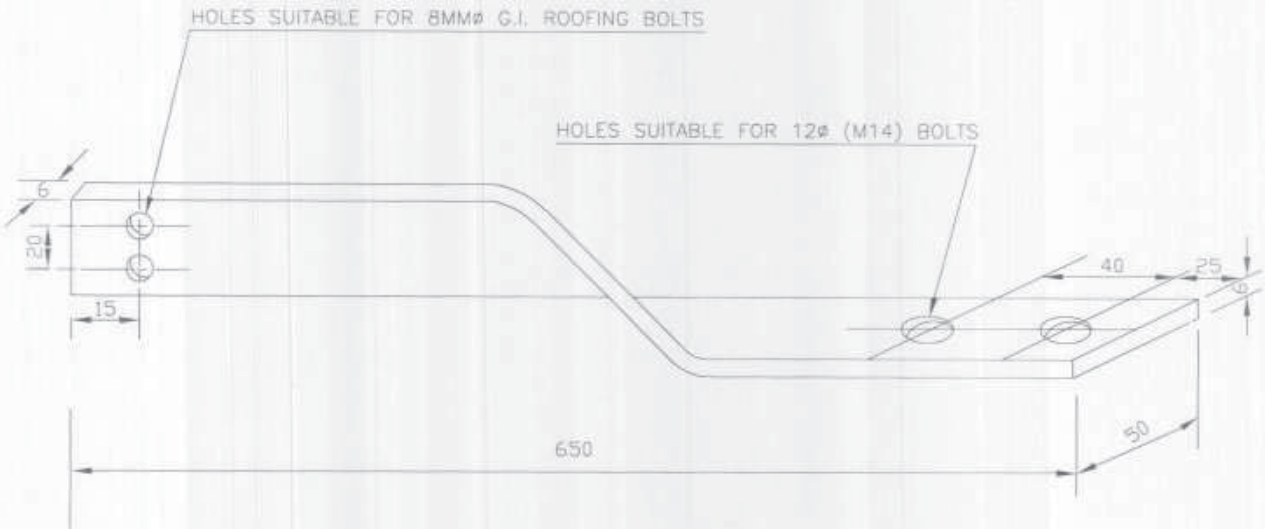
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REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



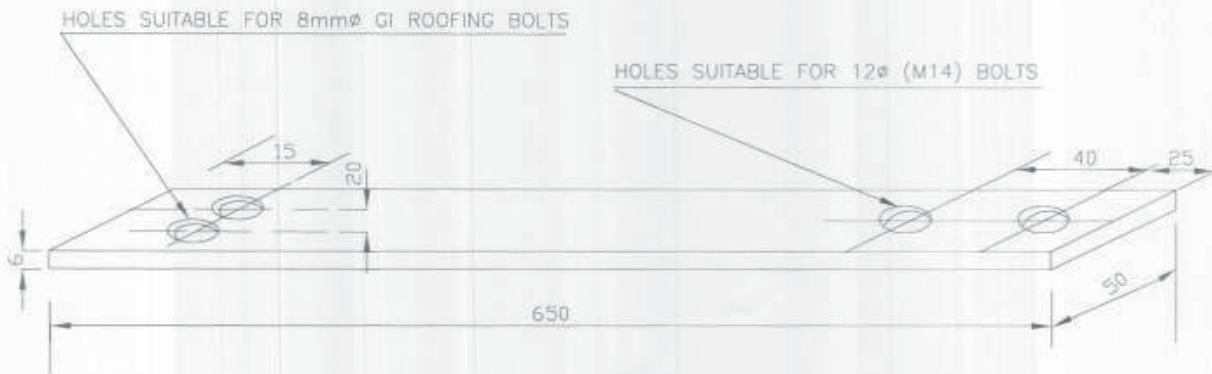


GI/AL. ACCESSORIES FOR  
EARTH PIT

PDS:E 611	0
DOCUMENT NO.	REV
SHEET 2 OF 2	



CONNECTING TWISTED ALUMINIUM FLAT PIECE



CONNECTING ALUMINIUM / G.I. FLAT PIECE

0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	<i>NKR</i>	<i>AV</i>	<i>BB</i>
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD



G.I. EARTH BUS

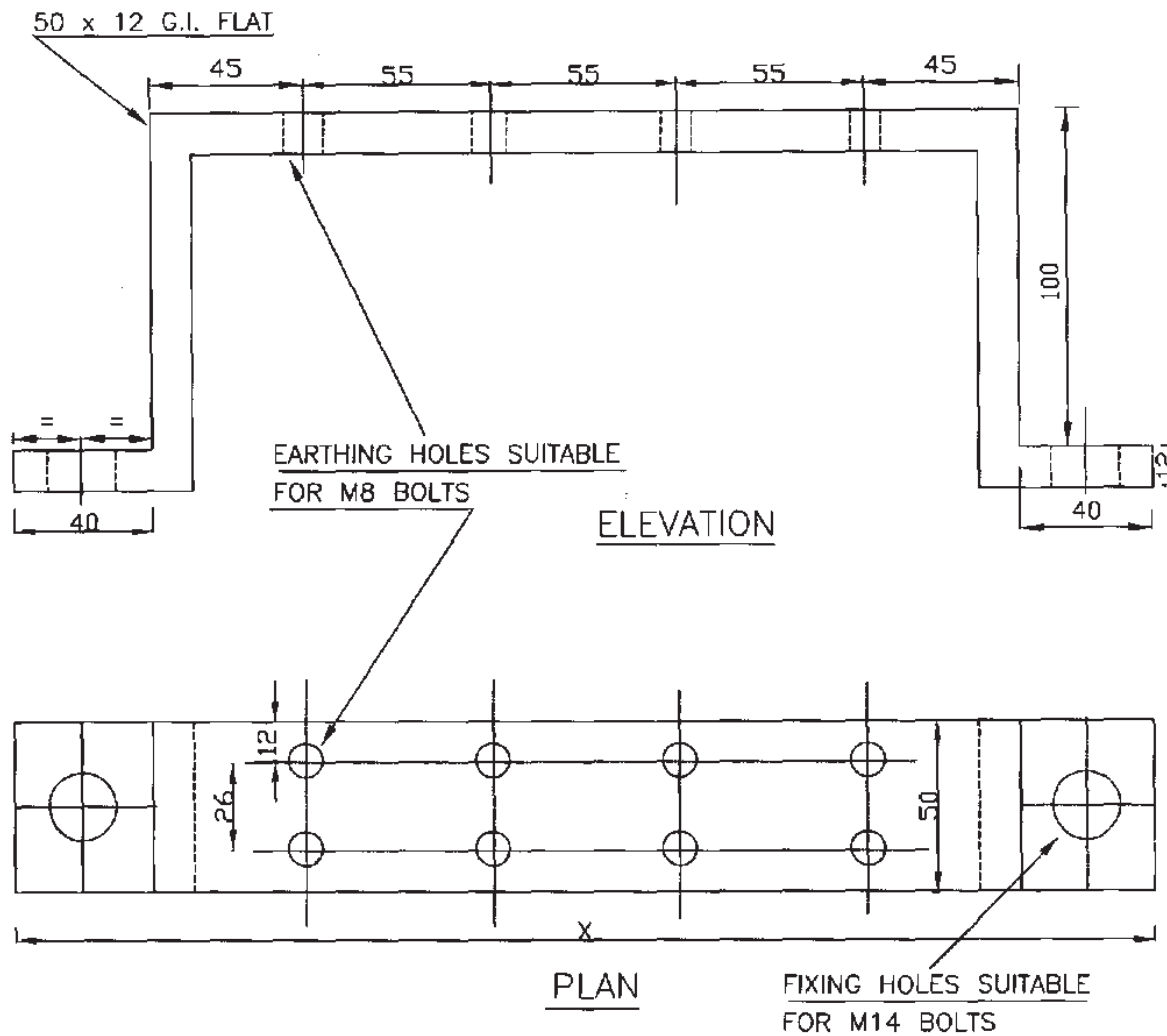
PDS:E 615

1

DOCUMENT NO.

REV

SHEET 1 OF 1



TYPE OF EARTH BUS	NO.OF EARTHING HOLES	OVERALL LENGTH x (mm)
1	8	335
2	10	390

NOTES:-

1. LOCATION OF EARTH BUS TO BE DECIDED AS PER EQUIPMENT POSITION AT SITE.
2. EARTH BUSES SHALL BE LOCATED ON STRUCTURES/COLUMNS WALLS/EQUIPMENT FOUNDATION ETC.
3. MOUNTING HEIGHT OF EARTH BUS SHALL NOT BE LESS THAN 500mm FROM FINISHED FLOOR LEVEL
4. ALL DIMENSIONS ARE IN mm

1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	<i>[Signature]</i> RUNDA	<i>[Signature]</i> AV	<i>[Signature]</i> BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REWD	APPD





# TYPICAL ARRANGEMENT FOR NEUTRAL AND EQUIPMENT EARTHING

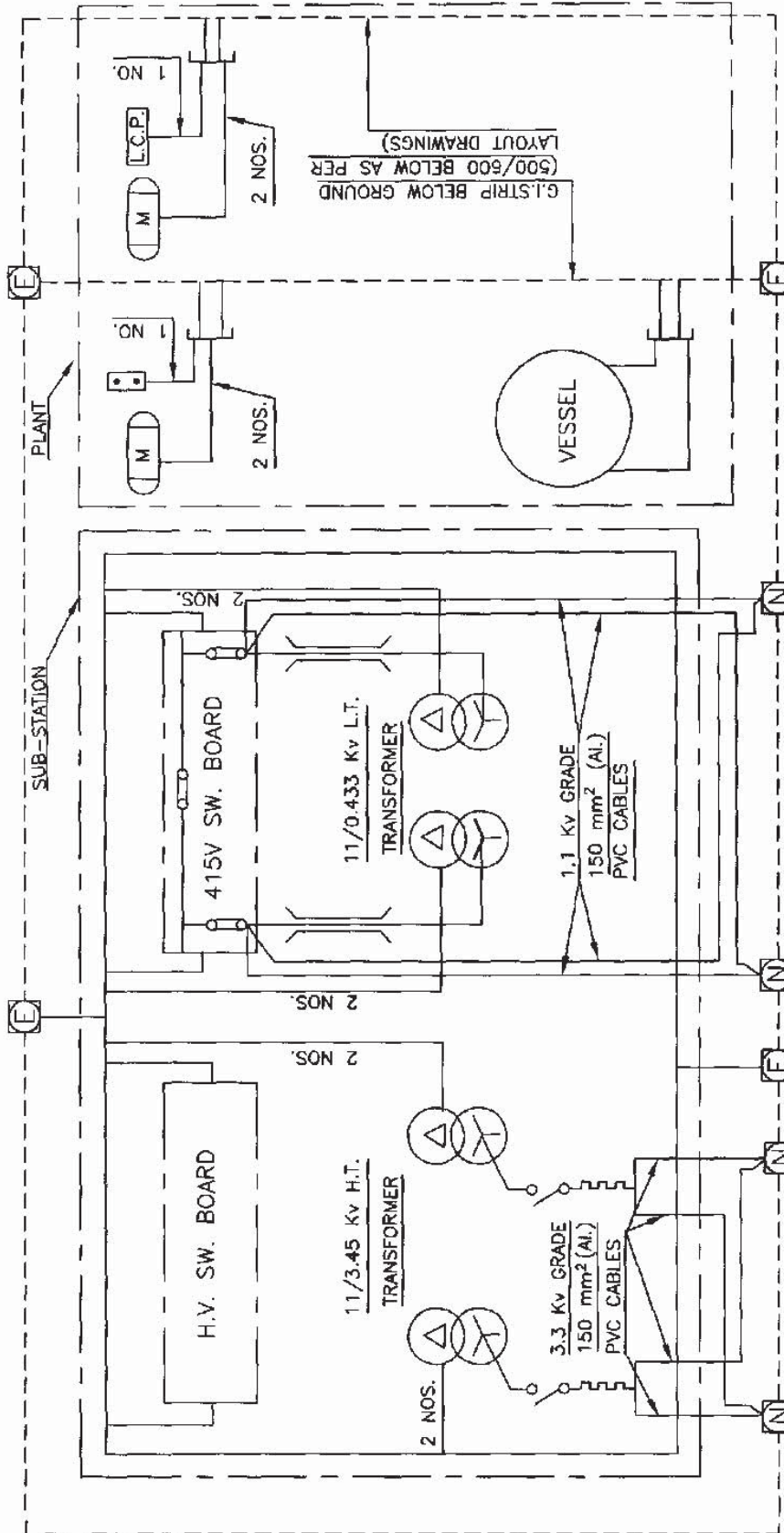
PDS:E 617

1

DOCUMENT NO.

REV

SHEET 1 OF 1



**REF. DRGS.**

- 1. EARTH PIT DETAILS - PDS:E 605
- 2. EARTH CONDUCTOR SIZES - PDS:E 602 (2 SHEETS)

**NOTE :-**

EARTH BUS SHALL BE 500 ABOVE FROM FLOOR LEVEL


**LEGEND**

- MOTOR
- LOCAL CONTROL PANEL
- LOCAL CONTROL STATION
- NEUTRAL EARTH PIT
- EARTH PIT FOR SYSTEM
- NEUTRAL LINK
- TPN BUS DUCT
- NEUTRAL EARTHING RESISTOR
- SWITCH
- EARTH BUS

1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	RUNDA	AV	BB
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD


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		DOCUMENT NO	REV
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## **GENERAL GUIDELINES FOR EXECUTION OF CIVIL & STRUCTURAL WORKS**

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## 1.00 GENERAL

- 1.01 The plans have been evolved tentatively based on information available with Owner / Consultant but the dimensions and details etc. are liable to changes. The Tenderers shall not be entitled to claim any higher rate or compensation on this account. The tender drawings are intended mainly to give an indication of the probable type of construction. The successful Tenderers will, however, be required to execute the work as per detailed drawings which are to be prepared and supplied by the them progressively and approval shall be concur by the Owner/PMC. Owner reserves the right to add / delete any of the building works mentioned in the N.I.T., during the currency of the contract.
- 1.02 The Tenderers shall note that the quantities of the different Items, as given in the "Schedule of Rates" are tentative based on tentative tender drawings and are subject to variation and they shall not be entitled to claim any higher rate or compensation on this account. Owner / Consultant reserve the right to change / modify the size and type of sections at any time. Owner / Consultant do not guarantee work under each item of the Schedule of Quantities.
- 1.03 The Tenderers shall be fully responsible for the correct setting out and execution of the work in accordance with approved drawings. All tools, tackles, construction equipments etc., required for the successful execution / construction of the complete work, shall be responsibility of the Tenderers.
- 1.04 The quantities given in the "Schedule of Rates" are approximate and are given only for the guidance for quoting rates. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. Unless otherwise specified, measurements of quantities shall be taken as per Indian Standards IS: 1200.
- 1.05 The rates to be inserted in the "Schedule of Rates" are to be inclusive of the value of the work described under several items including all costs and expenses which may be required for the construction of the work described together with all taxes, general risks, liabilities and obligations such as temporary buildings / hutments, fencing, watching, lighting, insurance, labour regulations, indemnity, maintenance and the like. The prices shall be inclusive of all labours, materials, tools, plants, equipment, hoists, tackles, scaffoldings, the sundries, etc., as may be necessary for the completion of the work in all respects.
- 1.06 No work shall be undertaken at site until detailed drawings have been approved by the Owner / Consultant in writing. The Contractor shall submit design calculations in excel sheet along with the drawings for approval.
- 1.07 Any fabrication / construction done before final approval of the drawings shall be the Contractor's responsibility. For structural steel items, preparation of fabrication drawings shall be under scope of the contractor without any cost to owner.
- 1.08 In case of any discrepancy between the description of items given in the "Schedule of Rates" and Specifications, drawings and other documents, the decision of the Owner

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/ Consultant in writing shall be final, binding and conclusive for the purpose of this contract.


- 1.09 The term "Design and drawings" mentioned in the description of Items in the "Schedule of Rates" means the detailed approved design drawings marked "Good for Construction".
- 1.10 The work "As described", "As shown", "As directed" or "As approved", "As mentioned" in the description of Items shall mean as directed in design or detailed drawings and as directed by the Engineer-in-Charge.
- 1.11 The Owner shall furnish the Contractor with only reference points of the job site and a level bench mark of nearby site, and the Contractor shall at his own cost and initiative, set out the works to the satisfaction of the Engineer-in-Charge but shall solely be responsible for the accuracy of such setting up notwithstanding satisfaction as aforesaid of the Engineer-in-Charge or any other assistance rendered by the Engineer-in-Charge for the purpose.
- 1.12 The Contractor shall provide, fix and be responsible for the maintenance of all stakes, templates, level marks, profiles and the like and shall take all precautions necessary to prevent their removal or disturbance, and shall be responsible for the consequence of such removal or disturbance and for their efficient and timely reinstatement. The Contractor shall also be responsible for the maintenance of all survey marks, boundary marks, distance marks and centre line marks, whether existing or supplied / fixed by the Contractor.
- 1.13 Before commencing the work, the Contractor shall at his own cost and initiative provide all necessary references, level posts, pegs, bamboos, flags, ranging rods, strings and other materials for proper layout of the work in accordance with the scheme for fixing bench marks acceptable to the Engineer-in-Charge. The centre of longitudinal or face line and cross line shall be marked by means of small masonry pillars. Each pillar shall have distinct mark at the center to enable a TOTAL STATION to be set over it. No work shall be started until all these points are approved by the Engineer-in-Charge in writing.
- But such approval shall not relieve the Contractor of any of his responsibilities in respect of the adequacy or accuracy, thereof. The Contractor shall also provide all labour, material and other facilities necessary for the proper checking of layout and inspection of the points during construction.
- 1.14 Pillars bearing geodetic marks located at the site / unit of works under construction should be protected and fenced by the Contractor.
- 1.15 On completion of works, the Contractor must submit to the Engineer-in-Charge the geodetic documents according to which the work was carried out.
- 1.16 The Contractor shall be exclusively responsible for the provision and maintenance of horizontal and vertical alignments and levels and for the correctness of every part of the work in accordance there with and shall at his own cost rectify any errors or imperfections therein.

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- 1.17 The Contractor shall at all times during the progress and continuance of the works be responsible for and effectively maintain and uphold in good, substantial, sound and perfect condition of all / and every part of works and shall make good from time to time and at all times as often as the Engineer-in-Charge shall require any damage or defect that may during the above period arise in or be any way connected with works.
- 1.18 The Contractor shall maintain adequate drainage facilities at the work site at all times during the execution of the work.
- 1.20 No compensation shall be made by the Owner / Consultant for any damage done by rain or traffic during the execution of the work.
- 1.21 The Contractor shall afford all reasonable facilities such as scaffolding etc., and cooperation to the various other agencies and Contractors, for services not included in this contract, who may be working on the site simultaneously so that entire work can proceed smoothly and simultaneously to a successful completion. The Tenderer must take all the aforesaid factors into consideration while quoting his rates. Nothing extra shall be paid on any ground out of or relating to the aforesaid factors.
- 1.22 For details of works, materials and workmanship, attention is invited to the "Schedule of Rates", Scope Drawings, Special Conditions of Contract, Materials and Job Specifications, this section, etc. and the Tenderers must quote the rates keeping in full view the requirement of the said documents.
- 1.23 Except otherwise clearly stated, CPWD Specifications with Correction Slips ( latest) shall be followed in all Civil, Structural and other allied Works and in absence of CPWD Specifications for any work, relevant Indian Standard codes of practices (latest) shall be followed. Where there are no Specifications available for any work either in CPWD Specifications or in IS Codes of practices, the work shall be carried out as per the direction of Engineer-in-Charge.
- 1.24 The following notations have been used throughout the "Schedule of Rates" and Materials and job Specifications:

1.	Cu.M	Cubic Metre
2.	Sq.M	Square Metre
3.	m.	Metre
4.	mm	Millimeter
5.	Cm. / Cms.	Centimeter / Centimeters
6.	No. / Nos.	Number / Numbers
7.	Tonne / Te.	Metric Tonne
8.	Kg.	Kilogram
9.	RCC	Reinforced Cement Concrete
10.	PCC	Plain Cement Concrete



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1.25 The quoted rates shall be applicable for all heights, depths etc. except otherwise clearly stated in the description of items and nothing extra shall be paid to the contractor on this account.

1.26 Description of items and mode of measurement for payment indicated herein shall override those given elsewhere if these are at variance.

1.27 Any materials / accessories / fittings etc. which may not be specifically mentioned in the description of items but which are normally used or necessary are to be provided by the contractor without any extra cost to Owner / Consultant and the work must be completed in all respects.

## **2.00 DEFINITION OF PLINTH**

2.01 The portion of a structure between the surface of the finished ground and the surface of the floor immediately above the ground will be considered as plinth, which is generally 300 mm to 600 mm above finished ground level of the site area.

2.02 Plinth Level as shown in the drawing shall be treated as plinth level for the purpose of payment.

## **3.00 MATERIALS**

3.01 The supply / procurement of all materials, required for the job, shall be the responsibility of the Contractor unless otherwise stated in the "Schedule of Rates" and elsewhere in the tender documents. The quality of the materials procured by the Contractor shall be subject to the approval of Engineer-in-Charge or his authorized representative before the materials are allowed to be used in the works. All the materials to be procured by the Contractor shall be in conformity with the CPWD Specifications with correction slips (latest) and in absence of which as laid down in the relevant Indian Standard Codes of practices (latest).


3.02 Transport of all materials shall be the Contractor's responsibility and it shall be at their own risk and cost.

3.03 The Engineer-in-Charge shall determine the suitability of materials to be used on the job and the Contractor shall get all materials approved by the Engineer-in-Charge. Any material procured and brought to site by the Contractor, found not to conform to the specifications and does not meet the approval of the Engineer-in-Charge, for use, will be rejected, and the Contractor shall remove and dispose off the same at his own cost and he shall not have any claim for compensation in this regard.

## **4.00 TESTS**

4.01 According to the nature and importance of works or as per IS code requirements, Owner / Consultant will demand the conduct of tests on concrete and other building materials etc., in which case the Contractor shall get the same done at his own cost in a laboratory to be approved by the Owner / Consultant.

4.02 Providing and operating necessary measurements and testing devices, materials and


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consumables are included in the scope of work and the rates quoted shall be deemed to include the cost of such tests which are required to ensure achievement of specified quality of work.

## 5.00 EXECUTION OF WORK

### 5.01 EARTH WORK

- a. The prices for all excavations shall include for removing and clearing away all shrubs, bushes, roots etc.
- b. The prices for all excavations shall also include for all leveling and ramming foundation beds, trimming of sides and bottom, grading to proper level as required.
- c. Removal and carrying shall include for all loading, unloading and handling as may be necessary and also all necessary means of transport (Mechanical or animal or manual) as required.
- d. The prices are also to include removal of water caused by rain, seepage, spring due to water table or any other cause, either by pumping or by bailing, that may accumulate in the trenches, foundations, pits, etc. It is likely that the subsoil water may encounter during excavation. The Contractor shall be responsible to remove all water accumulated in trenches, foundations, pits, etc. due to subsoil seepage, rainwater or from any other sources. For the above reasons, if the Contractor is required to install some special type of dewatering system, the same shall be arranged by the Contractor at his own cost and nothing extra shall be payable. The Contractor shall be fully responsible for removal of all water from the working area including necessary shoring and strutting, etc., wherever required, in order to maintain safe working condition and good engineering practice at his own cost and nothing extra shall be paid on this account.
- e. Where excavations are made in excess of the depth required the Contractor shall, at his own expenses, fill up to the desired level with lean concrete of nominal mix. 1:5:10 (1 cement: 5 coarse sand : 10 graded stone aggregate 40 mm nominal size).
- f. In case of hard / dense soil, the last 150 mm depth of such depth specified in the drawing or decided by the Owner shall be excavated just prior to the laying of plain cement concrete bed.
- g. In case surplus excavated materials are to be disposed off at different leads as per items in the "Schedule of Rates" the distance for such disposal shall be measured over the shortest practicable route as decided by Engineer-in-Charge and not necessarily the route actually taken by the Contractor for disposal. For the purpose of measurement of lead, the area excavated shall be divided into blocks (mutually agreed) and for each block the distance from center of the block to center of disposed material pertaining to this block shall be taken.

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- h. For payment of Earthwork in foundations / pits / trenches, etc., the excavation in earthwork volume shall be calculated by multiplying the base area as per the dimensions of mat (lean) concrete indicated in the drawing for different foundations by the specified depth of excavation considering vertical cut up to the bottom of mat concrete level from ground level. Extra excavation carried out by the Contractor with sloping sides or with larger base area or with extra deepening of trenches / pits / foundations, etc. for working convenience shall not be measured and paid for.


The payment for back filling and disposal of surplus excavated material shall also be made on the same basis as that for excavation. Therefore excavation, back filling and disposal of surplus earth resulting from the excavation over the mat concrete dimensions and for the depth beyond bottom level of mat concrete as indicated in the drawings shall not be paid for.

However, for the cases where waterproofing / acid proofing is indicated as per drawings on outer sides, the mode of measurement shall be as per IS: 1200.


- i. Nothing extra shall be paid for sorting / screening of the excavated materials to obtain good earth for filling.
- j. Nothing extra shall be paid on account of any lift for disposal of excavated materials.
- k. Proper precautions shall be taken during the excavations to prevent any damage to the existing structures, pipes, sewer lines etc. If such damage occurs, it shall be rectified by the Contractor at his own expense.

## 5.02 PLAIN AND REINFORCED CEMENT CONCRETE WORKS

- a. The prices for concrete beds and slabs are to include for laying on any type of subgrade, laying to falls or camber and for preparing surface to receive concrete.
- b. All concrete surfaces shall be finished to a fair face to give smooth and even surfaces and nothing extra shall be paid on this account.
- c. The prices are to include leaving pockets, cutouts and holes and to provide wooden boxes or any other suitable arrangement in R.C.C for providing pockets for bolts as per approved working drawings and nothing extra shall be paid on this account.
- d. All pockets / holes are to be properly covered by suitable means, so that dirt, rain water etc., should not enter the pockets / holes etc. No deduction in R.C.C quantity shall be made for pockets and nothing extra shall be paid for providing pockets as mentioned in para 5.02c above.
- e. For measurement of openings in plain concrete / R.C.C work, refer clause No. 4.13 of IS: 1200 (Part-3).

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- f. Threads of bolts etc., which have already been fixed in the pockets, are to be greased and properly covered with gunny bags or polythene sheet to protect it from damage from all sources and nothing extra shall be paid on this account.
- g. The prices shall include for all rebating, throating, chamfering, weathering, moulding etc. to accord with the details shown in the approved working drawings.
- h. Nothing extra shall be paid for any intricate work for foundation of equipments and machinery (Static / Dynamic) in R.C.C walls and other superstructure work or in concreting in small and thin sections in P.C.C or R.C.C work.
- i. The prices for concrete are to include for hoisting and / or lowering to any heights and / or depth required and in any type of form work, packing around reinforcement wherever required and finishing the surfaces to fair and even surfaces.
- j. The prices shall include for working up or hacking of concrete surface for providing keys for further concrete work and shall also include all plane, rebated or grooved construction and other joints.
- k. All reinforced cement concrete used shall be of controlled concrete with designed mix and weigh batched conforming to IS : 456 unless otherwise specified. In all concrete and R.C.C work, broken graded coarse aggregate shall be used. The design mixes of concrete of different grades shall be established at the beginning of the work considering the required workability. However, if batching plant facility is not available, only nominal mix concrete is permissible.
- l. Concrete admixtures for workability, if necessary, may be used in R.C.C., if decided by the Engineer-in-Charge. No extra payment for material or mixing etc. shall be made on this account.
- m. Machine and equipment foundations shall mean all foundations including pedestals of vessels, towers, pumps, compressors, motors or any other equipment or machinery (both static and dynamic), pipe supports etc., and / or the like.
- n. The prices shall include applying cement slurry on reinforced cement concrete surfaces, keys of construction joints etc. @ 2.75 Kg/Sq.m of surface area of receiving cement concrete including roughening and proper cleaning etc., complete as directed by Engineer-in-Charge.
- o. The prices shall include for performing water tightness for all water retaining R.C.C structure as stipulated in IS: 3370 (Part-I), wherever specified in the drawing.
- p. Cement to be used for plain & reinforced cement concrete and other works shall be of Ordinary Portland Cement conforming to IS : 269 unless otherwise stated in the "Schedule of Rates" and elsewhere in this Section of NIT.
- q. Any concrete having honeycomb is not acceptable and shall be rejected and

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redone at contractor's cost.

#### 5.03 REINFORCEMENT AND EMBEDMENTS

- a. Wastage in cutting will not be paid for. Steel actually fixed in position only will be paid by the linear measurement including hooks and laps. Lapping of bars will be allowed only where the required bar length exceeds the standard lengths available. All other laps provided, unless otherwise specified in the drawings, shall not be measured and paid for. Weight of binding wire shall not be measured for payment.
- b. Reinforcement are to be tack welded in addition to binding by 18 S.W.G annealed wire wherever necessary to improve efficiency of the joint. Bars of 28 mm diameter and above shall be provided with stitch weld in addition to binding with 18 SWG annealed wire and nothing extra shall be paid for stitch welding. Welding of mild steel plain and deformed reinforcements shall conform to IS: 2751, 'Code of practice for welding of mild steel plain and deformed bars for reinforced concrete construction'.
- c. The Contractor shall prepare the bar bending schedule for all reinforced cement concrete work as per the approved / "good for construction" drawings and nothing extra shall be paid on this account.

#### 5.04 SHUTTERING

- a. The prices for shuttering shall include for providing splayed edges, notching, chamfering, allowances for overlaps and passing at angles, battens, strutting bolting, wedging, easing, striking and removing.
- b. The concrete work should have ply wood / steel shuttering as not to require any plastering, after striking out the shuttering. Any concrete having honeycomb is not acceptable and is liable to be rejected and redone at Contractor's cost.
- c. The prices are also to include for all necessary supports, struts, braces, etc., dressing with shuttering compound and / or other approved method to prevent adhesion between concrete and form work and all raking for circular cutting and waste.
- d. The prices shall also include for all labour and materials necessary for providing form work at all heights and depths and including striking, dismantling the form work assembly etc. after the necessary stripping period of concreting is over and also making all the joints in shuttering fully leak-proof providing low density polythene sheets / bitumen paper.
- e. The prices shall also include for forming detailed design required for the form work and / or all other sundry labour.
- f. All shuttering shall be either plywood or steel shuttering to produce plain, smooth and even surfaces, which will thus be integrally finished. If any impressions of the shuttering joints are noticed after the striking of the shuttering, the same should

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be treated by rubbing with Carborundum stones and nothing extra shall be paid on this account.

- g. In case of dowel bars projecting out from R.C.C works such as columns, beams etc. nothing extra shall be paid for any special provision like making holes that may be required to be left in the form work.

#### 5.05 MASONRY WORKS

The prices for brick work shall include the following:

- a. Fair face of brick work with selected brick with class designation 75 or as specified in the description of relevant Items in the "Schedule of Rates" from the lot.
- b. Raking out joints for plastering and pointing done as separate process of finishing joints, flush as the work proceeds.
- c. All rough and / or fair cutting and waste unless specifically stated otherwise.
- d. Plumbing to angles.
- e. Providing holes left or formed for fixing pipes etc.
- f. Forming reveals to the jambs, where fair cutting on exposed face is not involved.
- g. All masonry work shall be done using mortar with coarse sand.


#### 5.06 WOOD WORK AND JOINERY

- a. All joiner's work shall include necessary nails and screws, and all other necessary materials.
- b. The description includes all necessary keys, wedges, dowels, hard or bamboo pins, pined tenon joints and cleaning of nail heads.
- c. Nothing extra will be paid for rebated and / or splayed meeting stiles of doors and Windows.


#### 5.07 STRUCTURAL STEEL WORK

- a. The weight of structural steel work for the sake of payment shall be calculated by linear measurements and unit weight taken from the relevant IS codes based on approved fabrication drawings assuming all members to be cut square without making any deduction for bolts, bevel ends or edges, beveling of plates. Gusset plates shall be paid for minimum rectangle enveloping their actual periphery.
- b. Welds, black-bolts, high tensile bolts, nuts, plain and tapered washers etc. shall not be measured and paid for. Rate for the structural steel work shall be deemed to include the same. Nothing extra shall be paid on this account.



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- c. Nothing extra shall be paid over the unit rates for structural members to be built up by butt or fillet welding as indicated in the approved fabrication drawings or as per the instruction of Engineer-in-Charge, from either:
- i. Plates.
  - ii. Two or more rolled steel sections.
  - iii. One or more rolled steel sections and plates.
- d. Nothing extra shall be paid over the unit rates for sealing the joints of box sections made out of channels or joists by continuous butt welding.
- e. All paints and primers specified in various Items in the "Schedule of Rates" shall be best quality of approved brand and manufacturer as per the Vendor list. All painting material supplied by the contractor should have at least 4 (four) months balance shelf life on the date of application.
- f. On box / compound sections, the painting shall be done before fabrication on all those surfaces which become inaccessible after fabrication.
- g. Prior approval of the Engineer-in-Charge shall have to be obtained for changing the sections due to non-availability of certain sections and using built-up sections / compound sections and nothing extra shall be paid on this account.
- h. The word "Fabrication" wherever used for the description of work herein shall include:
- Straightening, cutting, notching, beveling, drilling or cutting holes, necessary welding, fastening, etc. to prepare the structural member as per fabrication drawings.
- i. The word "Erection" wherever used for description of work shall include:
- Hoisting, putting in position at all required heights, aligning and fixing with necessary welding, bolting and / or other fasteners as per approved drawings and technical specifications with all safety standards.
- j. Preparation of "AS-BUILT" construction drawings incorporating all approved changes at site shall be in Contractor's scope of work and it shall be considered included in relevant Items of the "Schedule of Rates".
- k. For grid blasting / painting by the specialized agency other than indicated in the NIT, if proposed by the Contractor, the same shall be got approved from the Engineer-in-Charge at site.
- l. The Contractor shall prepare design of joints and detailed fabrication and erection drawings in sequence of erection on the basis of detailed design drawings. Nothing shall be paid extra on this account. The above fabrication drawings must show clearly all shop and site joints and connection with erection marks on each loose parts.

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- m. All joints shall be designed for full strength of the members or otherwise as indicated in the design drawings.
- n. The design calculations of joints and fabrication drawings will be checked and approved by the Contractor and he shall be solely responsible for it.

#### 5.08 STEEL AND ALUMINIUM DOORS, WINDOWS & VENTILATORS

- a. The prices are to include for necessary hardware fittings and fixtures as specified and fixing to frames with necessary lugs etc., all necessary chases, holes, etc., grouting of holes and making good to match after doors, windows and ventilators, etc. are fixed. The price of steel doors / windows / ventilators is also to include application of required primer and paint of approved shade, make and manufacturer.
- b. The prices shall also to include for providing good quality glass panes of required thickness as indicated in the "Schedule of Rates".

#### 5.09 FLOORS AND BASES

- a. The price for hard core shall include for all labour in laying to falls or camber, hand packing, edges of haunches forming splayed edges, watering and rolling with power driven roller and ramming wherever required to solid compaction.
- b. The prices shall include also for works at all heights and depths.

#### 5.10 FINISHING WORKS

- a. The prices shall include for work at any height / depth and for all necessary scaffolding etc. as required.
- b. The prices shall include for providing and laying of materials for all the Items of plaster and also raking to form key for plaster and for all work in narrow width, formed angles, chamfered external angles and for making good the faces.

#### 5.11 MISCELLANEOUS

- a. The Contractor may have to splice shorter length of structural steel members to obtain required length at site. If extra pieces of materials are required for splicing (say for lap jointing) then the same will be measured and paid for in the relevant structural steel items and nothing extra on any other account shall be paid to the Contractor for such splicing.
- b. The Contractor should note that steel wedges, packing plates, shim plates, etc. used by them for leveling and alignment of structural members are to be considered erection devices and these should be taken out after proper alignment is over to the satisfaction of Engineer-in-Charge. Such erection devices shall neither be measured nor paid for.
- c. Contractor shall submit the Material Test Certificates along with Bill copies for all bought out items prior to entry of material in plant premises.

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**SECTION – VII-1.0**

**PREAMBLE  
TO  
SCHEDULE OF RATES (CIVIL)  
FOR  
CIVIL & STRUCTURAL WORKS**

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## 1.00 GENERAL

- 1.01 The plans have been evolved tentatively based on information available with Owner / Consultant but the dimensions and details etc. are liable to changes. The Tenderers shall not be entitled to claim any higher rate or compensation on this account. The tender drawings are intended mainly to give an indication of the probable type of construction. The successful Tenderers will, however, be required to execute the work as per detailed design drawings provided progressively by the Contractor and approved by the Owner/PMC. Steel structures can be changed to R.C.C. or vice versa. Owner reserves the right to add / delete any of the building works mentioned in the N.I.T., during the currency of the contract.
- 1.02 The Tenderers shall note that the quantities of the different Items, as given in the "Schedule of Rates" are tentative based on tentative tender drawings and are subject to variation and they shall not be entitled to claim any higher rate or compensation on this account. Owner / Consultant reserve the right to change / modify the size and type of sections at any time. Owner / Consultant do not guarantee work under each item of the Schedule of Quantities. Quantity of some or all the items may increase or decrease up to any extent at the time of actual execution. For variation in value of contract, please refers relevant clause of **GCC**.
- 1.03 The Tenderers shall be fully responsible for the correct setting out and execution of the work in accordance with Issued for Construction drawings. All tools, tackles, construction equipments etc., required for the successful execution / construction of the complete work shall be responsibility of the Tenderers.
- 1.04 Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. Unless otherwise specified in Tender Documents, measurements of quantities shall be taken as per Indian Standards IS: 1200.
- 1.05 The rates to be inserted in the "Schedule of Rates" are to be inclusive of the value of the work described under several items including all costs and expenses which may be required for the construction of the work described together with all taxes, general risks, liabilities and obligations such as temporary buildings / hutments, fencing, watching, lighting, insurance, labour regulations, indemnity, maintenance and the like. The prices shall be inclusive of Supply of materials, construction, erection, all labors, materials, tools and tackles, plants, equipment, hoists, scaffoldings, the sundries, etc., as may be necessary for the completion of the work in all respects.
- 1.06 No work shall be undertaken at site until detailed drawings are issued for construction by the Contractor and approved for construction by the Owner/PMC.
- 1.07 Any fabrication / construction done before final approval of the drawings shall be the Contractor's responsibility and he is liable to bear the rectification cost.
- 1.08 In case of any discrepancy between the description of items given in the "Schedule of Rates" and Specifications, drawings and other documents, the decision of the Owner / Consultant in writing shall be final, binding and conclusive for the purpose of this contract.
- 1.09 The term "Design and drawings" mentioned in the description of Items in the "Schedule of Rates" means the detailed design drawings marked "Good for Construction".
- 1.10 The work "As described", "As shown", "As directed" or "As approved", "As mentioned" in the description of Items shall mean as directed in design or detailed drawings and as directed by the Engineer-in-Charge.

## SUMMARY OF SCHEDULE OF RATES

**NIT NO. :** PC183-PNCV-SEC-VI-203  
**NIT SUBJECT :** RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TFL, TALCHER

Sl. No.	DESCRIPTION	UNIT	AMOUNT (IN FIGURES)	AMOUNT (IN WORDS)
1	PART I-CIVIL WORKS	INR		
2	PART II – ELECTRICAL WORKS	INR		
3	PART III – LAN & EPABX WORKS	INR		
<b>4</b>	<b>TOTAL ( Sl. No. 1 + 2 +3 )</b>	<b>INR</b>		
5	APPLICABLE GST(INCLUDING CESS/SURCHARGE, IF ANY (BIDDER TO INDICATE % ONLY)	%		
6	APPLICABLE BOCW CESS, IF ANY (BIDDER TO INDICATE % ONLY)	%		
7	BIDDER TO INDICATE APPLICABLE SAC/HSN CODE			
8	TOTAL GST AMOUNT	INR		
9	TOTAL BOCW CESS AMOUNT	INR		
10	<b>TOTAL AMOUNT IN FIGURES (Sl. No. 4 + 8 + 9)</b>	<b>INR</b>		
	<b>TOTAL AMOUNT IN WORDS (Sl. No. 4 + 8 + 9)</b>			

	<b>SUMMARY OF SCHEDULE OF RATES</b>	PC-183-SEC-VII-SOR-SUMMARY-203	0	22.02.21	SK	SS	UPT	1	
		DOCUMENT NO	REV	REV DT	PREPD	REVWD	APPD	SHEET NO	

## SUMMARY OF SCHEDULE OF RATES



NIT NO. : PC183-PNCV-SEC-VI-203  
NIT SUBJECT : RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER  
GUARD BUILDING AND ALLIED WORKS AT TFL, TALCHER

### Note:

a) If the bidder fails to quote for any item in the price bid i.e. Part-I, II and III of the Schedule of Rates (SOR), it will be implied that such item is included elsewhere in the quoted prices. Also, wherever bidder has indicated “Not Applicable” / “Nil” and the same is required during execution of the contract it will be considered as included in the price.

b) Evaluation shall be done on overall basis i.e. GRAND TOTAL of SI. No. 10. The work is non-splitable. Refer clause no. 40.1.3 of Instruction to Bidder Part-1, Commercial of tender document for Evaluation Methodology.

NAME : \_\_\_\_\_  
SIGNATURE & SEAL OF TENDERER : \_\_\_\_\_  
PLACE : \_\_\_\_\_  
DATE : \_\_\_\_\_

	SUMMARY OF SCHEDULE OF RATES	PC-183-SEC-VII-SOR-SUMMARY-203	0	22.02.21	SK	SS	UPT	2	
		DOCUMENT NO	REV	REV DT	PREPD	REVWD	APPD	SHEET NO	



 <p>पी डी आई एल <b>PDIL</b></p>	<p><b>PROJECTS &amp; DEVELOPMENT INDIA LTD</b></p>	VL	0	 <p><b>Taicher Fertilizers</b></p>
		Document No	Rev	
		Sheet 1 Of 9		

## VENDOR LIST

	<b>TALCHER FERTILIZERS LIMITED</b> <b><u>VENDOR LIST</u></b>	VL	0	
		DOCUMENT NO	REV	
		SHEET 2 OF 9		

## 1.0 CIVIL & STRUCTURAL

### GENERAL NOTES:

- i. Only 'First' Quality materials shall be used
- ii. OWNER / CONSULTANT reserve the right to choose any of the approved make / vendor as per this list. Make of the item not indicated and any other make for the specified item shall be subject to owner's / consultant's approval.
- iii. Specifications of manufacturer's items shall be checked against tender item / specifications before selecting any product or brand name. In case of any discrepancy, tender item / specifications shall prevail, and any such brand of item shall not be used which is not conforming to tender specifications even if it is listed in this vendor list.
- iv. In case of non-availability of any material among approved vendors / makes in a particular site / region, alternate vendor / make conforming to IS / BS etc. Shall be used subject to approval by OWNER / CONSULTANT.

SL. NO.	ITEM	NAME
1.0	<b><u>FLOOR FINISHING</u></b>	
1.1	CEMENT TILES (FLOOR/WALL)	a) EUROCON b) ALTRA TILE PVT. LTD. c) DAZZLE
1.2	TERRAZZO TILES	A) NITCO B) HINDUSTAN TILES
1.3	CERAMIC TILES	a. SOMANY CERAMICS b. H&R JOHNSON CERAMICS c. KAJARIA CERAMICS d. ORIENT CERAMICS
1.4	HEAVY DUTY FLOOR TILES	A) BHARAT TILES B) RESTILE CERAMICS C) PELICAN CERAMIC INDUS. D) PAVIT E) SONA TILES
1.5	INDUSTRIAL FLOOR HARDENER ADMIXTURE	a) PIDILITE INDUSTRIES b) SIKA c) CICO.
1.6	PVC ROLLS	A) PREMIER VINYL B) ARMSRONG INARCO C) RMG POLYVINYL
1.7	PVC TILES	

	<b>TALCHER FERTILIZERS LIMITED</b> <b>VENDOR LIST</b>	VL	0	
		DOCUMENT NO	REV	
		SHEET 3 OF 9		

		A) ARMSTRONG
1.8	PVC TILES/ROLL ANTISTATIC	A) PREMIER VINYL B) RMG POLYVINYL C) ARMSTRONG
1.9	ACID RESISTANT TILES(BATTERY ROOM)	A) H&R JOHNSON OR APVD. EQUIV.
1.10	MOSSAIC TILE	A) ITALIS B) SPECIFIC GLASS MUSSAIC INDIA LTD.
<b>2.0</b>	<b>WOODWORK</b>	
2.1	FLUSH DOOR	A) GREEN B) CENTURY DOORS C) KITPLY PRODUCTS
2.2	PLY WOOD/BLOCK BOARD	A) CENTURY B) KITPLY PRODUCTS C) GREEN PLY
2.3	PARTICLE BOARD (EXTRA GRADE)	A) BHUTAN BOARD B) NOVAPAN INDIA LTD.
2.4	MDF BOARD/MD PARTICLE BOARD (EXTRA GRADE)	A) NUCHEM LTD. B) MANGALAM TIMBER PRODUCTS LTD. C) WESTERN BIO SYSTEMS LTD.
2.5	DECORATIVE LAMINATES	A) CENTURY B) GREENPLY INDUS. LTD. C) MERINO D) ARCHID
2.6	MARINE PLYWOOD	A) CENTURY B) GREENPLY INDUS. LTD. C) MERINO D) ARCHID
<b>2.7.0</b>	<b>DOORS &amp; WINDOWS FITTINGS</b>	
2.7.1	MORTICE LOCKS WITH HANDLES	A) GODREJ & BOYCE B) EVERITE AGENCIES (P) LTD. C) DOORSET
2.7.2	CYLINDRICAL PIN TUMBLER LOCK WITH KNOBS	A) GODREJ & BOYCE B) EVERITE AGENCIES (P) LTD. C) DOORSET
2.7.3	HYDRAULIC DOOR CLOSER (OVER HEAD/ FLOOR)	A) OZONE B) EVERRITE AGENCIES (P) LTD. C) HARDWYN
2.7.4	MISC. DOOR FITTINGS HINGLE,	A) EVERITE AGENCIES (P) LTD.

	<b>TALCHER FERTILIZERS LIMITED</b> <b>VENDOR LIST</b>	VL	0	
		DOCUMENT NO	REV	
		SHEET 4 OF 9		

	TOWER BOLTS, LATCHES, SOPPER, STAYS, ALDROPS ETC.	B) EBCO DINSUTRIES D) OZONE E) HARDWYN
2.7.5	THREE WAY BOLTING LOCKING DEVICE HANDLE	A) SRIMA SALES & SERVICES B) DHIMAN INDUSTRIES
2.7.6	PANIC BAR LATCH (FOR EMERGENCY DOOR)	A) SRIMA SALES & SERVICE
2.7.7	UPVC WINDOWS	A) FENESTA B) ENCRAFT C) WINDOW MAGIC
2.7.8	FASTENERS	A) HILTI INDIA PVT. LTD. B) FISCHER
<b>3.0</b>	<b>STEEL / ALUMINIUM DOORS, WINDOWS &amp; VENTILATOR</b>	
3.1	PRESSED STEEL DOORS WINDOWS & SECTION DOORS WINDOWS/ROLLING SHUTTER	A) RAYMUS ENGINEERS B) DHIMAN STEEL C) RDG ENGINEERING D) SUPER STEEL WINDOW CO. E) SKS STEEL INDUS.
3.2	ALMUNIUM / DOORS/ WINDOWS SECTIONS	A) JINDAL ALUMINIUM LTD. B) HINDALCO INDUSTRIES C) INDAL
3.3	FIRE-PROOF DOORS(APPROVED)	A) NAVAIR INTERNATIONAL B) RDG ENGINEERING
3.4	PVC DOORS / WINDOWS	A) SINTEX OR APPVD EQUIV.
3.5	PVC WATER TANKS	A) SINTEX OR APPVD EQUIV.
<b>4.0</b>	<b>PLASTERING</b>	
4.1	WATERPROOFING/ COMPOUND IN CEMENT PLASTER	A) STRUCTURAL WATER PROOFING CO. (P) LTD. B) PIDILITE INDUSTRIES C) SIKA D) KRISHNA CONCHEM
<b>5.0</b>	<b>ROOF TREATMENT (WATER PROOFING)</b>	
5.1	BRICK BAT COBA	A) INDIA WATER PROOFING CO. B) OVERSEAS WATERPROOFING CORPN.
5.2	ACRYLIC BASED CEMENTATIOUS PRIMER COATING FOR ROOF WATERPROOFING	A) STRUCTURAL WATER PROOFING CO. (P) LTD. B) SIKA QUALCRETE LTD. C) PIDILITE INDUSTRIES D) KRISHNA CONCHEM
5.3	APP MODIFIED POLYMERIC WASTER PROOFING MEMBRANE	A) PIDILITE INDUSTRIES LTD. B) SIKA

	<b>TALCHER FERTILIZERS LIMITED</b> <b>VENDOR LIST</b>	VL	0	
		DOCUMENT NO	REV	
		SHEET 5 OF 9		

5.4	PU BASED WATERPROOFING	A) PIDILITE INDUSTRIES LTD. B) SIKA C) BASF D) FOSROC
<b>6.0</b>	<b>PAINTING WORKS</b>	
6.1	PLASTIC EMULSION (INTERIOR/EXTERIOR)	A) ICI INDIA LTD. B) BERGER PAINTS LTD. C) ASIAN PAINTS LTD. D) SHALIMAR PAINTS E) KANSAI NEROLAC PAINTS LTD. F) M/s. Johnson & Nicholson
6.2	DRY OILBOUND DISTEMBER	A) ASIAN PAINTS LTD. B) KANSAI NEROLAC PAINTS LTD.
6.3	INDUSTRIAL / EPOXY/ ALIPHATIC ACRYLATE/ SYNTHETIC ENAMEL PAINTS	A) ICI/AKZO NOBEL INDIA B) BERGER PAINTS LTD. C) ASIAN PAINTS LTD. D) SHALIMAR PAINTS E) INTERNATIONAL MARINE COATINGS PVT. LTD. F) KANSAI NEROLAC PAINTS LTD. G) BOMBAY PAINT H) KRISHNA CONCHEM
6.4	WATERPROOFING CEMENT PAINT	A) KILLICK NIXON LTD. B) RAJDHOT PAINTS
6.5	WOOD MELAMINE POLISH	A) ASIAN PAINTS B) SHALIMAR PAINTS C) WEMBLY PAINTS
6.6	WATERPROOFING TRANSPARENT EXTERIOR WALL COATING (OVER PAINTED SURFACE)	A) PIDILITE INDUSTRIES B) SIKA C) KRISHNA CONCHEM
6.7	FIRE PROOF COATING	A) NAVAIR INTERNATIONAL OR APPVD. EQUIV.
<b>7.0</b>	<b>ROOFING SHEETS &amp; ACCESSORIES</b>	
7.1	ASBESTOS SHEETS	A) ETERNIT EVEREST LTD. B) CHARMINAR INDUSTRIES C) VISAKA
7.2	C.G.I. SHEETS	A) ISPAT INDUSTRIES LTD. B) STEEL AUTHORITY OF INDIA C) TATA STEEL D) JINDAL

	<b>TALCHER FERTILIZERS LIMITED</b> <b>VENDOR LIST</b>	VL	0	
		DOCUMENT NO	REV	
		SHEET 6 OF 9		

7.3	PRECOATED G.I. PROFILE SHEETS FOR ROOFING & WALL CLADDING	A) ISPAT INDUSTRIES LTD. B) LLOYD INSULATION (I) LTD. C) STEEL AUTHORITY OF INDIA D) TATA STEEL E) JINDAL
7.4	ALUMINIUM SHEET (PLAIN/PROFILE)	A) INDIAN ALUMINIUM CO. LTD. OR APPROVED EQUIVALENT
7.5	FIBRE GLASS SHEETS & PANELS (MACHINE MOULDED)	A) SIMBA FRP (P) LTD. B) GE INDIA C) DUROPLAST
7.6	PROOFING J/L HOOKS, BOLTS & OTHER ACCESSORIES (POLYMER COATED)	A) KATALIST CONSULTANT (P) LTD. B) ADVANCED MACHINE
<b>8.0</b>	<b>SANITARY PLUMBING FITTINGS &amp; FIXTURES</b>	
8.1	SANITARY FITTINGS (W.C. WASH BASIN, URINAL ETC.)	A) HINDUSTAN SANITARY WARE & INDUS. LTD. B) PARRYWARE SANITARY WARE C) MADHUSUDAN CERAMICS D) NY CER CERAMICS
8.2	PLUMBING FITTINGS & FIXTURES	A) JAGUAR B) CERA C) HINDWARE
8.3	GLASS/MIRROR (SHEET/ FLOAT/ TOUGHENED/ LAMINATION)	A) GUJARAT GUARDIAN LTD. B) SAINT GOBAIN C) ASAHI FLOAT
8.4	GI PIPES	A) JINDAL B) SURYA C) PRAKASH D) SWASTIK
<b>9.0</b>	<b>FALSE CEILING, FALSE FLOORING &amp; UNDERDECK INSULATION</b>	
9.1	FALSE CEILING / WALL CLADDING (ALUMINIUM STRIP/ TRAY TYPE)	A) INTERARCH BUILDING PRODUCTS (P) LTD. B) HUNTER DOUGLAS C) MASCOT OVERSEAS
9.2	FALSE FLOORING	A) MULTI INTERIORS PVT. LTD. B) BESTLOCK SYSTEM & CONCEPTS C) LLOYD INSULATION (I) LTD. D) UNITED INSULATION E) A.R. & BROTHERS
9.3	UNDERDECK/WALL HEAT INSULATION	A) BAKELITE HYLAM LTD. B) U.P. TWIGA F.G. LTD. C) LLOYD INSULATION (I) LTD. D) SUPEREME E) PIDILITE



	<b>TALCHER FERTILIZERS LIMITED</b> <b>VENDOR LIST</b>	VL	0	
		DOCUMENT NO	REV	
		SHEET 7 OF 9		

9.4	OVERDECK HEAT INSULATION	A) LLOYD INSULATION (I) LTD. B) BEST PLASTRONICS LTD. C) PIDILITE INDUSTRIES LTD
9.5	GYPSUM BOARD TILES (FIBRE GLASS REINFORCED)/ PRIMA BOARD ARMSTRONG FALSE CEILING	A) SAINT GOBAIN
10.0	<b>SPECIALITY PRODUCTS (CEMENT ADDITIVES/ ADMIXTURES / CORROSION INHIBITORS / SBR LATEX &amp; ACRYLIC POLYMERS / EPOXY LATEX POLYMERS / FOOD GRADE EPOXY SURFACE TREATMENT/ EPOXY &amp; CEMENTITIOUS GROUT/ EPOXY BONDING AGENTS &amp; ANCHORS / SEALING / COATING</b>	A) PIDILITE INDUSTRIES B) SIKA C) KRISHNA CONCHEM D) FOSROC E) BASF
10.1	EPOXY FLOOR COATING (BATTERY ROOM ETC)	A) SIKA B) FAIRMATE C) CIPY POLYURETHANE D) KRISHNA CONCHEM
10.2	EPOXY PHENOLIC CHEMICAL RESISTANT COATING & MORTAR( SCREED) FOR FLOOR & WALLS	A) KRISHNA CONCHEM B) SIKA C) FOSROC D) BASF E) CIPY POLYURETHANE
10.3	CONCRETE REPAIR & REHABILITATION PRODUCTS	A) KRISHNA CONCHEM B) SIKA C) FOSROC D) BASF E) PIDILITE
10.4	PREMIXED CEMENTITIOUS MORTARS & MICROCONCRETE	A) KRISHNA CONCHEM B) SIKA C) FOSROC D) BASF E) PIDILITE
10.5	GLASS/CARBON FIBRE WRAPPING FIBRE / LAMINATE / EPOXY	A) KRISHNA CONCHEM B) SIKA C) FOSROC

	<b>TALCHER FERTILIZERS LIMITED</b> <b>VENDOR LIST</b>	VL	0	
		DOCUMENT NO	REV	
		SHEET 8 OF 9		

		D) BASF
10.6	CORROSION PROTECTION ANODES & CAPLETS	A) KRISHNA CONCHEM B) SIKA C) FOSROC D) BASF
<b>11.0</b>	<b>MISCELLANEOUS ITEMS</b>	
11.1	WOOD PRESERVATIVE	A) ASCU HICKSON LTD.
11.2	WALL SURFACE TEXTURED COATING	A) JOTUN B) SPECTRUM PAINTS C) BAKELITE HYLAM D) OIKOS
11.3	EXTERNAL ACRYLIC WALL COATINGS	A) KRISHNA CONCHEM B) SIKA C) FOSROC D) BASF E) PIDILITE F) ASIAN G) BERGER
11.4	PVC PLUMBING FITTINGS	a) SUPREME b) POLYPAC c) ASTROL
11.5	REINFORCED FIBRE GLASS WATERPROOFING FELT	A) SIKA B) U.P. TWIGA F.G. LTD.
11.6	ANTI TERMITE TREATMENT	A) PCI OR APPRVD EQUIV.
11.7	MATERIAL TEST HOUSE	A) IIT MADRAS B) GOVT APPROVED AGENCY
12.0	CEMENT	A) ACC B) J K CEMENT C) BINANI CEMENT D) JP CEMENT E) GUJARAT AMBUJA F) ULTRA TECH CEMENT G) BIRLA CORPN. LTD. H) GRASIM I) SHREE
12.1	SULPHUR RESISTANT CEMENT	A) SAURASHTRA CEMENT LTD. B) SHREE DIGVIJAY CEMENT
13.0	RCC DESIGN MIX	AP GOVT APPROVED AGENCY
14.0	WRAPPING COATING (I/C TAPE & PRIMER) IWL OR APPROVED EQUIPMENT	A) IWL OR APPROVED EQUIVALENT
15.0	FIRE PROOFING MATERIAL	A) CAFCO B) CARBOLINE

	<b>TALCHER FERTILIZERS LIMITED</b> <b><u>VENDOR LIST</u></b>	VL	0	
		DOCUMENT NO	REV	
		SHEET 9 OF 9		

16.0	STRUCTURAL STEEL / CS PLATE	HEAVY SECTIONS MORE THAN 150 MM A) SAIL B) TATA STEEL C) RINL LIGHT SECTIONS LESS THAN 150 MM D) JINDAL E) ESSAR F) ISPAT INDUSTRIES
16.1	MS PIPES (HAND RAIL APPLICATION)	a) SURYA b) PRAKASH c) JINDAL
17.0	TMT BAR / REBAR	A) SAIL B) TATA STEEL C) RINL D) SHYAM STEEL INDUSTRIES LIMITED E) ELECTROSTEEL STEELS LTD F) SHRI RATHI STEEL LTD. G) SRMB SRIJAN PRIVATE LIMITED
18.0	GRATINGS/HANDRAILS	A) INDIANA GRATINGS B) WESTCOAST ENGINEERING C) GREATWELD GRATING D) KANADE ANAND UDYOG
19.0	WELDING ELECTRODE	A) ADOR B) ESAB C) D & H D) HANOVAR



## CURRENT SITUATION OF CISF BARRACK BUILDING



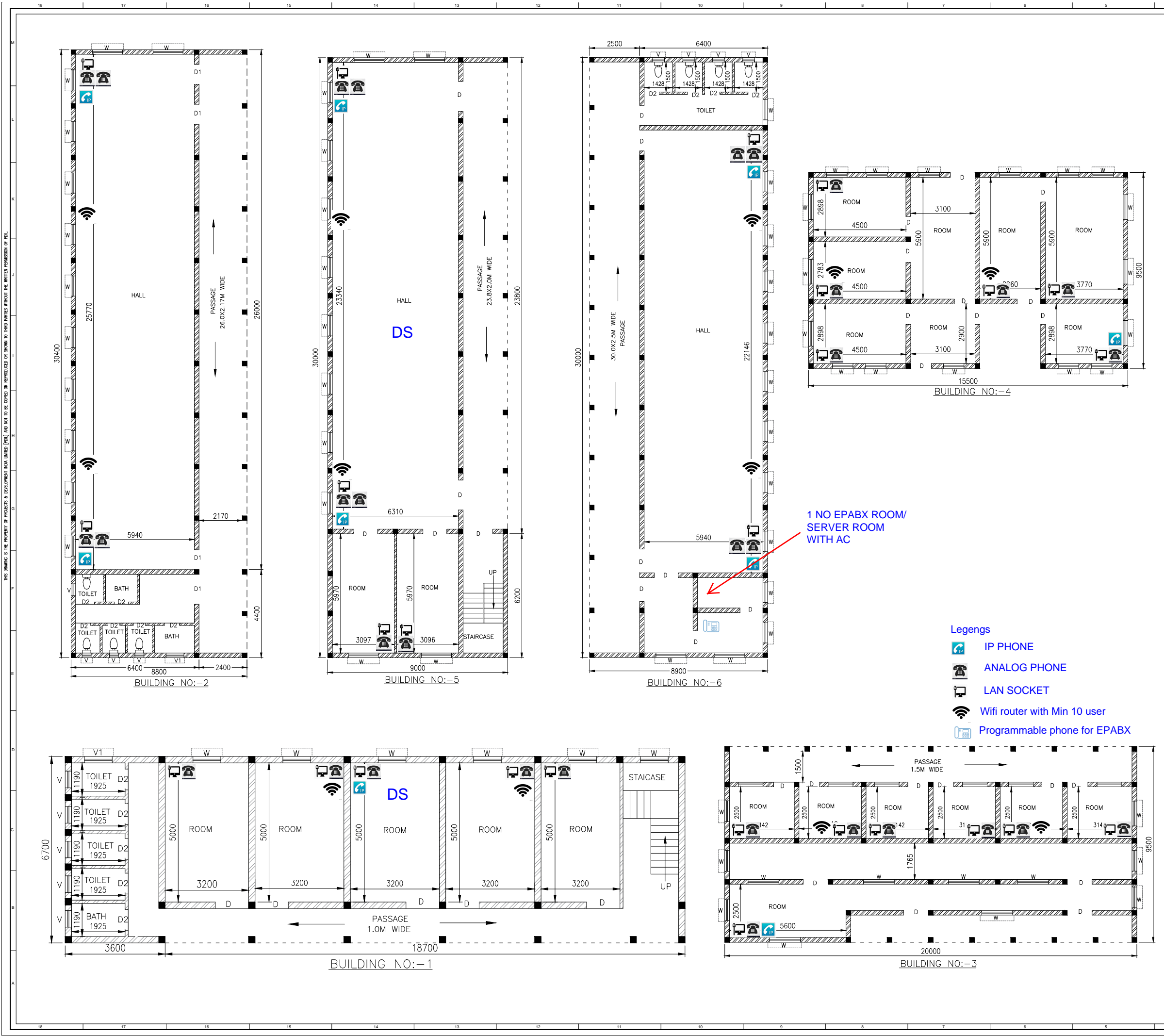






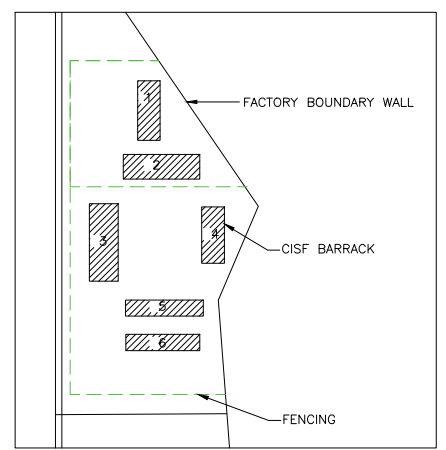






REFERENCE DRAWING	DRAWING NO.

**NOTES:**  
 1. ALL DIMENSIONS ARE IN MM AND LEVELS IN M NOTED OTHERWISE.  
 2. THE LAYOUT AND DIMENSIONS ARE MAY VARY AT SITE.



KEY PLAN

1 NO EPABX ROOM/  
 SERVER ROOM  
 WITH AC

- Legends**
- IP PHONE
  - ANALOG PHONE
  - LAN SOCKET
  - Wifi router with Min 10 user
  - Programmable phone for EPABX

**Notes**

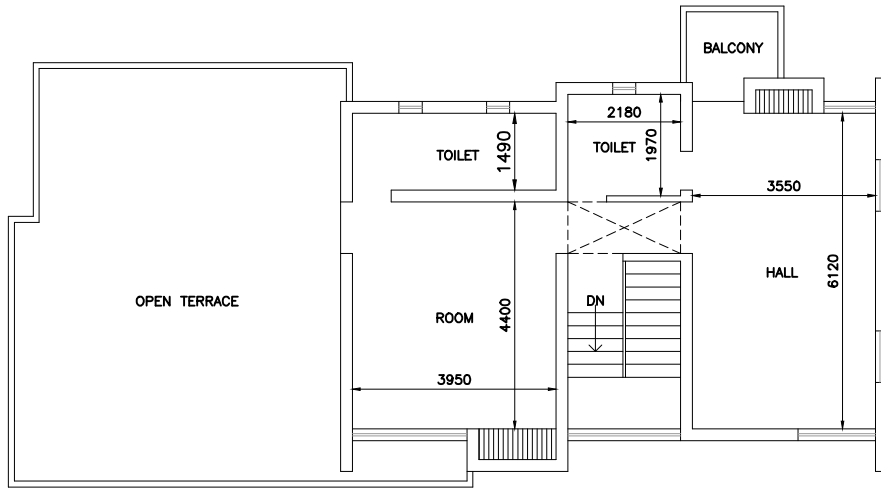
- All wi-fi router connections shall be mounted near ceiling with 230V power supply for Router
- Telephone socket shall be located near to Bed/desk or suitable location.

ONLY FOR TENDER PURPOSE

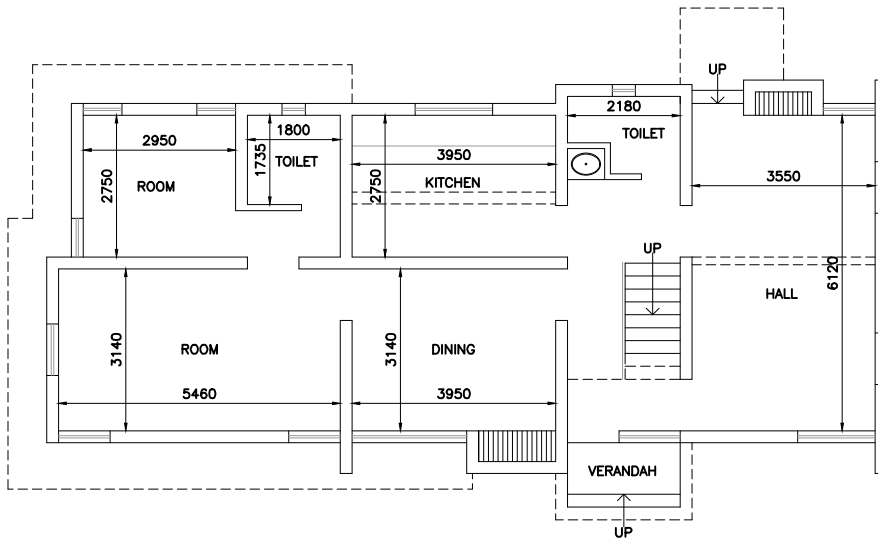
P	27.03.2019	ISSUED FOR TENDER PURPOSE	PG	SS	UPT
REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT :		M/s. TALCHER FERTILIZER LIMITED	SHEET 1 OF 1		
LOCATION :		TALCHER, ANGUL DISTRICT, ODISHA(INDIA)	SCALE : ~ NTS		
TITLE :		PLANS OF EXISTING CISF BARRACK	DRG. No.~ PC150-0000-XXXX		
			FILE : ~		

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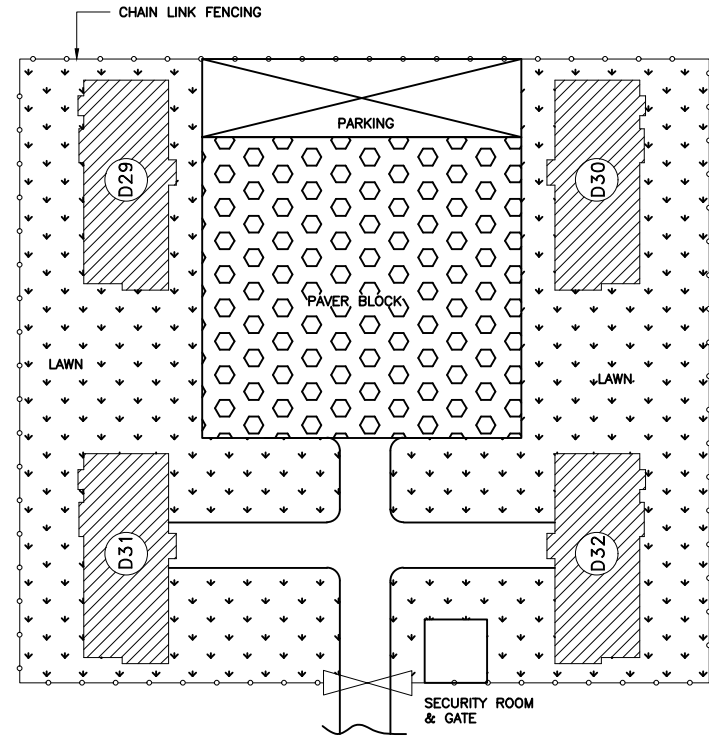
ANNEXE - A



EXISTING FIRST FLOOR PLAN  
(BUNGALOWS D29 TO D32)



EXISTING GROUND FLOOR PLAN  
(BUNGALOWS D29 TO D32)



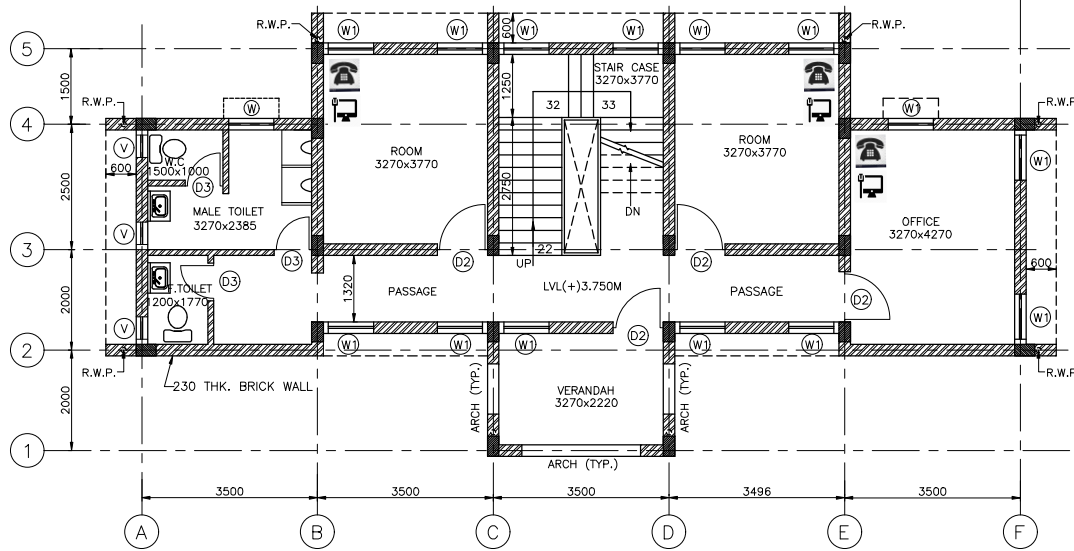
KEY PLAN

NOTE:-

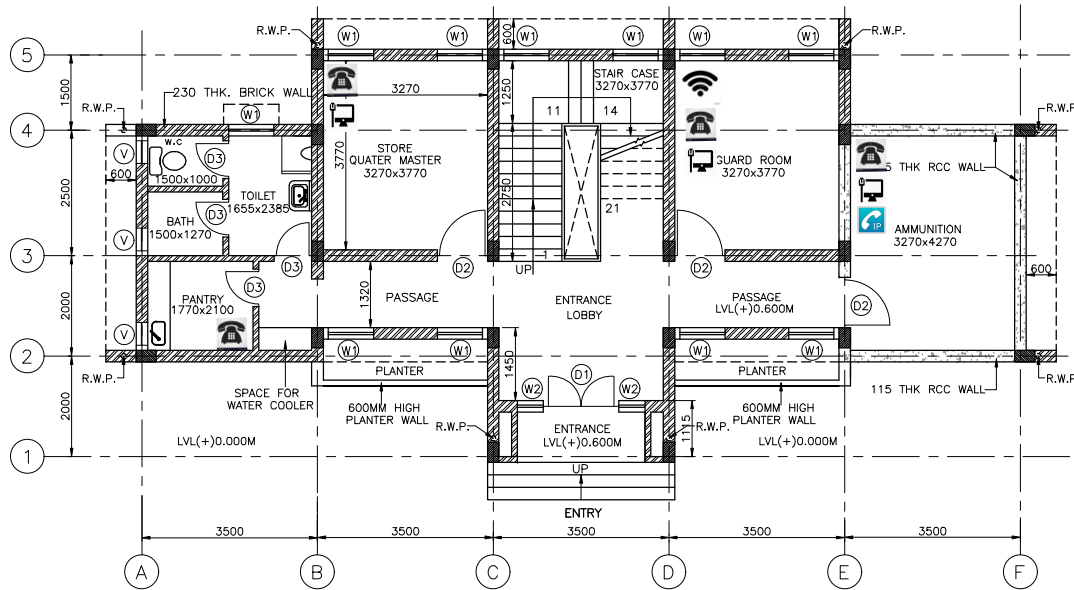
1. ALL DIMENSION ARE IN MM AND LEVELS ARE IN M. UNLESS NOTED OTHERWISE.
2. THE DRAWING SHOULD NOT BE SCALED, ONLY FIGURE DIMENSION ARE TO BE FOLLOWED.

NO.	DATE	ISSUED FOR TENDER	SP	UPT	UPT
REV.	DATE	DESCRIPTION	PREP.	CHEK.	APPR.
CLIENT :		M/A. TALCHER FERTILIZER LIMITED	SHEET 1 OF 1		
LOCATION :		TALCHER, ANGUL DISTRICT, ORISSA (INDIA)	SCALE :-		
TITLE :		PLAN OF EXISTING GUEST HOUSE D-TYPE BUNGALOWS D29 TO D32	DRL. No. :-		
			FILE :-		
PROJECTS & DEVELOPMENT INDIA LTD. NOIDA					

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FIRST FLOOR PLAN



GROUND FLOOR PLAN

S.NO.	REFERENCE DRG.	DRAWING NO.

NOTES:  
1. ALL DIMENSIONS ARE IN MM AND LEVELS IN M NOTED OTHERWISE.

**Notes**

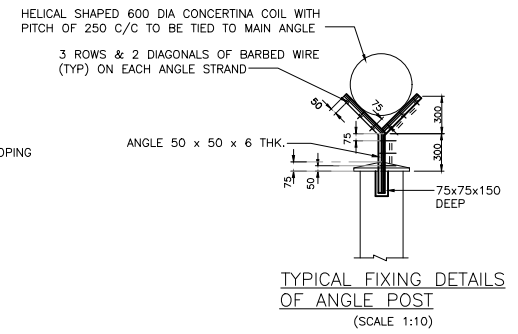
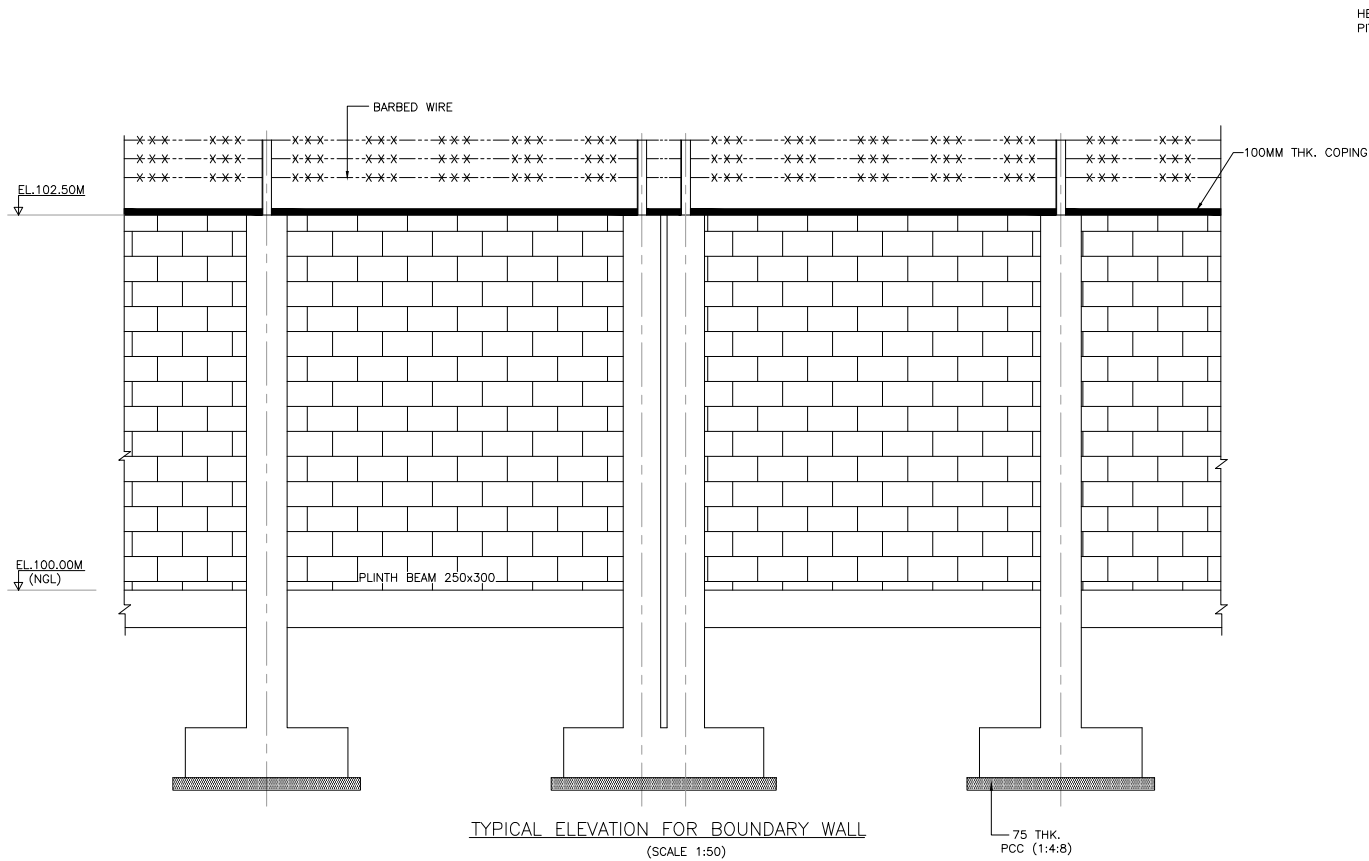
- All wi-fi router connections shall be mounted near ceiling with 230V power supply for Router
- Telephone socket shall be located near to Bed/desk or suitable location.

**Legends**

- Analog Phone
- Analog Phone
- Wi-fi router with Min 10 user
- LAN Socket

THIS DRAWING IS PURELY SCHEMATIC FOR TENDER PURPOSE ONLY. DIMENSION MAY VARY AT THE TIME OF FINAL DETAIL DESIGN.

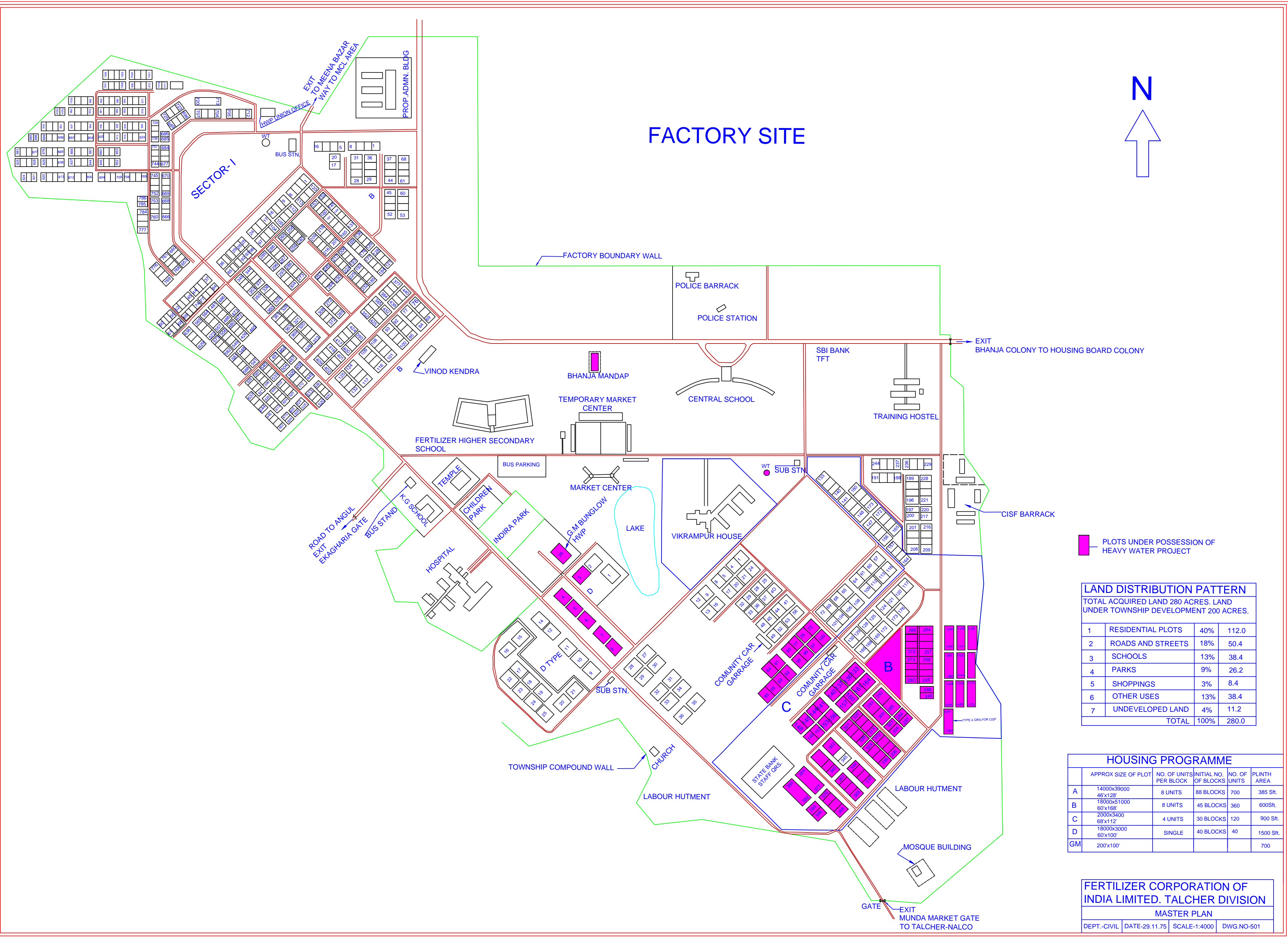
P	04.12.19	ISSUED FOR TENDER PURPOSE	JP	SS	UPT
REV	DATE	DESCRIPTION	BY	CHKD	APPD.
CLIENT :		M/s. TALCHER FERTILIZER LIMITED	REV.	P	
LOCATION		TALCHER, ANGUL DISTRICT, ODISHA(INDIA)	SHEET 1 OF 1		
TITLE		GENERAL ARRANGEMENT OF PROPOSED CISF QUARTER GUARD BUILDING.	SCALE:-1:50		
			DRG. NO.-		
			FILE.-		
		PROJECTS & DEVELOPMENT INDIA LIMITED NOIDA			



**GENERAL NOTES:-**

1. ALL DIMENSIONS ARE IN MM AND LEVELS IN M. UNLESS NOTED OTHERWISE.
2. CONCRETE SHALL BE OF GRADE M25 AND REINFORCEMENT SHALL BE OF GRADE HYSD OF CRS Fe 500D UNLESS NOTED OTHERWISE.

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
0	09.09.20	ISSUED FOR TENDER PURPOSE	SK	SS	UPT
CLIENT :			REV. 0		
M/s. TALCHER FERTILIZER LIMITED			SHEET 1 OF 1		
LOCATION : TALCHER, ANGUL DISTRICT, ODISHA(INDIA)			SCALE :- 1 : 50		
TITLE :			DRG. No.:-		
BOUNDARY WALL			PC150-PNCV-PH-XXX		
GENERAL ARRANGEMENT PLAN			FILE :-		
			PC150-PNCV-PH-XXXX		
PROJECTS & DEVELOPMENT INDIA LTD. NOIDA					



**SCHEDULE OF RATES**

**SECTION VII**



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
<b>1</b>	<b>CIVIL AND STRUCTURAL WORK (PART- I)</b>							
<b>2.0</b>	<b>Architect Planner</b>							
2.01	Engagement of the services of Architect Planner for detail design and planning of the renovation works of the existing buildings and construction of new buildings such as Quarter Gaurd building, shops, boundary wall, fencing etc. as mentioned in scope of works.	1.000	Lumpsum		0.00	0.00	0.00	INR Zero Only
<b>3.0</b>	<b>Dismantling &amp; Demolishing</b>							
3.01	Demolishing plain cement concrete under floor including disposal of material outside Building premises as directed by Engineer-in-charge. 1:3:6 or richer mix.	165.000	CuM		0.00	0.00	0.00	INR Zero Only
3.02	Dismantling old plaster or skirting, raking out joints and cleaning the surface for plaster including disposal of rubbish as directed by Engineer-in-charge.	8470.000	Sq.M		0.00	0.00	0.00	INR Zero Only
3.03	Dismantling of existing tiles in floor and wall laid in cement mortar as directed.	545.000	Sq.M		0.00	0.00	0.00	INR Zero Only
3.04	Dismantling of existing G.I. water supply pipes with all fittings / fixtures / clamps as per instruction of Engineer- in charge.	765.000	R.M.		0.00	0.00	0.00	INR Zero Only
3.05	Dismantling of C.I. pipes (waste water & soil water) with fittings/fixtures and clamps including traps as per instruction of Engineer- in charge.	905.000	R.M.		0.00	0.00	0.00	INR Zero Only
3.06	Dismantling C.I. or asbestos rain water pipe with fittings and clamps including disposal within 200 metres lead:	390.000	R.M.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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Name of the Bidder/ Bidding Firm / Company :	
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3.07	Taking out cinders and other filling materials, drying it and backfilling it in position in sunken floor of toilet.	100.000	CuM		0.00	0.00	0.00	INR Zero Only
3.08	Dismantling doors, windows and clerretory windows & ventilator (steel or wood) shutter including chowkhats, architravs, holdfasts etc. complete <b>Of area 3 Sq.m. and below</b>	90.000	Each		0.00	0.00	0.00	INR Zero Only
3.09	Dismantling doors, windows and clerretory windows & ventilator (steel or wood) shutter including chowkhats, architravs, holdfasts etc. complete . <b>Of area beyond 3 Sq.m.</b>	100.000	Each		0.00	0.00	0.00	INR Zero Only
3.10	Demolishing brick work manually/ by mechanical means including disposal of unserviceable material within 200 metres lead as per direction of Engineer-in-charge. <b>In cement mortar</b>	65.000	CuM		0.00	0.00	0.00	INR Zero Only
3.11	Dismantling manually/ by mechanical means including disposal of unserviceable material within 200 metres lead as per direction of Engineer-in-charge : <b>Bituminous road</b>	210.000	Sq.M		0.00	0.00	0.00	INR Zero Only
3.12	Demolishing water proofing in terracing Upto sound concrete and disposal of material within 200 metres lead as per direction of Engineer-in-charge.	230.000	CuM		0.00	0.00	0.00	INR Zero Only
3.13	Dismantling steel work manually/ by mechanical means in built up sections without dismembering within 200 metres lead as per direction of Engineer-in-charge.	660.000	Kg		0.00	0.00	0.00	INR Zero Only
3.14	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material with in 200 meters lead as directed by Engineer-in-charge.	320.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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3.15	Demolishing R.C.C. work manually/ by mechanical means including disposal of unserviceable material within 200 metres lead as per direction of Engineer - in- charge.	50.000	CuM		0.00	0.00	0.00	INR Zero Only
3.16	Dismantling precast concrete or stone slabs in walls, partition walls etc. within 200 metres lead : <b>Thickness up to 40 mm</b>	200.000	Sq.M		0.00	0.00	0.00	INR Zero Only
<b>4.0</b>	<b>Earth work</b>							
4.01	Excavating trenches of required width for pipes, cables, etc including excavation for sockets and dressing of sides, ramming of bottoms depth up to 1.5 m including getting out the excavated soil and then returning the soil as required in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, or dewatering etc. and disposing of surplus excavated soil as directed, within TFL Premises: <b>Pipes, cables etc exceeding 80 mm dia but not exceeding 300 mm dia</b>	575.000	R.M.		0.00	0.00	0.00	INR Zero Only
4.02	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 200 m and lift upto 1.5 m, as directed by Engineer-in-charge. <b>All kinds of soil</b>	2800.000	CuM		0.00	0.00	0.00	INR Zero Only
4.03	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 200 m and lift upto 1.5 m, as directed by Engineer-in-charge: <b>Lift from 1.5 M to 3.0 M.</b>	510.000	CuM		0.00	0.00	0.00	INR Zero Only
4.04	Backfilling with available excavated good earth (excluding rocks / boulders), as approved and directed by Engineer-in-Charge, in trenches, plinth, under floors, sides of foundation etc., at all depths in layers not exceeding 20 cms. in thickness including consolidating and dressing each deposited layer by ramming and watering with lead upto 200 m, complete in all respects.	2165.000	CuM		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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4.05	Supplying and filling with <b>available good earth brought from Inside TFL premises</b> / as approved by the Engineer -in-Charge in trenches, plinth, under floors, sides of foundation etc., at all depths in layers not exceeding 20 cms. in thickness including consolidating and dressing each deposited layer by ramming and watering (Rate shall include all transportation, loading and unloading, etc., and nothing extra will be paid on this account including compaction under floor with mechanical vibrator / road roller including watering).	50.000	CuM		0.00	0.00	0.00	INR Zero Only
<b>5.0</b>	<b>Plain Cement Concrete &amp; RCC</b>							
5.01	Providing and laying plain cement concrete, machine mixed and mechanically vibrated in foundations, plinth, under floors, etc., including all necessary cost of centring and shuttering : <b>1:5:10 (1 cement: 5 coarse sand:10 graded stone aggregate 20 mm nominal size).</b>	40.000	CuM		0.00	0.00	0.00	INR Zero Only
5.02	Providing and laying plain cement concrete, machine mixed and mechanically vibrated in foundations, plinth, under floors, etc., including all necessary cost of centring and shuttering : <b>1:4:8 (1 cement: 4 coarse sand:8 graded stone aggregate 20 mm nominal size).</b>	90.000	CuM		0.00	0.00	0.00	INR Zero Only
5.03	Providing and laying plain cement concrete, machine mixed and mechanically vibrated in foundations, plinth, under floors, etc., including all necessary cost of centring and shuttering : <b>1:3:6 (1 Cement : 3 coarse sand (zone-III) : 6 graded stone aggregate 20 mm nominal size).</b>	495.000	CuM		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

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5.04	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness), slab including attached plasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets, sunken floor etc., up to floor five level, including the cost of centering, shuttering and finishing: - 1:1½:3 (1 cement : 1½ coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size).	80.000	CuM		0.00	0.00	0.00	INR Zero Only
5.05	Providing and laying in position specified grade of reinforced cement concrete, machine mixed, mechanically vibrated and finished to a fair face but including the cost of centring and shuttering excluding reinforcement in superstructure at all heights for columns, pillars, posts, attached pilasters, portals, struts, inclined posts, pedestals ,Beam, walls, Roof, Slabs etc., complete in all respects as per direction of Engineer-in-Charge. <b>Design mix M25 grade concrete</b>	300.000	CuM		0.00	0.00	0.00	INR Zero Only
5.06	Providing and laying in position reinforced cement concrete in foundations, walls, plinth beams etc. including the cost of centring, shuttering, finishing but excluding reinforcement - All work up to plinth level . <b>Design mix M25 grade concrete</b>	370.000	CuM		0.00	0.00	0.00	INR Zero Only
5.07	Providing and laying in position reinforced cement concrete in foundations, walls, plinth beams etc. including the cost of centring, shuttering, finishing but excluding reinforcement - All work up to plinth level . <b>M20 grade concrete</b>	85.000	CuM		0.00	0.00	0.00	INR Zero Only
5.08	Repairing & Renewing existing RCC/Cement concrete works in patches including chipping / dismantling the damaged portion to required depth/thickness and re-doing the same with rich cement concrete/cement mortar and making good the same as the existing shape. Including scaffolding, centering, shuttering and disposal of unserviceable material within 200 metres lead etc. Complete in all respects as per direction of Engineer-in- Charge.	40.000	CuM		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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5.09	Supplying, providing and laying Steel reinforcement (Hot rolled deformed bars) for R.C.C. work including straightening, cutting,welding,bending, placing in position and binding all complete.	60055.00	Kg		0.00	0.00	0.00	INR Zero Only
5.10	Grading roof for water proofing treatment with - Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size),with using waterproof powder/chemical.	65.000	CuM		0.00	0.00	0.00	INR Zero Only
5.11	Neat cement punning.	320.000	Sq.M		0.00	0.00	0.00	INR Zero Only
<b>6.0</b>	<b>Brick Work</b>							
6.01	Providing and constructing Brick work with non modular fly ash bricks conforming to IS:12894, class designation 10 average compressive strength in in cement mortar 1 : 6 ( 1 cement: 6 coarse sand jinwalls, etc. at all depths, places and positions including raking out joints, curing, scaffolding etc. complete excluding plastering and painting.	900.000	CuM		0.00	0.00	0.00	INR Zero Only
6.02	Half brick masonry with non modular fly ash bricks of class designation 7.5 in foundations and plinth in : <b>mortar 1:4 (1 cement : 4 coarse sand)</b>	260.000	Sq.M		0.00	0.00	0.00	INR Zero Only
6.03	Half brick masonry with non modular fly ash bricks of class designation 7.5 in superstructure above plinth level up to floor V level. <b>mortar 1:4 (1 cement : 4 coarse sand)</b>	200.000	SqM		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

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Contract No: PNP/PC183/E/203/NCB

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6.04	Repairs to plaster of thickness 12 mm to 20 mm in patches of area 2.5 sq. meters and under, including cutting the patch in proper shape, raking out joints and preparing and plastering the surface of the walls complete, including disposal of rubbish to the dumping ground, all complete as per directions of Engineer-In-Charge. <b>With cement mortar 1:4 (1 cement : 4 fine sand)</b>	1600.000	Sq.M		0.00	0.00	0.00	INR Zero Only
<b>7.0</b>	<b>Finishing</b>							
7.01	12 mm thick cement plaster 1:6 (1 cement: 6 fine sand) after properly cleaning etc. as per instruction of Engineer - In-charge.	10725.000	Sq.M		0.00	0.00	0.00	INR Zero Only
7.02	15 mm thick cement plaster 1:6 (1 cement: 6 fine sand) after properly cleaning etc. as per instruction of Engineer - In-charge.	4595.000	Sq.M		0.00	0.00	0.00	INR Zero Only
7.03	6mm thick cement plaster to ceiling of mix 1:3 (1 cement: 3 fine sand).	4020.000	Sq.M		0.00	0.00	0.00	INR Zero Only
7.04	Wall painting with Plastic Emulsion Paint / acrylic emulsion paint with one coat of primer of approved brand and manufacture to give an even shade : <b>One or more coat on old work. (Including scrapping and sand rubbing &amp; preparing the smooth surface)</b>	4475.000	Sq.M		0.00	0.00	0.00	INR Zero Only
7.05	Wall painting with Plastic Emulsion Paint / acrylic emulsion paint with one coat of primer of approved brand and manufacture to give an even shade : <b>New work (two or more coats) over and including water thinnable priming coat with cement primer</b>	5620.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

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7.06	Finishing walls with 100% Premium acrylic emulsion paint with one coat of primer having VOC less than 50 gm/litre and UV Resistance as per IS 15489:2004, Alkali & fungal resistance, dirt resistance exterior paint of required shade (Company Depot Tinted) with silicon additives with approved manufacture (Asian/ Nerolac/ Berger or equivalent), quality and shades over exterior walls including labour, materials, equipment, handling, transportation, finishing, scaffolding and preparing the surface Including Filling of cracks with water proof materials etc. Cleaning stain from floors, walls, glass panes etc. all complete instructions of the Engineer at all elevations. Roller to be used in the paint application. : <b>On new work</b>	2265.000	Sq.M		0.00	0.00	0.00	INR Zero Only
7.07	Finishing walls with 100% Premium acrylic emulsion paint with one coat of primer having VOC less than 50 gm/litre and UV Resistance as per IS 15489:2004, Alkali & fungal resistance, dirt resistance exterior paint of required shade (Company Depot Tinted) with silicon additives with approved manufacture (Asian/ Nerolac/ Berger or equivalent), quality and shades over exterior walls including labour, materials, equipment, handling, transportation, finishing, scaffolding and preparing the surface Including Filling of cracks with water proof materials etc. Cleaning stain from floors, walls, glass panes etc. all complete instructions of the Engineer at all elevations. Roller to be used in the paint application: <b>On old work</b>	8360.000	Sq.M		0.00	0.00	0.00	INR Zero Only
7.08	Distemping with 1st quality acrylic distemper (ready mixed) with one coat of primer having VOC content less than 50 gms/litre, of approved manufacturer, of required shade and colour complete, as per manufacturer's specification.Two or more coats..	4000.000	Sq.M		0.00	0.00	0.00	INR Zero Only
7.09	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete .	13930.000	Sq.M		0.00	0.00	0.00	INR Zero Only
7.10	Melamine polishing on wood work on old and new work (one or more coat), matt/glossy as directed by EIC.	860.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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7.11	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : <b>200x10 mm</b>	235.000	Each		0.00	0.00	0.00	INR Zero Only	
7.12	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : <b>150x10 mm</b>	170.000	Each		0.00	0.00	0.00	INR Zero Only	
7.13	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : <b>100x10 mm</b>	170.000	Each		0.00	0.00	0.00	INR Zero Only	
7.14	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	285.000	Each		0.00	0.00	0.00	INR Zero Only	
7.15	Providing and fixing special quality bright finished brass cupboard or ward robe locks with four levers of approved quality including necessary screws etc. complete. :40 mm	115.000	Each		0.00	0.00	0.00	INR Zero Only	
7.16	Providing and fixing special quality bright finished brass cupboard or ward robe locks with four levers of approved quality including necessary screws etc. complete. : <b>50 mm</b>	130.000	Each		0.00	0.00	0.00	INR Zero Only	
7.17	Providing and fixing bright finished brass handles with screws etc.complete: <b>125 mm</b>	165.000	Each		0.00	0.00	0.00	INR Zero Only	
7.18	Providing and fixing bright finished brass handles with screws etc.complete: <b>100 mm</b>	150.000	Each		0.00	0.00	0.00	INR Zero Only	

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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7.19	Taking out existing wooden door shutter, repair by cutting, painting etc. and refixing of repaired door shutters to existing door frames, including replacement of hinges with screws, etc. as required, all complete as per the direction of the Engineer-in-charge	125.000	Each		0.00	0.00	0.00	INR Zero Only
7.20	Providing and fixing brass curtain rods of wall thickness 1.25 mm with two brass brackets fixed with brass screws and wooden plugs etc. wherever necessary complete. <b>25mm Diameter</b>	730.000	R.M.		0.00	0.00	0.00	INR Zero Only
<b>8.0</b>	<b>Flooring</b>							
8.01	Providing and laying Vitrified finish ceramic floor tiles 600mm x 600mm (thickness to be specified by manufacturer) of first quality conforming to IS: 15622 of NAVEEN, NITCO, ORIENT, ORIENT, KAJARIA or equivalent make in all colours, shade and design as approved by E.I.C. laid on 20mm thick cement mortar (1 cement: 4 coarse sand) including pointing the joints with white cement and matching pigment of matching shade to match the level of existing floor complete in all respect at any level.	2920.000	Sq.M		0.00	0.00	0.00	INR Zero Only
8.02	Providing and laying Vitrified finish ceramic floor tiles on skirting made from tiles 600mm x 600mm (thickness to be specified by manufacturer) of height As per directed by EIC. of first quality tiles conforming to IS:15622 of KAZARIA, NAVEEN, NITCO, ORIENT, SOMANY or equivalent make in all colours, shade and design as approved by E.I.C. laid on 20mm thick cement mortar 1:4 (1 cement: 4 coarse sand) including pointing the joints with white cement and matching pigment of matching shade complete in all respect at any level.	545.000	Sq.M		0.00	0.00	0.00	INR Zero Only
8.03	Providing and laying 1st quality ceramic glazed tiles 300mm x 300mm conforming to IS: 15622 of minimum thickness 5mm of approved make like KAJARIA, NITCO, ORIENT, SOMANY or equivalent make on walls in all colours, shade and design as approved by E.I.C. over 12mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand) and jointing with grey cement slurry @ 3.3Kg per Sq.m. including pointing in white cement mixed with pigment of matching shade complete.	1715.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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8.04	Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab, including rubbing and polishing Mechanically as per directed by EIC. complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) : <b>25 mm thick</b>	475.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
8.05	Kota stone slabs 20 mm thick in risers of steps, skirting, dado and pillars laid on 12 mm (average) thick cement mortar 1:3 (1 cement: 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing Mechanically as per directed by EIC.complete.	265.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
<b>9.0</b>	<b>Sanitary Installations</b>								
9.01	Providing and fixing Chlorinated Polyvinyl Chloride (UPVC/CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. Concealed work, including cutting chases and making good the walls etc. : <b>15 mm nominal outer dia pipes</b>	350.000	R.M.		0.00	0.00	0.00	INR Zero Only	
9.02	Providing and fixing Chlorinated Polyvinyl Chloride (UPVC/CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. Concealed work, including cutting chases and making good the walls etc. : <b>20 mm nominal outer dia pipes</b>	670.000	R.M.		0.00	0.00	0.00	INR Zero Only	

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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9.03	Providing and fixing Chlorinated Polyvinyl Chloride (UPVC/CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. Concealed work, including cutting chases and making good the walls etc. <b>25 mm nominal outer dia pipes</b>	225.000	R.M.		0.00	0.00	0.00	INR Zero Only
9.04	Providing and fixing Chlorinated Polyvinyl Chloride (UPVC/CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. Concealed work, including cutting chases and making good the walls etc. <b>32 mm nominal outer dia pipes</b>	225.000	R.M.		0.00	0.00	0.00	INR Zero Only
9.05	Providing and fixing soil/ waste PVC pipes as required connecting properly with old and new existing pipe and filling all joints as required at any level (including tees, bends, plain junction, stays & clamps and other fixtures as required complete in all respect.: <b>75 mm dia.</b>	765.000	R.M.		0.00	0.00	0.00	INR Zero Only
9.06	Providing and fixing soil/ waste PVC pipes as required connecting properly with old and new existing pipe and filling all joints as required at any level (including tees, bends, plain junction, stays & clamps and other fixtures as required complete in all respect.: <b>100 mm dia.</b>	465.000	R.M.		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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9.07	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid with necessary opening (area less than 0.5 sqm) over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment,epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels. Area of slab over 0.50 sqm" : <b>Granite of any colour and shade, area of slab upto 0.5 Sq.m.</b>	55.000	Sq.M		0.00	0.00	0.00	INR Zero Only
9.08	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid with necessary opening (area less than 0.5 sqm) over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment,epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels. Area of slab over 0.50 sqm" : <b>Granite of any colour and shade, area of slab over 0.5 Sq.m.</b>	50.000	Sq.M		0.00	0.00	0.00	INR Zero Only
9.09	Providing and fixing vitreous china wash basin of Parryware or approved make and colour with C.I. brackets 15mm C.P. brass Pillar taps Jaquar, no.011, 32mm C.P. brass waste of standard pattern , including painting of fittings and C.I. brackets, cutting and making good the walls wherever required. : <b>White Vitreous China Flat back wash basin size 550x400 mm with single 15 mm C.P. brass pillar tap</b>	60.000	Each		0.00	0.00	0.00	INR Zero Only
9.10	Providing and fixing vitreous china wash basin of Parryware or approved make and colour with C.I. brackets 15mm C.P. brass Pillar taps Jaquar, no.011, 32mm C.P. brass waste of standard pattern , including painting of fittings and C.I. brackets, cutting and making good the walls wherever required. : <b>White Vitreous China Surgeon type wash basin of size 660x460 mm with single 15 mm C.P. brass pillar taps with elbow operated levers ISI Marked .</b>	10.000	Each		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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9.11	Providing and fixing white vitreous china pedestal type water closet (European type W.C. pan) of Cera make or equivalent with seat and lid, 10 litre low level white PVC flushing cistern with manually controlled device conforming to IS: 7231 with all fittings and fixtures With jet spray all complete including cutting and making good the walls and floors wherever required, including providing and fixing jet to W.C. Pan(European). : <b>W.C. pan with ISI marked white solid plastic seat and lid self closing type.</b>	50.000	Each		0.00	0.00	0.00	INR Zero Only
9.12	Providing and fixing C.P. brass bib cock of Jaquar / Cera / Hindware / Parryware or equivalent make, chrome finish of approved quality and 15 mm nominal bore. : <b>Long body bib cock</b>	65.000	Each		0.00	0.00	0.00	INR Zero Only
9.13	Providing and fixing C.P. brass bib cock of Jaquar / Cera / Hindware / Parryware or equivalent make, chrome finish of approved quality and 15 mm nominal bore. : <b>Short body bib cock</b>	80.000	Each		0.00	0.00	0.00	INR Zero Only
9.14	Providing and fixing C.P. brass angle valve, 15 mm nominal bore of Jaquar make no.053 chrome finish or equivalent for Wash basins, urinals etc. of approved quality conforming to IS:8931	100.000	Each		0.00	0.00	0.00	INR Zero Only
9.15	Providing and fixing toilet paper holder C.P. brass of approved make Jaquar / Cera / Hindware / Parryware or equivalent chrome finish.	60.000	Each		0.00	0.00	0.00	INR Zero Only
9.16	Providing and fixing PTMT liquid soap container 109mm wide, 125mm high and 112mm distance from wall of standard shape with bracket of the same material with snap fitting of approved colour and make, complete in all respect.	55.000	Each		0.00	0.00	0.00	INR Zero Only
9.17	Providing and fixing PVC waste pipe 32mm or 40mm rigid with elbow, tee, reducer etc. as required to complete in all respect to wash basin etc.	100.000	Each		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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9.18	Providing and fixing CP Jalli of approved make for traps.	205.000	Each		0.00	0.00	0.00	INR Zero Only
9.19	Providing and fixing brass ferrule with C.I. mouth cover including boring and tapping the main : <b>20 mm nominal bore</b>	20.000	Each		0.00	0.00	0.00	INR Zero Only
9.20	Providing and placing on terrace (at all floor levels) polyethylene water storage tank, IS : 12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	44500.000	Per Litre		0.00	0.00	0.00	INR Zero Only
9.21	Providing and fixing white vitreous china flat back half stall urinal of size 580x380x350 mm with white PVC automatic flushing cistern, with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS :2556, C.I. trap with outlet grating and other couplings in C.P. brass,including painting of fittings and cutting and making good the walls and floors wherever required : <b>Single half stall urinals with 5 litre P.V.C. automatic flushing cistern</b>	32.000	Each		0.00	0.00	0.00	INR Zero Only
9.22	Providing and fixing Stainless Steel A ISI 304 (18/8) kitchen sink as per IS: 13983 with C.I. brackets and stainless steel plug 40 mm, including painting of fittings and brackets, cutting and making good the walls wherever required : <b>Kitchen sink with drain board (510x1040 mm bowl depth 225 mm)</b>	20.000	Each		0.00	0.00	0.00	INR Zero Only
9.23	Providing and fixing water closet squatting pan (Indian type W.C. pan ) with 100 mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern, including flush pipe, with manually controlled device (handle lever) conforming to IS : 7231, with all fittings and fixtures complete, including cutting and making good the walls and floors wherever required: <b>White Vitreous china Orissa pattern W.C. pan of size 580x440 mm with integral type foot rests</b>	17.000	Each		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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9.24	Providing and fixing PTMT towel ring trapezoidal shape 215 mm long,200 mm wide with minimum distances of 37 mm from wall face with concealed fittings arrangement of approved quality and colour, weighing not less than 88 gms.	55.000	Each		0.00	0.00	0.00	INR Zero Only	
9.25	Providing and fixing PTMT swivelling shower, 15 mm nominal bore, weighing not less than 40 gms.	60.000	Each		0.00	0.00	0.00	INR Zero Only	
9.26	Providing and fixing 600x450 mm beveled edge mirror of superior glass (of approved quality) complete with 6 mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	55.000	Each		0.00	0.00	0.00	INR Zero Only	
9.27	Providing Gola 75mm x 75mm in cement concrete 1:2:4 (1cement: 2 coarse sand: 4 stone aggregate 10mm and down grade) including finishing with cement mortar 1:3 (1 cement: 3 fine sand) as per standard design.	280.000	R.M.		0.00	0.00	0.00	INR Zero Only	
9.28	Providing and fixing trap of any type (self cleansing design with or without vent arm complete including cost of cutting and making good the walls and floors. <b>PVC make, 100 mm inlet &amp; 100 mm outlet.</b>	210.000	Each		0.00	0.00	0.00	INR Zero Only	
9.29	Providing and fixing on wall face unplasticised Rigid PVC rain waterpipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes. <b>110 mm diameter</b>	855.000	R.M.		0.00	0.00	0.00	INR Zero Only	
9.30	Providing and fixing CP Brass 32mm size Bottle Trap of approved quality & make and as per the direction of Engineer-in-charge.	60.000	Each		0.00	0.00	0.00	INR Zero Only	

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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9.31	Providing and fixing Chlorinated Polyvinyl Chloride (UPVC/CPVC) pipes, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge.: <b>40 mm nominal outer dia Pipes</b>	100.000	R.M.		0.00	0.00	0.00	INR Zero Only
9.32	Providing and fixing Chlorinated Polyvinyl Chloride (UPVC/CPVC) pipes, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge.: <b>50 mm nominal outer dia Pipes</b>	100.000	R.M.		0.00	0.00	0.00	INR Zero Only
9.33	Providing and fixing Ball valve with C.I. wheel of approved quality (screwed end) : <b>25 mm nominal bore</b>	30.000	Each		0.00	0.00	0.00	INR Zero Only
9.34	Providing and fixing Ball valve with C.I. wheel of approved quality (screwed end) : <b>40 mm nominal bore</b>	30.000	Each		0.00	0.00	0.00	INR Zero Only
9.35	Providing and fixing Ball valve with C.I. wheel of approved quality (screwed end) : <b>50 mm nominal bore each</b>	30.000	Each		0.00	0.00	0.00	INR Zero Only
9.36	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete : <b>150 mm dia. R.C.C. pipe.</b>	150.000	R.M.		0.00	0.00	0.00	INR Zero Only
9.37	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete : <b>250 mm dia. R.C.C. pipe</b>	250.000	R.M.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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9.38	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete : <b>300 mm dia. R.C.C. pipe</b>	150.000	R.M.		0.00	0.00	0.00	INR Zero Only
9.39	Providing and fixing PTMT extension nipple for water tank pipe, fittings of approved quality and colour. <b>25mm nominal bore, weighing not less than 62 gms.</b>	30.000	Each		0.00	0.00	0.00	INR Zero Only
9.40	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931. 15 mm nominal bore.	40.000	Each		0.00	0.00	0.00	INR Zero Only
9.41	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels. Raj Nagar Plain white marble/ Udaipur green marble/ Zebra black marble. : <b>Area of slab upto 0.50 sqm</b>	25.000	Sq.M		0.00	0.00	0.00	INR Zero Only
9.42	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels. Raj Nagar Plain white marble/ Udaipur green marble/ Zebra black marble. : <b>Area of slab over 0.50 sqm</b>	25.000	Sq.M		0.00	0.00	0.00	INR Zero Only
9.43	PTMT Ball Cock 25mm complete with Epoxy Coated Aluminium Rod & H.D. Ball.	20.000	Each		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

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Contract No: PNP/PC183/E/203/NCB

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9.44	PTMT Ball Cock 40mm complete with Epoxy Coated Aluminium Rod & H.D. Ball.	20.000	Each		0.00	0.00	0.00	INR Zero Only
9.45	CP Brass Single lever telephonic wall mixer of approved make	10.000	Each		0.00	0.00	0.00	INR Zero Only
9.46	Providing and fixing square-mouth S.W. gully trap class SP-1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design: <b>100x100 mm size P type With common burnt clay F.P.S. (non modular) bricks of class designation 7.5 .</b>	18.000	Each		0.00	0.00	0.00	INR Zero Only
<b>10.0</b>	<b>Doors, Windows &amp; Ventilators</b>							
10.01	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position with hold fast lugs or with dash fasteners of required dia & length ( hold fast lugs or dash fastener shall be paid for separately). : <b>Kiln seasoned and chemically treated hollock wood or equivalent grade wood</b>	10.000	CuM		0.00	0.00	0.00	INR Zero Only
10.02	Providing and fixing panelled or panelled and glazed shutters for doors, windows and clerestory windows, including ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws, excluding panelling which will be paid for separately, all complete as per direction of Engineer-in-charge. : <b>Kiln seasoned and chemically treated hollock wood or equivalent grade wood (30 mm thick shutters)</b>	160.000	Sq.M		0.00	0.00	0.00	INR Zero Only
10.03	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick : <b>Kiln seasoned and chemically treated hollock wood or equivalent grade wood</b>	300.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

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10.04	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick : <b>Ply wood 5 ply, 9 mm thick Decorative plywood one side decorative veneer and commercial veneer on other face (Type 1)conforming to IS 1328 BWR Type</b>	110.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
10.05	Providing and fixing panelling or panelling and glazing in panelled or panelled and glazed shutters for doors, windows and clerestory windows (Area of opening for panel inserts excluding portion inside grooves or rebates to be measured). Panelling for panelled or panelled and glazed shutters 25 mm to 40 mm thick : <b>Particle Board 12 mm thick Plain particle board flat pressed, 3 layer or graded wood particle board medium density Grade I, IS :3087 marked</b>	120.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
10.06	Providing and fixing ISI marked flush door shutters conforming to IS: 2202, core of block construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. : <b>30 mm thick non-decorative type including ISI marked stainless steel butt hinges with necessary screws.</b>	320.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
10.07	Providing and fixing glazed shutter for doors, windows and clerestory windows using 4 mm thick float glass panes including ISI marked butt hinges bright finished of required size with necessary screws. : <b>30 mm thick Kiln seasoned and chemically treated hollock wood or equivalent garde wood</b>	220.000	Sq.M		0.00	0.00	0.00	INR Zero Only	

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10.08	Providing and fixing 25 mm thick shutters for cup board etc. : <b>Panelled or panelled &amp; glazed shutters : 1st class teak wood including nickel plated bright finished M.S. piano hinges with necessary screws.</b>	420.000	Sq.M		0.00	0.00	0.00	INR Zero Only
10.09	Providing and fixing wire gauge shutters using stainless steel grade 304 wire gauge with wire of dia 0.5 mm and average width of aperture 1.4 mm in both directions for doors, windows and clerestory windows with necessary screws : 35 mm thick shutters. <b>With ISI marked stainless steel butt hinges of required size Kiln seasoned and chemically treated hollock wood or equivalent garde wood.</b>	430.000	Sq.M		0.00	0.00	0.00	INR Zero Only
10.10	Providing and fixing to existing door frames 30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames. direction of Engineer-in-charge.	70.000	Sq.M		0.00	0.00	0.00	INR Zero Only
10.11	Providing and fixing in position collapsible steel shutters with vertical channels 20x10x2 mm and braced with flat iron diagonals 20x5 mm size, with top and bottom rail of T-iron 40x40x6 mm, with 40 mm dia steel pulleys, complete with bolts, nuts, locking arrangement, stoppers, handles, including applying a priming coat of approved steel primer.	50.000	Sq.M		0.00	0.00	0.00	INR Zero Only
10.12	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete	50.000	Each		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

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10.13	Fixing chowkhat in existing opening in brick/ RCC wall with dash fasteners/Chemical fasteners of appropriate size (3 nos on each vertical member of door chowkhat and 2 nos on each vertical member of window chowkhats), including Cost of dash fasteners/ chemical fastener.	250.000	Each		0.00	0.00	0.00	INR Zero Only	
10.14	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, of HINDALCO,JINDAL, or Equivalent fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P.brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : <b>For fixed portion Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15.</b>	2500.000	Kg		0.00	0.00	0.00	INR Zero Only	
10.15	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item): <b>With float glass panes of 4.0 mm thickness (weight not less than 10 kg/ sqm), along with SS jali sutter.</b>	125.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
10.16	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item): <b>With float glass panes of 5.0 mm thickness (weight not less than 10 kg/ sqm), along with SS jali sutter.</b>	125.000	Sq.M		0.00	0.00	0.00	INR Zero Only	

**Item Rate BoQ**

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10.17	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge; With stainless steel cover plate minimum 1.25 mm thickness.	10.000	Each		0.00	0.00	0.00	INR Zero Only
<b>11.0</b>	<b>Water Proofing Treatment</b>							
11.01	Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc. by applying cement slurry mixed with Armourcrete of M/s The Structural water proofing Company Pvt. Ltd. or Tapecrete of M/s CICO Engineering Service consisting of applying: a) First layer of slurry of cement @ 0.488 Kg/Sq.m mixed with Armourcrete or Tapecrete @ 0.253 Kg/Sq.m. This layer will be allowed to air cure for 4 hours. b) Second layer of slurry of cement @ 0.242 Kg/Sq.m mixed with Armourcrete or Tapecrete @ 0.126 Kg/Sq.m. This layer will be allowed to air cure for 4 hours follwed with water curing for 48 hours. (The rate includes preparation of surface , treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.	510.000	Sq.M		0.00	0.00	0.00	INR Zero Only
11.02	Providing and laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer, 3 mm thick water proofing membrane, black finished reinforced with glass fibre matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 litre/sqm by the same membrane manufactured of density at 25°C, 0.87 - 0.89 kg/litre and viscosity 70 - 160 cps. Over the primer coat the layer of membrane shall be laid using butane torch and sealing all joints etc., and preparing the surface complete. The vital physical and chemical parameters of the membrane shall be as under : Joint strength in longitudinal and transverse direction at 23°C as 350/300 N/5 cm. Tear strength in longitudinal and transverse direction as 60/80N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be got done through the authorised applicator of the manufacturer of membrane : - 3 mm thick	2500.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

<b>Name of the Bidder/ Bidding Firm / Company :</b>	
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**SCHEDULE OF RATE** (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )

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SI. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
11.03	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: <b>(a)</b> Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCCslab including adjoining walls upto 300 mm height including cleaning the surface before treatment. <b>(b)</b> Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. <b>(c)</b> After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge. <b>(d)</b> Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. <b>(e)</b> The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test."All above operations to be done in order and as directed and specified by the Engineer-in-Charge : <b>With average thickness of 120 mm and minimum thickness at khurra as 65 mm.</b>	150.000	Sq.M		0.00	0.00	0.00	INR Zero Only
<b>12.0</b>	<b>Paver Block &amp; Fencing</b>							
12.01	Providing and fixing G.I. chain link fabric fencing of required width in mesh size 50x50 mm including strengthening with 2 mm dia wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge. <b>Made of G.I. wire of dia 4 mm</b>	1200.000	Sq.M		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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12.02	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length ( total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately)	1000.000	R.M.		0.00	0.00	0.00	INR Zero Only
12.03	Providing and laying factory made chamfered edge Cement Concrete paver blocks In foot path, park & lawns driveway or light & traffic parking etc. of required strength, thickness & size/ shape, made by table vibratory method using PU mould, laid in required colour & pattern over 50mm thick compacted bed of course sand, compacting and proper embedding/laying of inter locking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand, all complete as per manufacturer's specifications & direction of Engineerin-Charge. <b>80mm thick Cement concrete paver block of M-30 grade with approved colour, design &amp; pattern.</b>	2400.000	Sq.M		0.00	0.00	0.00	INR Zero Only
<b>13.0</b>	<b>Handrailing &amp; Gate</b>							
13.01	Providing and fixing M.S pipe hand railing (medium grade) conforming to IS-1239 consisting of top and middle horizontal rails of 40 mm dia. and 32 mm dia. nominal bore respectively, 1050 mm high upright members of 40 mm dia. nominal bore at 1500 mm maximum distance centre to centre of each member including all joints, bends , elbows, and specials as required and upright members welded or bolted to structural steel work/toe plates or welded to M.S. insert plates with M.S. lugs embedded in R.C.C. works, complete in all respects and as per direction of Engineer-in-Charge . <b>Two coats of chlorinated rubber based paint at dry film thickness of 40 microns per coat over two coats of high built zinc phosphate primer compatible to chlorinated rubber based paint at dry film thickness of 25 microns per coat.</b>	4.000	Ton		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

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Contract No: PNP/PC183/E/203/NCB

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13.02	Steel work welded in built up sections/ framed work trash racks, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required. <b>In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works</b>	1260.000	Kg		0.00	0.00	0.00	INR Zero Only
13.03	Structural steel work in single section, fixed with or without connecting plate, including cutting, hoisting, fixing in position and painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade - new work with two coats including a coat of approved steel primer and a coat of mordant solution with 38 gms of copper acetate in a litre of soft water.	5000.000	Kg		0.00	0.00	0.00	INR Zero Only
13.04	Providing, fabricating and fixing in position double leaf gates of any height with one wicket door within the main gate, all made out of structural steel sections such as M.S. Angles, Tees, Channels, Plates, Flats, etc., for all horizontal, vertical and diagonal members, M.S. Gusset plates including providing and fixing in position at all heights hard drawn steel wire fabric mesh of size 75 mm x 25 mm and weight not less than 7.75 kg/sq.m. welded with frames, including providing and fixing necessary lock plate, handles, locking arrangement and other fittings, drilling of holes wherever required, welding etc. including providing necessary hinge plates welded to insert plates embedded in RCC columns, bolts and nuts for hinge etc. including providing and applying painting, complete in all respects and direction of Engineer-in-Charge : <b>With providing and applying two coats of high build zinc phosphate primer of approved brand and manufacture compatible to chlorinated rubber paint at a dry film thickness of 50 micron per coat on structural steel work after preparation of surfaces including providing and applying two coats of chlorinated rubber based paint of approved colour, brand and manufacture at a dry film thickness of 50 microns per coat</b>	9.000	Ton		0.00	0.00	0.00	INR Zero Only
13.05	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. including priming coat with approved steel primer all complete. <b>Fixed to openings /wooden frames with rawl plugs screws etc.</b>	1200.000	Kg		0.00	0.00	0.00	INR Zero Only

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**Item Rate BoQ**

Tender Inviting Authority: Projects &amp; Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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13.06	Providing and fixing rolling shutters of approved make made of 80 mm wide MS laths and interlocked together through their entire length and jointed together at the ends by end locks, mounted on specially designed pipe shaft with bracket plates, guide channels and arrangement for inside and outside locking with push-pull operation complete including cost of wire spring and hood cover for the shutters and painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade - new work with two coats including a coat of approved steel primer and a coat of mordant solution with 38 gms of copper acetate in a litre of soft water.	120.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
13.07	Extra for providing mechanical device chain and crank operation for operating rolling shutters. - Exceeding 16.80 sqm in the area.	45.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
<b>14.0</b>	<b>Hotriculture &amp; Landscape</b>								
14.01	Supplying sludge/manure at site including royalty and carriage upto 5km complete (sludge measured in stacks will be reduced by 8% for payment).	895.000	CuM		0.00	0.00	0.00	INR Zero Only	
14.02	Renovating lawns including weeding, cheeling the grass, forking the ground, top dressing with sludge or manure, mixing the same with forked soil, watering and maintaining the lawn for 60 days or more till the grass forms a thick lawn (korean lawn) free from weeds and fit for mowing and disposal of rubbish as directed, including supplying good earth if needed but including the cost of sludge or manure (The manure/sludge shall be paid for separately).	1980.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
14.03	Plantation of Trees, Shrubs, and Hedge at site i/c watering and removal of unserveiceable material's as per direction of officer in charge (excluding cast of plant & water) : <b>Trees Plant</b>	315.000	Each		0.00	0.00	0.00	INR Zero Only	
14.04	Plantation of Trees, Shrubs, and Hedge at site i/c watering and removal of unserveiceable material's as per direction of officer in charge (excluding cast of plant & water) : <b>Shrubs Plant</b>	430.000	Each		0.00	0.00	0.00	INR Zero Only	

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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14.05	Plantation of Trees, Shrubs, and Hedge at site i/c watering and removal of unserviceable material's as per direction of officer in charge (excluding cast of plant & water) : <b>Hedge Plant</b>	430.000	Each		0.00	0.00	0.00	INR Zero Only
14.06	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level, surface dressing of the ground including removing in-equalities not exceeding 15 cm deep and removal of rubbish lead up to a distance of 50 m (lift up to 1.5 m),outside the periphery of the area cleared.	3520.000	Sq.M		0.00	0.00	0.00	INR Zero Only
14.07	Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. : <b>Beyond 30 cm girth upto and including 60 cm girth.</b>	5.000	Each		0.00	0.00	0.00	INR Zero Only
14.08	Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. : <b>Beyond 60 cm girth upto and including 120 cm girth</b>	4.000	Each		0.00	0.00	0.00	INR Zero Only
14.09	Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. : <b>Beyond 120 cm girth upto and including 240 cm girth</b>	6.000	Each		0.00	0.00	0.00	INR Zero Only
14.10	Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. : <b>Above 240 cm girth</b>	5.000	Each		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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14.11	Pruning, trimming, shaping of trees /shrubs (ht 15 feet and above) i/c removal of cut materials upto 50mt. Lead, as per direction of officer in charge. T&P shall be arranged by the contractor.	200.000	Per tree		0.00	0.00	0.00	INR Zero Only
<b>15.0</b>	<b>Miscellaneous</b>							
15.01	Disposal of excavated earth / building rubbish / malba /coal ash and similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to municipal approved dumping ground or as approved by Engineer-in-charge, <b>beyond 200 m</b> initial lead, for lead distance upto 5 km including all lifts involved.	2500.000	CuM		0.00	0.00	0.00	INR Zero Only
15.02	Same as item no. 1 of Miscellaneous ( <b>15.01</b> ) but for lead distance up to 5-10 km	50.000	CuM		0.00	0.00	0.00	INR Zero Only
15.03	Same as item no. 1 of Miscellaneous ( <b>15.01</b> ) but for lead distance up to 10-20 km	50.000	CuM		0.00	0.00	0.00	INR Zero Only

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15.04	Providing and fixing tiled false ceiling of specified materials of size 595x595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanized steel sections ( galvanized @ 120 grams/ sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm center to center and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid including, required cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x 37 x 25 x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm GI adjustable rods with galvanised butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200 mm center to center along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all complete for all heights as per specifications, drawings and as directed by Engineer-in-charge. 12.5 mm thick fully Perforated Gypsum Board tile made from plasterboard having glass fibre conforming to IS: 2095 part I, of size 595x595 mm, having perforation of 9.7x9.7 mm at 19.4 mm c/c with center borders of 48 mm and the side borders of 30 mm, backed with non woven tissue on the back side, having an NRC (Noise Reduction Coefficient) of 0.79, with 50 mm resin bonded glass wool backing.	400.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.05	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) <b>Treatment of existing masonry</b> using chemical emulsion @ one litre per hole at 300 mm interval including drilling holes at 45 degree and plugging them with cement mortar 1:2 (1cement : 2 coarse sand) to the full depth of the hole : <b>With Chlorpyriphos/Lindane E.C. 20% with 1% concentration</b>	700.000	R.M.		0.00	0.00	0.00	INR Zero Only



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Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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SI. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
15.06	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) : <b>Treatment of soil under existing floors</b> using chemical emulsion @ one litre per hole, 300 mm apart including drilling 12 mm diameter holes and plugging with cement mortar 1 :2 (1 cement : 2 Coarse sand) to match the existing floor: <b>With Chlorpyriphos/Lindane E.C. 20% with 1% concentration</b>	3520.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.07	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) : Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete: <b>With Chlorpyriphos/Lindane E.C. 20% with 1% concentration</b>	1000.000	R.M.		0.00	0.00	0.00	INR Zero Only
15.08	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) <b>Treatment at points of contact of wood work</b> by chemical emulsion Chlorpyriphos/ Lindane (in oil or kerosene based solution) @ 0.5 litres per hole by drilling 6 mm dia holes at downward angle of 45 degree at 150 mm centre to centre and sealing the same.	200.000	R.M.		0.00	0.00	0.00	INR Zero Only
15.09	Cleaning of reinforcement from rust from the reinforcing bars to give it a total rust free steel surface by using alkaline chemical rust remover of approved make with paint brush and removing loose particles after 24 hours of its application with wire brush and thoroughly washing with water and allowing it to dry, all complete as per direction of Engineer-In-Charge. : <b>Bars upto 12 mm diameter.</b>	100.000	R.M.		0.00	0.00	0.00	INR Zero Only
15.10	Cleaning of reinforcement from rust from the reinforcing bars to give it a total rust free steel surface by using alkaline chemical rust remover of approved make with paint brush and removing loose particles after 24 hours of its application with wire brush and thoroughly washing with water and allowing it to dry, all complete as per direction of Engineer-In-Charge. : <b>Bars above 12 mm diameter</b>	100.000	R.M.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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15.11	Chipping of unsound/weak concrete material from slabs, beams, columns etc. with manual Chisel and/ or by standard power driven percussion type or of approved make including tapering of all edges, making square shoulders of cavities including cleaning the exposed concrete surface and reinforcement with wire brushes etc. and disposal of debris for all lead and lifts all complete as per direction of Engineer-In-Charge. : <b>75mm average thickness</b>	200.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.12	Chipping of unsound/weak concrete material from slabs, beams, columns etc. with manual Chisel and/ or by standard power driven percussion type or of approved make including tapering of all edges, making square shoulders of cavities including cleaning the exposed concrete surface and reinforcement with wire brushes etc. and disposal of debris for all lead and lifts all complete as per direction of Engineer-In-Charge. : <b>50mm average thickness</b>	200.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.13	Drilling suitable holes in reinforced or plain cement concrete with power driven drill machine to a minimum depth of 100mm upto 200mm in RCC beams, lintels, columns and slabs to introduce steel bars for sunshades/balconies including fixing the steel bars in position using epoxy resin anchor grout of approved make but excluding the cost of reinforcement, all complete as per direction of Engineer-In-Charge. : <b>Upto and including 12mm dia.</b>	200.000	Each		0.00	0.00	0.00	INR Zero Only
15.14	Providing, mixing and applying bonding coat of approved adhesive on chipped portion of RCC as per specifications and direction of Engineer-In-charge complete in all respect. <b>SBR Polymer (@10% of cement weight) modified cementitious bond coat @ 2.2 kg cement per sqm of surface area mixed with specified proportion of approved polymer.</b>	100.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.15	Providing, mixing and applying bonding coat of approved adhesive on chipped portion of RCC as per specifications and direction of Engineer-In-charge complete in all respect. <b>Epoxy bonding adhesive having coverage 2.20 sqm/kg of approved make</b>	100.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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15.16	Providing, mixing and applying SBR polymer (of approved make) modified Cement mortar in proportion of 1:4 (1 cement: 4 graded coarse sand with polymer minimum 2% by wt. of cement used) as per specifications and directions of Engineer-in-charge. Note: Measurement and payment: The pre-measurement of thickness shall be done just after the surface preparation is completed and Payment under this item shall be made only after proper wet curing has been done and surface has been satisfactorily evaluated by sounding / tapping with a blunt metal instrument and/or the 75mm size cube crushing strength at the end of 28 days to be not less than 30 N/Sqmm2). <b>12 mm average thickness.</b>	100.000	Sq.M		0.00	0.00	0.00	INR Zero Only	
15.17	Providing, mixing and applying SBR polymer (of approved make @ minimum 2% by wt. of cement used) modified plain/reinforced cement <b>concrete for structural members</b> having minimum characteristic compressive strength [with ordinary portland cement, coarse sand and graded stone aggregate of 10mm maximum size in proportion as per design criteria] with specified average thickness. <b>Note:</b> Rates shall be for finished surface area of concrete and shall include the cost of labour, concrete and appropriate approved Super- Plasticiser for rendering concrete as flowable and SBR polymer (But shall exclude cost of reinforcement, bond coat, Shear Keys, centering and shuttering, strutting, propping etc (Payment under this item shall be made only after proper wet curing has been done and surface has been satisfactorily evaluated by sounding/tapping with a blunt metal instrument). <b>50mm thick in Grade M 25 with cement content not less than 330 kg per cum</b>	150.000	Sq.M		0.00	0.00	0.00	INR Zero Only	

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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15.18	Providing, mixing and applying SBR polymer (of approved make @ minimum 2% by wt. of cement used) modified plain/reinforced cement concrete for structural members having minimum characteristic compressive strength [with ordinary portland cement, coarse sand and graded stone aggregate of 10mm maximum size in proportion as per design criteria] with specified average thickness. <b>Note:</b> Rates shall be for finished surface area of concrete and shall include the cost of labour, concrete and appropriate approved Super- Plasticiser for rendering concrete as flowable and SBR polymer (But shall exclude cost of reinforcement, bond coat, Shear Keys, centering and shuttering, strutting, propping etc (Payment under this item shall be made only after proper wet curing has been done and surface has been satisfactorily evaluated by sounding/tapping with a blunt metal instrument). <b>75mm thick in Grade M 25 with cement content not less than 330 kg per cum</b>	150.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.19	Providing and laying SBR Polymer modified (of approved make @ minimum 2% by wt. of cement used) plain/reinforced <b>concrete jacket</b> for the structural members e.g. columns, pillars, piers, beams etc with concrete having the specified minimum characteristic compressive strength [with ordinary portland cement, coarse sand and graded stone aggregate of 10mm maximum size in proportion as per design criteria] with specified average thickness all-round existing core of RCC member. <b>Note:</b> Rates shall be for finished surface area of concrete and shall include the cost of making holes in existing RCC slab, if required, for pouring concrete in shuttering mould of jacket and appropriate approved Super-Plasticiser for rendering concrete as flowable self compacting and SBR polymer (but shall exclude cost of reinforcement, bond coat, Shear Keys, centering and shuttering, strutting, propping etc) (Payment under this item shall be made only after proper wet curing has been done and surface has been satisfactorily evaluated by sounding/tapping with a blunt metal instrument). <b>50mm thick in Grade M 25 with cement content not less than 330 kg per cum</b>	100.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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15.20	Providing and laying SBR Polymer modified (of approved make @ minimum 2% by wt. of cement used) plain/reinforced <b>concrete jacket</b> for the structural members e.g. columns, pillars, piers, beams etc with concrete having the specified minimum characteristic compressive strength [with ordinary portland cement, coarse sand and graded stone aggregate of 10mm maximum size in proportion as per design criteria] with specified average thickness all-round existing core of RCC member. <b>Note:</b> Rates shall be for finished surface area of concrete and shall include the cost of making holes in existing RCC slab, if required, for pouring concrete in shuttering mould of jacket and appropriate approved Super-Plasticiser for rendering concrete as flowable self compacting and SBR polymer (but shall exclude cost of reinforcement, bond coat, Shear Keys, centering and shuttering, strutting, propping etc) (Payment under this item shall be made only after proper wet curing has been done and surface has been satisfactorily evaluated by sounding/tapping with a blunt metal instrument). <b>75mm thick in Grade M 25 with cement content not less than 330 kg per cum</b>	100.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.21	L shaped 100mm long, 10mm dia mild steel shear key	200.000	Kg		0.00	0.00	0.00	INR Zero Only
15.22	Providing and inserting 12mm dia galvanised steel injection nipple in honey comb area and along crack line including drilling of holes of required diametre (20mm to 30mm) up to depth from 30mm to 80mm at required spacing and making the hole & crack dust free by blowing compressed air, sealing the distance between injection nipple with adhesive chemical of approved make and allow it to cure complete as per direction of Engineer-In-Charge.	200.000	Each		0.00	0.00	0.00	INR Zero Only
15.23	Providing corrugated G.S. sheet roofing including vertical / curved surface fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead, including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete (up to any pitch in horizontal/ vertical or curved surfaces), excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required. <b>1.00 mm thick with zinc coating not less than 275 gm/m²</b>	200.000	Sq.M		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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15.24	Centering and shuttering including strutting, propping etc. and removal of form work for : Retaining walls, return walls, walls (any thickness) including attached pilasters, buttresses, plinth and string courses fillets, kerbs and steps, Suspended floors, roofs, landings, balconies and access platform.etc.	220.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.25	Providing and fixing in position wall panelling at all heights with integral densified calcium silicate panels/tiles of size 595 x 595mm, having NRC (Noise Reduction coefficient) of 0.50 (minimum) as per IS 8225:1987, Light reflectance of 85% (minimum). Non combustible as per BS:476 (part-4), fire performance as per BS:476 (part 6 &7), humidity resistance of 100%, thermal conductivity < 0.043 W/m K as per ASTM 518:1991, comprising of a frame made from especially fabricated galvanised mild steel sheet 0.50 mm thick pressed section (galvanizing @120 grams per sqm including both sides) i.e.vertical studs of size 48 x 34 x 36 mm are placed at 600mm center to center in a floor and ceiling channel section of size 50 x 32mm fixed to the floor and soffit at 600mm centers using 12mm dia,50mm long wedge type expanded zinc alloy dash fastner with 10mm bolt. This same channel is then to be fixed in horizontal direction at 600mm center to center so as to form a grid of 600mm x 600mm. Glasswool of 50mm thickness is then to be inserted in the slots and finally calcium silicate non combustible panels/tiles are to be screw fixed with self tapping pan head nickel coated mild steel screws of size 13 x 3.2mm on to this grid leaving an even groove of 1 mm between the panels. The joints between the panels are to be duly jointed and finished using recommended jointing calcium silicate based compound and fiber joint tape roll 50mm wide (90 metre )roll and two coats of primer suitable for panelling as per manufacturer's specification as per direction of Engineer-in-Charge all complete. <b>With 15 mm thick fully perforated square/butt edge light weight calcium silicate panels/ tiles</b>	500.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.26	Providing and fixing in wall lining flat pressed three layer (medium density) particle board or graded wood Pre-laminated one side decorative lamination and other side balancing lamination Grade I, Type II, IS : 12823 marked, including priming coat on unexposed surface, with necessary fixing arrangement and screws etc. complete : <b>25 mm thick</b>	500.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.27	Providing & Laying of Pebbles (20mm to 50mm) round in shape of good quality, free form organic material sulphates or any deleterious material.	50.000	CuM		0.00	0.00	0.00	INR Zero Only



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15.28	Providing and fixing 16 mm M.S. Fan clamps of standard shape and size in existing R.C.C. slab, including cutting chase, anchoring clamp to reinforcement bar, including cleaning, refilling, making good the chase with matching concrete, plastering and painting the exposed portion of the clamps complete.	60.000	Each		0.00	0.00	0.00	INR Zero Only
15.29	Providing and placing in position 100 mm thick factory made machine batched & machine mixed Precast RCC Rectangular Covers on drains of footpath of various sizes, of M-25 grade cement concrete for RCC work, including cost of centering, shuttering, reinforcement of 8 mm dia TMT bars of Fe 500 grade @ maximum 100mm c/c on both ways, neat cement punning on finished surface, properly encased on all edges with 1.6 mm thick, 100 mm wide MS sheet duly painted over priming coat, reinforcement to be welded at edges with MS sheet and providing 2 Nos. 12 mm dia bar for hooks etc i/c cost of cartage, all leads & lift, handling at site etc. all complete as per direction of Engineer-in-Charge.	700.000	Sq.M		0.00	0.00	0.00	INR Zero Only
15.30	Supplying chemical emulsion in sealed containers including delivery as specified. - Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	500.000	Litre		0.00	0.00	0.00	INR Zero Only
<b>16.0</b>	<b>Rain Water Harvesting (EXCAVATION, PCC, RCC, SHUTTERING, REINFORCEMENT &amp; BRICK WORK SHALL BE PAID SEPERATELY AS PER ITEM SPECIFIED ABOVE)</b>							
16.01	Providing, hoisting and fixing precast reinforced cement concrete work including the cost of required centering, shuttering but, excluding cost of reinforcement, with 1:1.5:3 (1 cement : 1.5 coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size).	7.000	CuM		0.00	0.00	0.00	INR Zero Only
16.02	Supplying, filling, spreading & leveling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	15.000	CuM		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

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16.03	Supplying, filling, spreading & leveling gravels of size range 5 mm to 10 mm, in the recharge pit, over the existing layer of boulders, in required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	15.000	CuM		0.00	0.00	0.00	INR Zero Only
16.04	Supplying, filling, spreading & leveling coarse sand of size range 1.5 mm to 2 mm in recharge pit, in required thickness over gravel layer, for all leads & lifts, all complete as per direction of Engineer - in-charge.	15.000	CuM.		0.00	0.00	0.00	INR Zero Only
16.05	Gravel packing in tubewell construction in accordance with IS: 4097, including providing gravel fine/ medium/ coarse, in required grading & sizes as per actual requirement, all complete as per direction of Engineer-in-charge.	10.000	CuM.		0.00	0.00	0.00	INR Zero Only
16.06	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/ bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer -in-charge, for all depth below ground level. <b>Upto 300 mm dia bore hole for all types of soil.</b>	100.000	R.M.		0.00	0.00	0.00	INR Zero Only
16.07	Supplying, assembling, lowering and fixing in vertical position in bore well, unplasticized PVC medium well casing (CM) pipe of required dia, conforming to IS: 12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer - in-charge. <b>Upto 200 mm nominal size dia.</b>	100.000	R.M.		0.00	0.00	0.00	INR Zero Only
17.0	<b>ELECTRICAL WORKS (PART- II)</b>							

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

<p align="center"><b>SCHEDULE OF RATE</b> (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )</p>								
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Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
<b>18.0</b>	<b>DISTRIBUTION BOARD (MPDBs / PDBs / LSDBs / SPDBs / FPB )</b> Design, Supply, Installation, Testing and Commissioning at site of following weather proof Distribution Board made of CRCA sheet steel IP-55 execution having minimum thickness 2.0 mm suitable for wall / structure mounting, Indoor /Outdoor type and the same shall be suitable for DIN rail mounting MCBs/MCCBs/RCCBs etc. with provision of both (top & bottom) entry with 3nos.LED phase indicating lamps in incomers. Required nos. of suitable Elmex/ phoenix /connectwell terminals, crimping type Cu lugs and double compression rolled aluminum cable glands for Incomer and outgoing cable feeders including power and control cable glanding and terminations, handling, transportation from owner's store/ storage yard to erection site; unpacking, inspection; dressing of foundation as required; on frame works/supports grouted or welded to columns/structures; mounting in position and connecting of loose components and accessories; drilling of gland plates with required holes or enlarging existing holes for cable entries; fixing of cable glands and terminal supplied loose; plugging of all unused cable entries in the board/panels to make the same dust and vermin proof, making good of wall/column broken or chipped by cement plastering; minor repair and touch painting work; operational and functional checking; supply of fixing bolts, nuts and washers and other necessary hardwares and civil masonry materials; all work, labour and materials complete as per drawings & documents, specifications, codes and standards and directions of Engineer-in-Charge. Further please note that termination shall also include drilling, tapping of cable insulation, crimping of lugs to the conductor & connection of the lugs to equipment terminal..If any board is installed in outdoor area PVC shed shall be provided covering the total switchboard and safe staying of one person for maintenance during rainy season.							
18.01	415V Hose proof and weatherproof industrial type sheet steel enclosed, Extendible type Main Switchboard (MPDB at Vikrampur Guest House) with IP-55 degree of protection having 2 nos. 3200A 4P ACB I/C, 1 No. 3200 A ACB B/C, 1 No. 800 A 4P ACB I/C and Outgoing Feeders as indicated in SLD/ feeder details with ammeter & Voltmeter as per Technical specifications.	1	No.		0.00	0.00	0.00	INR Zero Only
18.02	415V Hose proof and weatherproof industrial type sheet steel enclosed, Extendible type Power Distribution Board (PDB-1) for CISF Barrack with IP-55 degree of protection having 2 nos. 800A 4PMCCB I/C and Outgoing Feeders as indicated in SLD/ feeder details with ammeter & Voltmeter as per Technical specifications.	1	No.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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SI. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
18.03	415V Hose proof and weatherproof industrial type sheet steel enclosed, Extendible type Power Distribution Board (PDB-2) for BUngalows with IP-55 degree of protection having 2 nos.800A 4PACB I/C and Outgoing Feeders as indicated in SLD/ feeder details with ammeter & Voltmeter as per Technical specifications.	1	No.		0.00	0.00	0.00	INR Zero Only
18.04	415V Hose proof and weatherproof industrial type sheet steel enclosed, 12 way Lighting Distribution Board (LSDB) for CISF Barrack with IP-55 degree of protection having 1 no, 63A 4P MCCB, 3 nos 63A DP RCBO in phase and 12 nos.16A DP MCBs outgoing as per Technical specifications , SLD, standards & direction of Engineer in charge including provision for 2 nos earthing with 1x16 sq.mm (Al) unarmoured cable.	9	Nos.		0.00	0.00	0.00	INR Zero Only
18.05	415V Hose proof and weatherproof industrial type sheet steel enclosed, 18-way Sub-Power Distribution Board (PDB) for Switch Socket / AC with IP-55 degree of protection having 1 no. 63A 4P MCCB, 63 A DP RCBO in each PHASE and 9 Nos. outgoing 16 A DP MCBs & 9 Nos. outgoing 32A DP MCB as per Technical specifications , SLD, standards & direction of Engineer in charge including provision for 2 nos earthing with 1x16 sq.mm (Al) unarmoured cable.	8	Nos.		0.00	0.00	0.00	INR Zero Only
18.06	415V Hose proof and weatherproof industrial type sheet steel enclosed, 21-way Sub-Power Distribution Board (PDB) for Switch Socket / AC with IP-55 degree of protection having 1 no. 63A 4P MCCB, 63 A DP RCBO in each PHASE and 15 Nos. outgoing 16 A DP MCB & 6 Nos. outgoing 32A DP MCB as per Technical specifications , SLD, standards & direction of Engineer in charge including provision for 2 nos earthing with 1x16 sq.mm (Al) unarmoured cable.	1	No.		0.00	0.00	0.00	INR Zero Only
18.07	415V Hose proof wall mounted type 24 way MCB prewired Lighting Distribution board having 1 no. 125A 4P MCCB, 63 A DP RCBO in each PHASE and 18 nos 16A DP MCB outgoing feeder and 6 Nos.32A DP MCB outgoing feeder as per Technical specifications , SLD, standards & direction of Engineer in charge including provision for 2 nos earthing with 1x16 sq.mm (Al) unarmoured cable.	4	Nos.		0.00	0.00	0.00	INR Zero Only
18.08	Wall mounted Meter Distribution Board complete with 125A Fuse and 125A Isolator, 3 phase, 4 Wire, 415V, house service type (20KW) Digital Energy Meter.	4	Nos.		0.00	0.00	0.00	INR Zero Only
18.09	Wall mounted Meter Distribution Board complete with 32A Fuse and 32A Isolator, 1 phase, 2 Wire, 240V, house service type (2KW) Digital Energy Meter.	4	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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<b>Name of the Bidder/ Bidding Firm / Company :</b>	
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**SCHEDULE OF RATE** (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )

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SI. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
18.10	110 V, 2 Wire, Compartmentalized steel enclosed DC Distribution Board (DCDB) . It shall consist of 1 nos. incoming 63 A DP MCCB incomers (with ON & OFF Indication Light) and 14 Nos. 32 A DP MCB as outgoing feeders.	1	Nos.		0.00	0.00	0.00	INR Zero Only
<b>19.0</b>	<b>LIGHTING</b>							
19.01	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers,condensers,internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc ,cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>High quality LED tube batten complete with 2X20W tube (T5) eco friendly, having ≥ 2000 lumen output, CCT-6500K, IP-20, luminous efficacy ≥ 100 lm/watt, CRI&gt;80, life ≥ 40000 burning hours, PF&gt;0.95 and THD&lt;10%, no UV radiation etc. suitable for ceiling/ wall mounted</b>	180.000	Nos.		0.00	0.00	0.00	INR Zero Only
19.02	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers,condensers,internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc ,cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>High quality LED tube batten complete with 1X20W tube (T5) eco friendly, having ≥ 2000 lumen output, CCT-6500K, IP-20, luminous efficacy ≥ 100 lm/watt, CRI&gt;80, life ≥ 40000 burning hours, PF&gt;0.95 and THD&lt;10%, no UV radiation etc. suitable for ceiling/wall mounted</b>	270.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

Name of the Bidder/ Bidding Firm / Company :								
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Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
19.03	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers, condensers, internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc ,cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>240VAC 1 phase 45W outdoor light with LED lamp (with short arm) in weatherproof &amp; hose proof light Min IP55, fixture complete with driver ,cable glands and other accessories, suitable for 3 X 2.5mm2 (Cu) cable and stopping plug for outdoor area.</b>	24.000	Nos.		0.00	0.00	0.00	INR Zero Only
19.04	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers, condensers, internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc ,cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>240VAC 1 phase 45 W Street Lighting Fixtures. with LED lamp in weatherproof &amp; hose proof light Min IP55, fixture complete with driver ,cable glands and other accessories, suitable for 3 X 2.5mm2 (Cu) cable and stopping plug for outdoor area.</b>	20.000	Nos.		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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19.05	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers,condensers,internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc ,cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>Wall mounted high quality LED tube batten complete with single 9W tube (T5) eco friendly, having ≥ 900 lumen output, CCT-6500K, IP-20, luminous efficacy ≥ 100 lm/watt, CRI&gt;80, life ≥ 40000 burning hours, PF&gt;0.95 and THD&lt;10%, no UV radiation etc.</b>	70.000	Nos.		0.00	0.00	0.00	INR Zero Only
19.06	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers,condensers,internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc ,cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>Wall/Bracket mounted bulk head lighting fixtures complete with bracket, 9W LED bulb eco friendly, having ≥ 900 lumen output, CCT-6500K, luminous efficacy ≥ 100 lm/watt, CRI&gt;80, life ≥ 40000 burning hours, PF&gt;0.95 and THD&lt;10%, no UV radiation etc. suitable for outdoor installation.</b>	1.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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19.07	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers, condensers, internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc ,cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>240V AC 1 phase 45W outdoor highbay light with LED lamp in weatherproof &amp; hose proof wall / bracket mounted Min IP55, fixture complete with driver, cable glands and other accessories, suitable for 3X2.5 mm2 (Cu) cable and stopping plug for outdoor area.</b>	18.000	Nos.		0.00	0.00	0.00	INR Zero Only
19.08	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers, condensers, internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc ,cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>Round surface mounted 6W LED Down Lighter .</b>	80.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

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19.09	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED lighting fixtures, electronic drivers, condensers, internal & external reflectors, louvers, etc. Including handling, transportation from owners store to erection site, unpacking, inspection; checking of internal wiring; Erection in position on false ceiling / floor etc .cable glanding, crimping of lugs and connections at fixtures; supply of all erection materials Including necessary GI hardware, GI clamps, GI brackets, civil masonry materials; all work, labour and materials complete as per drawings, specifications, codes and standards and directions of Engineer in charge. <b>240VAC 1 phase Outdoor Type Bollard Light 12W LED in weatherproof &amp; hose proof light Min IP55, fixture complete with driver ,cable glands and other accessories, suitable for 3 X 2.5mm2 (Cu) cable and stopping plug.</b>	30.000	Nos.		0.00	0.00	0.00	INR Zero Only
<b>20.0</b>	<b>Wiring</b>							
20.01	<b>Point Wiring : One Light / Fan / Exhaust Fan Point shall controlled by one switch .</b> Supply and Providing Point Wiring system for primary light point/ceiling fan point/exhaust fan point/ call bell point/light plug point controlled by 1-6 Ampere modular type switch inclusive of the cost for providing circuit wiring from Distribution board to switch boards with 2x2.5 sq.mm., 1.1 KV grade PVC multi stranded fire resistant insulated copper conductor wire for light in required size of rigid PVC conduit with conduit accessories and 14swg bare copper earth wire continuity conductor including providing/fixing of PVC conduit of required size. Item shall also include wiring from switch board to point/fitting with 2x1.5 sq.mm copper conductor PVC insulated wire of 1100V grade with 14 SWG copper wire as earth continuity conductor for light in appropriate size of PVC conduit including providing & fixing PVC conduit with accessories such as bends, JB, sockets etc.required size of MS zinc passivated modular box with white inner plate and glossy white outer module plate for housing modular switch, sockets, fan regulators (Electronic heavy duty step up type) bell push on modular plate etc,The rates shall include cutting and refilling of chases/ Wall etc. including internal connections as required. All switch sockets shall be modular type fixed on modular plate. Make of modular plate, board, switch, socket etc shall be as per approved Make .(Actual nos. shall be decided at site).	512.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

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Contract No: PNP/PC183/E/203/NCB

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Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
20.02	<b>Point Wiring : TWO Light / Fan / Exhaust Fan Point shall controlled by one switch.</b> Supply and Providing Point Wiring system for primary light point/ceiling fan point/exhaust fan point/ call bell point/light plug point controlled by 1-6 Ampere modular type switch inclusive of the cost for providing circuit wiring from Distribution board to switch boards with 2x2.5 sq.mm., 1.1 KV grade PVC multi stranded fire resistant insulated copper conductor wire for light in required size of rigid PVC conduit with conduit accessories and 14swg bare copper earth wire continuity conductor including providing/fixing of PVC conduit of required size. Item shall also include wiring from switch board to point/fitting with 2x1.5 sq.mm copper conductor PVC insulated wire of 1100V grade with 14 SWG copper wire as earth continuity conductor for light in appropriate size of PVC conduit including providing & fixing PVC conduit with accessories such as bends,JB,sockets etc.required size of MS zinc passivated modular box with white inner plate and glossy white outer module plate for housing modular switch,sockets,fan regulators (Electronic heavy duty step up type) bell push on modular plate etc,The rates shall include cutting and refilling of chases/wall etc. including internal connections as required. All switch sockets shall be modular type fixed on modular plate. Make of modular plate,board switch, socket etc shall be as per approved Make. (Actual nos. shall be decided at site).	130.000	Nos		0.00	0.00	0.00	INR Zero Only
20.03	<b>Point Wiring : THREE Light / Fan /Exhaust Fan Point shall controlled by one switch.</b> Supply and Providing Point Wiring system for primary light point/ceiling fan point/exhaust fan point/ call bell point/light plug point controlled by 1-6 Ampere modular type switch inclusive of the cost for providing circuit wiring from Distribution board to switch boards with 2x2.5 sq.mm., 1.1 KV grade PVC multi stranded fire resistant insulated copper conductor wire for light in required size of rigid PVC conduit with conduit accessories and 14swg bare copper earth wire continuity conductor including providing/fixing of PVC conduit of required size. Item shall also include wiring from switch board to point/fitting with 2x1.5 sq.mm copper conductor PVC insulated wire of 1100V grade with 14 SWG copper wire as earth continuity conductor for light in appropriate size of PVC conduit including providing & fixing PVC conduit with accessories such as bends,JB,sockets etc.required size of MS zinc passivated modular box with white inner plate and glossy white outer module plate for housing modular switch,sockets,fan regulators (Electronic heavy duty step up type) bell push on modular plate etc,The rates shall include cutting and refilling of chases/wall etc. including internal connections as required. All switch sockets shall be modular type fixed on modular plate. Make of modular plate,board switch, socket etc shall be as per approved Make. (Actual nos. shall be decided at site).	30.000	Nos		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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20.04	<b>Point Wiring : TWIN controlled Light Point.</b> Supply and Providing Point Wiring system for twin controlled lighting point controlled by 1-6 Ampere modular type switch inclusive of the cost for providing circuit wiring from Distribution board to switch boards with 2x2.5 sq.mm., 1.1 KV grade PVC multi stranded fire resistant insulated copper conductor wire for light in required size of rigid PVC conduit with conduit accessories and 14swg bare copper earth wire continuity conductor including providing/fixing of PVC conduit of required size. Item shall also include wiring from switch board to point/fitting with 2x1.5 sq.mm copper conductor PVC insulated wire of 1100V grade with 14 SWG copper wire as earth continuity conductor for light in appropriate size of PVC conduit including providing & fixing PVC conduit with accessories such as bends, JB, sockets etc. required size of MS zinc passivated modular box with white inner plate and glossy white outer module plate for housing modular switch, sockets, fan regulators (Electronic heavy duty step up type) bell push on modular plate etc, The rates shall include cutting and refilling of chases/wall etc. including internal connections as required. All switch sockets shall be modular type fixed on modular plate. Make of modular plate, board switch, socket etc shall be as per approved Make. (Actual nos. shall be decided at site).	8.000	Nos		0.00	0.00	0.00	INR Zero Only
20.05	<b>Point Wiring : Plug Point</b> Supply and Providing Point Wiring system for 6A Plug points with single core multi stranded PVC insulated unsheathed copper conductor fire retardant wires of 1100V grade in recessed PVC conduit including providing and fixing PVC conduits of required size complete with accessories such as bends, JB, Pull Boxes etc with plate, switches, sockets, screws and covers, Zinc Passivated MS modular boxes (16 gauge sheet construction) of suitable sizes, embedded in wall, concealed and flush with walls including cutting and refilling the chases/ Wall etc and inclusive of 14 SWG bare copper earth conductor for socket outlets as per specifications & direction of Engineer in charge. All Modular type switch & socket shall be of approved make. 6 Amp 6 pin socket outlet with 6A switch mounted side by side with 2x2.5 sq.mm PVC copper wire with 14 SWG bare copper earth wire. (Actual nos. shall be decided at site).	111.000	Nos		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
20.06	<b>Point Wiring : Secondary Plug Point from Primary Plug Point</b> Supply and Providing Point Wiring system for 6A Plug points with single core multi stranded PVC insulated unsheathed copper conductor fire retardant wires of 1100V grade in recessed PVC conduit including providing and fixing PVC conduits of required size complete with accessories such as bends,JB, Pull Boxes etc with plate, switches,sockets,screws and covers, Zinc Passivated MS modular boxes (16 gauge sheet construction) of suitable sizes, embedded in wall, concealed and flush with walls including cutting and refilling the chases/ Wall etc and inclusive of 14 SWG bare copper earth conductor for socket outlets as per specifications & direction of Engineer in charge. All Modular type switch & socket shall be of approved make.6 Amp 6 pin socket outlet with 6A switch mounted side by side with 2x2.5 sq.mm PVC copper wire with 14 SWG bare copper earth wire.(Actual nos. shall be decided at site).	823.000	Nos		0.00	0.00	0.00	INR Zero Only
20.07	<b>Point Wiring : Power Plug Point</b> Supply and Providing Point Wiring system for 16A /6A power plug point with following sizes PVC insulated unsheathed single core multi stranded copper conductor, fire retardant wires of 1100V grade in recessed PVC conduits of required size complete with accessories such as bends,JB,Pull boxes etc with plate switches,sockets,screws and covers, Zinc Passivated MS modular boxes (16 gauge sheet construction) of suitable size, embedded in wall concealed and flush with walls including cutting and refilling the chases/Wall etc, and inclusive of 14SWG bare copper earth conductor for socket outlets as per specifications & direction of Engineer in charge. All modular type switch & socket shall be of approved make.16A, 6 Pin socket outlet with 16A switch mounted side by side with 2x4 sq.mm PVC copper wire with 14 SWG bare copper earth wire as an independent circuit from DB. (Actual nos. shall be decided at site).	65.000	Nos		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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20.08	<b>Point Wiring : Secondary Power Plug Point from Primary Power Plug Point</b> Supply and Providing Point Wiring system for 16A /6A power plug point with following sizes PVC insulated unsheathed single core multi stranded copper conductor, fire retardant wires of 1100V grade in recessed PVC conduits of required size complete with accessories such as bends, JB, Pull boxes etc with plate switches, sockets, screws and covers, Zinc Passivated MS modular boxes (16 gauge sheet construction) of suitable size, embedded in wall concealed and flush with walls including cutting and refilling the chases/Wall etc, and inclusive of 14SWG bare copper earth conductor for socket outlets as per specifications & direction of Engineer in charge. All modular type switch & socket shall be of approved make.16A, 6 Pin socket outlet with 16A switch mounted side by side with 2x4 sq.mm PVC copper wire with 14 SWG bare copper earth wire as an independent circuit from DB. Two nos.power plug point shall be looped from one primary plug point.	114.000	Nos		0.00	0.00	0.00	INR Zero Only
20.09	<b>Point Wiring : A.C. Point</b> Supply and Providing Point Wiring system for 32A Industrial socket point (A.C. Point) with 2x4 sq.mm PVC insulated copper conductor FRLS cable in recessed PVC conduit along with 1x4 sq.mm. PVC insulated FRLS cable for earthing I/C, Providing & fixing 25A plug & socket unit complete with 32A DP MCB and 32A plug top including GI Box to be mounted on modular plate complete with connections, testing & commissioning etc (separate circuit for each point) : <b>32A DP MCB with Sockets for 1.5T AC</b>	85.000	Nos		0.00	0.00	0.00	INR Zero Only
21.0	<b>TV Point</b>							

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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21.01	Supply, providing & drawing point wiring system for co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the surface / recessed in appropriate size of PVC conduit including providing & fixing PVC conduit with accessories such as bends, JB etc. along with TV socket as required. The rate shall include supply and fixing of TV antenna socket outlet (modular type) complete with required size of MS zinc passivated modular box with white inner plate and glossy white outer module plate, modular base, cover plate etc. The rate shall also include cutting and refilling of chases/wall etc, including internal connections as required. All sockets shall be modular type fixed on the modular plate. Make of modular plate, board, switch, socket etc shall be of approved make.	60.000	Nos		0.00	0.00	0.00	INR Zero Only
22.00	Supply, hanging, fixing, connecting of f following single phase exhaust fan with guards/ louvers, along with necessary brackets, all required civil works, making good the walls after fixing the fans etc. <b>300 mm sweep heavy duty exhaust fan with self opening louvers.</b>	35.000	Nos.		0.00	0.00	0.00	INR Zero Only
22.01	Supply, hanging, fixing, connecting of f following single phase exhaust fan with guards/ louvers, along with necessary brackets, all required civil works, making good the walls after fixing the fans etc.: <b>450 mm sweep heavy duty Industrial type exhaust fan with self opening louvers.</b>	18.000	Nos.		0.00	0.00	0.00	INR Zero Only
23.0	<b>Supply, Installation, Testing &amp; Commissioning of Call Bell/Buzzer for single phase , 230 V complete as required</b>	7.000	Nos.		0.00	0.00	0.00	INR Zero Only
24.0	Supply, hanging, fixing, connecting ,decorative type, 3-blade ceiling fan including provision of cable/wire from ceiling rose or connector to fan including supply and fixing hexagonal fan hook with 12 mm dia. MS rod bend to shape as required. <b>1400 mm sweep</b>	50.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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24.01	Supply, hanging, fixing, connecting ,decorative type, 3-blade ceiling fan including provision of cable/wire from ceiling rose or connector to fan including supply and fixing hexagonal fan hook with 12 mm dia. MS rod bend to shape as required. <b>1200 mm sweep</b>	110.000	Nos.		0.00	0.00	0.00	INR Zero Only
24.02	Supply, hanging, fixing, connecting ,decorative type, 3-blade ceiling fan including provision of cable/wire from ceiling rose or connector to fan including supply and fixing hexagonal fan hook with 12 mm dia. MS rod bend to shape as required. <b>600 mm sweep</b>	10.000	Nos.		0.00	0.00	0.00	INR Zero Only
25.0	Supply, hanging, fixing, connecting of following single phase wall fan , along with necessary brackets, all required civil works, making good the walls after fixing the fans etc. <b>400 mm sweep heavy duty wall fan with string controlled regulator &amp; rotation.</b>	180.000	Nos.		0.00	0.00	0.00	INR Zero Only
26.0	Supply, installation, testing and commissioning of interlocked type switch sockets with matching plugs complete with cable glands, lugs, terminal blocks etc. of following ratings: <b>63A, 5 pin, 415V (Weather Proof)</b>	2.000	No.		0.00	0.00	0.00	INR Zero Only
26.01	Supply, installation, testing and commissioning of interlocked type switch sockets with matching plugs complete with cable glands, lugs, terminal blocks etc. of following ratings: <b>25A, 3 pin, 240V</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
27.0	<b>EARTHING AND LIGHTNING PROTECTION</b>							

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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27.01	Supply ,Installation, Testing & Commissioning of 100 NB,3.8 M. Long G.I.pipe Earth Electrode in Earth pit including Earth Bus as per PDS attached with TS Including handling, transportation to Erection site, Excavation of Earth pit in all types of soil, back filling of pit with common salt, charcoal / coke and loose Earth after installation of Electrode there in, removal of surplus Earth away from Erection site, consolidation of loose Earth on back filled pit, making of bricks work, Inspection chamber on back filled pit and cover of RCC ,there of complete with lifting hook, fixing & connecting inside the chamber of G.I. Earth bracket and other accessories of the Earth Electrode, painting of Earth pit No. and Earthing symbol on the cover, supply of salt, charcoal /coke, bricks, sand, cement, stone chips, reinforcement rods, lifting hook, necessary stainless steel hardware, paints etc. all works, labour & materials complete as per Drawings, specifications, code & standards and direction of consultant/owner.	23.000	Nos.		0.00	0.00	0.00	INR Zero Only
27.02	Supply Installation, Testing & Commissioning of GI earth strip / Wire conductors of following sizes as per PDS attached with TS enclosed in ready made concrete trenches or in floor slits, on brick / concrete wall under concrete floors, or paved areas, across pipe joints and valves, directly buried under ground at depth of 500 mm, including handling, transportation to erection site, bending, straightening, cutting to size, welding together of earth strips in overlapping manner, chipping in concrete floors/ paved areas for laying the earth strips under floors/ paved areas and making good by cement plastering concrete after laying of the strips ; clamping and supporting of earth strips laid above ground, connecting the strips/ wire at both ends to equipment or to earth bus / earth plates or to GI brackets fixed inside earth pit chamber, by bolting etc., Hessian tapes, all necessary GI hardware, GI clamps, civil masonry materials, etc. all work, labour as per specifications, codes and standards and directions of owner/consultant. of Hot Dip Galvanized GI earth strips & GI earth wire (with min. coating 610gm/sq.m) of size : <b>75 mm x 10 mm</b> <b>Note:</b> The conductors shall be laid at a minimum depth of 500 mm from ground level. The excavation for the GI earth conductors/ strips shall not be separately measured and the rates quoted to include the same.	50.000	Mtr		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

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27.03	Supply Installation, Testing & Commissioning of GI earth strip / Wire conductors of following sizes as per PDS attached with TS enclosed in ready made concrete trenches or in floor slits, on brick / concrete wall under concrete floors, or paved areas, across pipe joints and valves, directly buried under ground at depth of 500 mm, including handling, transportation to erection site, bending, straightening, cutting to size, welding together of earth strips in overlapping manner, chipping in concrete floors/ paved areas for laying the earth strips under floors/ paved areas and making good by cement plastering concrete after laying of the strips ; clamping and supporting of earth strips laid above ground, connecting the strips/ wire at both ends to equipment or to earth bus / earth plates or to GI brackets fixed inside earth pit chamber, by bolting etc., Hessian tapes, all necessary GI hardware, GI clamps, civil masonry materials, etc. all work, labour as per specifications, codes and standards and directions of owner/consultant. of Hot Dip Galvanized GI earth strips & GI earth wire (with min. coating 610gm/sq.m) of size: - <b>50 mm x 6 mm</b> <b>Note:</b> The conductors shall be laid at a minimum depth of 500 mm from ground level. The excavation for the GI earth conductors/ strips shall not be separately measured and the rates quoted to include the same.	860.000	Mtr		0.00	0.00	0.00	INR Zero Only
27.04	Supply Installation, Testing & Commissioning of GI earth strip / Wire conductors of following sizes as per PDS attached with TS enclosed in ready made concrete trenches or in floor slits, on brick / concrete wall under concrete floors, or paved areas, across pipe joints and valves, directly buried under ground at depth of 500 mm, including handling, transportation to erection site, bending, straightening, cutting to size, welding together of earth strips in overlapping manner, chipping in concrete floors/ paved areas for laying the earth strips under floors/ paved areas and making good by cement plastering concrete after laying of the strips ; clamping and supporting of earth strips laid above ground, connecting the strips/ wire at both ends to equipment or to earth bus / earth plates or to GI brackets fixed inside earth pit chamber, by bolting etc., Hessian tapes, all necessary GI hardware, GI clamps, civil masonry materials, etc. all work, labour as per specifications, codes and standards and directions of owner/consultant. of Hot Dip Galvanized GI earth strips & GI earth wire (with min. coating 610gm/sq.m) of size: - <b>35 mm x 6 mm</b> <b>Note:</b> The conductors shall be laid at a minimum depth of 500 mm from ground level. The excavation for the GI earth conductors/ strips shall not be separately measured and the rates quoted to include the same.	560.000	Mtr		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

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NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
27.05	Supply Installation, Testing & Commissioning of GI earth strip / Wire conductors of following sizes as per PDS attached with TS enclosed in ready made concrete trenches or in floor slits, on brick / concrete wall under concrete floors, or paved areas, across pipe joints and valves, directly buried under ground at depth of 500 mm, including handling, transportation to erection site, bending, straightening, cutting to size, welding together of earth strips in overlapping manner, chipping in concrete floors/ paved areas for laying the earth strips under floors/ paved areas and making good by cement plastering concrete after laying of the strips ; clamping and supporting of earth strips laid above ground, connecting the strips/ wire at both ends to equipment or to earth bus / earth plates or to GI brackets fixed inside earth pit chamber, by bolting etc., Hessian tapes, all necessary GI hardware, GI clamps, civil masonry materials, etc. all work, labour as per specifications, codes and standards and directions of owner/consultant. of Hot Dip Galvanized GI earth strips & GI earth wire (with min. coating 610gm/sq.m) of size: - <b>1Cx16 sq.mm Al cable Unarmoured</b> <b>Note:</b> The conductors shall be laid at a minimum depth of 500 mm from ground level. The excavation for the GI earth conductors/ strips shall not be separately measured and the rates quoted to include the same.	420.000	Mtr		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

<p align="center"><b>SCHEDULE OF RATE</b> (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )</p>								
NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
27.06	Supply Installation, Testing & Commissioning of GI earth strip / Wire conductors of following sizes as per PDS attached with TS enclosed in ready made concrete trenches or in floor slits, on brick / concrete wall under concrete floors, or paved areas, across pipe joints and valves, directly buried under ground at depth of 500 mm, including handling, transportation to erection site, bending, straightening, cutting to size, welding together of earth strips in overlapping manner, chipping in concrete floors/ paved areas for laying the earth strips under floors/ paved areas and making good by cement plastering concrete after laying of the strips ; clamping and supporting of earth strips laid above ground, connecting the strips/ wire at both ends to equipment or to earth bus / earth plates or to GI brackets fixed inside earth pit chamber, by bolting etc., Hessian tapes, all necessary GI hardware, GI clamps, civil masonry materials, etc. all work, labour as per specifications, codes and standards and directions of owner/consultant. of Hot Dip Galvanized GI earth strips & GI earth wire (with min. coating 610gm/sq.m) of size: - <b>1Cx185 sq.mm Al cable Unarmoured</b> <b>Note:</b> The conductors shall be laid at a minimum depth of 500 mm from ground level. The excavation for the GI earth conductors/ strips shall not be separately measured and the rates quoted to include the same.	50.000	Mtr		0.00	0.00	0.00	INR Zero Only
27.07	Supply Installation, Testing & Commissioning of GI earth strip / Wire conductors of following sizes as per PDS attached with TS enclosed in ready made concrete trenches or in floor slits, on brick / concrete wall under concrete floors, or paved areas, across pipe joints and valves, directly buried under ground at depth of 500 mm, including handling, transportation to erection site, bending, straightening, cutting to size, welding together of earth strips in overlapping manner, chipping in concrete floors/ paved areas for laying the earth strips under floors/ paved areas and making good by cement plastering concrete after laying of the strips ; clamping and supporting of earth strips laid above ground, connecting the strips/ wire at both ends to equipment or to earth bus / earth plates or to GI brackets fixed inside earth pit chamber, by bolting etc., Hessian tapes, all necessary GI hardware, GI clamps, civil masonry materials, etc. all work, labour as per specifications, codes and standards and directions of owner/consultant. of Hot Dip Galvanized GI earth strips & GI earth wire (with min. coating 610gm/sq.m) of size: - <b>8 SWG Wire</b> <b>Note:</b> The conductors shall be laid at a minimum depth of 500 mm from ground level. The excavation for the GI earth conductors/ strips shall not be separately measured and the rates quoted to include the same.	220.000	Mtr		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
27.08	Supply, Installation & Commissioning of GI Earth Bus bars (size: 390x50x12mm thick) as per PDS attached with TS Including handling, transportation, drilling of necessary holes/enlargement existing holes as required; all associated work for fixing the Bus bars in position e.g. cutting, leveling, aligning, chipping, grouting, welding bolting etc.; making good of broken/chipped portion on walls /columns by cement plastering. Supply of all necessary hardware (GI), paints, civil masonry materials etc. all work, labour complete as per drawings, specifications, codes and standards and directions of consultant /owner. Hot dip galvanized GI earth bus bar of size 390 x 50 x 12 thick (with min. coating 610gm/sq.m of zinc) with fixing materials as per	28.000	Nos.		0.00	0.00	0.00	INR Zero Only
27.09	Supplying and laying of the stainless steel SS-304 air terminations, base plate & clamping of down Conductor complete with base plate, concrete coping fixing accessories and clamping with down Conductor	16.000	Nos.		0.00	0.00	0.00	INR Zero Only
<b>28.0</b>	<b>CABLES (LT)</b>							
28.01	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>3.5CX400 mm2 (Cu)</b>	500.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.02	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>3.5 x 300 mm2 (Al)</b>	4800.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.03	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>3.5 x 120 mm2 (Al)</b>	100.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.04	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>3.5 x 150 mm2 (Al)</b>	10.000	Mtr		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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28.05	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>3.5 x 50 mm2 (Al)</b>	200.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.06	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>3.5 x 25 mm2 (Al)</b>	2400.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.07	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>3 C x 6 mm2 (Cu)</b>	10.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.08	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>3 C x 2.5 mm2 (Cu)</b>	600.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.09	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>5 C x 2.5 mm2 (Cu)</b>	100.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.10	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>7 C x 2.5 mm2 (Cu)</b>	100.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.11	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>10 C x 2.5 mm2 (Cu)</b>	1500.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.12	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>12 C x 2.5 mm2 (Cu)</b>	4200.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.13	Supply of 1.1 KV Grade, XLPE Insulated, PVC inner Sheath, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. PC183-TS-0805. : <b>19 C x 2.5 mm2 (Cu)</b>	100.000	Mtr		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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28.14	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, AI clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3.5CX400 mm2 (Cu)</b>	500.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.15	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, AI clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3.5 x 300 mm2 (Al)</b>	4800.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.16	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, AI clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3.5 x 150 mm2 (Al)</b>	3500.000	Mtr		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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28.17	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, AI clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3.5 x 120 mm2 (AI)</b>	3200.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.18	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, AI clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3.5 x 70 mm2 (AI)</b>	1700.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.19	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, AI clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3.5 x 50 mm2 (AI)</b>	200.000	Mtr		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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28.20	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3.5 x 35 mm2 (Al)</b>	300.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.21	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3.5 x 25 mm2 (Al)</b>	2400.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.22	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3 C x 6 mm2 (Cu)</b>	10.000	Mtr		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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SI. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
28.23	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>3 C x 2.5 mm2 (Cu)</b>	600.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.24	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>5 C x 2.5 mm2 (Cu)</b>	100.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.25	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>7 C x 2.5 mm2 (Cu)</b>	100.000	Mtr		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

<p align="center"><b>SCHEDULE OF RATE</b> (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )</p>								
NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
28.26	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>10 C x 2.5 mm2 (Cu)</b>	1500.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.27	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>12 C x 2.5 mm2 (Cu)</b>	4200.000	Mtr		0.00	0.00	0.00	INR Zero Only
28.28	Horizontal and vertical laying, testing (before and after laying) and commissioning of following LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles / directly buried up to 1000mm depth etc.etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge. <b>19 C x 2.5 mm2 (Cu)</b>	100.000	Mtr		0.00	0.00	0.00	INR Zero Only
29.0	<b>Cable Glands</b>							

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

<p align="center"><b>SCHEDULE OF RATE</b> (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )</p>								
NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	NUMBER #	TEXT #
SI. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
29.01	11 KV (UE) Grade, XLPE Insulated, PVC inner sheathed, armoured, FRLS PVC outer sheathed cables. <b>3 x 240 mm2 (Al)</b>	8.000	Nos		0.00	0.00	0.00	INR Zero Only
29.02	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3.5CX400 mm2 (Cu)</b>	30.000	Nos		0.00	0.00	0.00	INR Zero Only
29.03	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3.5 x 300 mm2 (Al)</b>	40.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.04	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3.5 x 150 mm2 (Al)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.05	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3.5 x 120 mm2 (Al)</b>	8.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.06	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3.5 x 70 mm2 (Al)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.07	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3.5 x 50 mm2 (Al)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.08	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3.5 x 35 mm2 (Al)</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.09	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3.5 x 25 mm2 (Al)</b>	48.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.10	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3 C x 6 mm2 (Cu)</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.11	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>3 C x 2.5 mm2 (Cu)</b>	134.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

Name of the Bidder/ Bidding Firm / Company :								
<b>SCHEDULE OF RATE</b> (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )								
NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
29.12	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>5 C x 2.5 mm2 (Cu)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.13	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>10 C x 2.5 mm2 (Cu)</b>	12.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.14	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>12 C x 2.5 mm2 (Cu)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
29.15	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. <b>19 C x 2.5 mm2 (Cu)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
<b>30.0</b>	<b>TERMINATION OF CABLES</b>							
30.01	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3.5CX400 mm2 (Cu)</b>	30.000	Nos		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
30.02	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3.5 x 300 mm2 (Al)</b>	42.000	Nos.		0.00	0.00	0.00	INR Zero Only
30.03	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3.5 x 150 mm2 (Al)</b>	8.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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SI. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
30.04	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3.5 x 120 mm2 (AI)</b>	16.000	Nos.		0.00	0.00	0.00	INR Zero Only
30.05	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3.5 x 70 mm2 (AI)</b>	16.000	Nos.		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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30.06	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3.5 x 50 mm2 (AI)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
30.07	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3.5 x 35 mm2 (AI)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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30.08	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3.5 x 25 mm2 (Al)</b>	40.000	Nos.		0.00	0.00	0.00	INR Zero Only
30.09	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3 C x 6 mm2 (Cu)</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

Name of the Bidder/ Bidding Firm / Company :								
<b>SCHEDULE OF RATE</b> (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )								
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Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
30.10	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>3 C x 2.5 mm2 (Cu)</b>	120.000	Nos.		0.00	0.00	0.00	INR Zero Only
30.11	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size <b>5 C x 2.5 mm2 (Cu)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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30.12	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size. <b>10 C x 2.5 mm2 (Cu)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
30.13	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size. <b>12 C x 2.5 mm2 (Cu)</b>	6.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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30.14	End termination and subsequent testing of XLPE insulated single core/ multi core armoured cables of 1.1KV grade, Al/ Cu cable., excluding supply of termination kits, glands but including lugs , all labour and consumable materials to make installation complete in all respect. Modification in existing switch board for accommodating the proposed cables. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of supports & clamps for cables, G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. 1.1 KV grade, XLPE Insulated, PVC inner sheath, armoured, FRLS PVC outer, Stranded Cu/ Al Conductor cables as per IS:7098 (Part-1) of size. <b>19 C x 2.5 mm2 (Cu)</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
<b>31.0</b>	<b>CABLE ROUTE MARKER</b>							
31.01	Supply, Grouting and Installation of Cable Route Marker of Round shape made of MS of dia. 200mm with suitable engraving as of HT/ LT / Control / Data Cable jointed with angle of 30X30X5 mm grouted in concrete of size 150mm x 150mm x 500mm.	18.000	Nos.		0.00	0.00	0.00	INR Zero Only
<b>32.0</b>	<b>Hume Pipe</b>							
32.01	Supply laying of NP2 class 250 mm dia Hume pipe including collars, jointing with stiff mixture of cement mortar in proportion 1:2 including cutting of pipes wherever required	250.000	Mtrs.		0.00	0.00	0.00	INR Zero Only
<b>33.0</b>	<b>GI Pipe / HDPE Pipe</b>							
33.01	Supply, laying, installation of medium class GI pipe as per IS:1239 (part-1) of size <b>50 mm NB</b>	100.000	Mtr.		0.00	0.00	0.00	INR Zero Only
33.02	Supply, laying, installation of medium class GI pipe as per IS:1239 (part-1) of size <b>100 mm NB</b>	320.000	Mtr.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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33.03	Supply, laying, installation of HDPE Pipe of size : 90/75mm, Wall thickness 3.0 +/- 0.2mm, 90mm OD, Homogenous	100.000	Mtrs.		0.00	0.00	0.00	INR Zero Only
<b>34.0</b>	<b>EXCAVATION AND BACK FILLING</b>							
34.01	Excavation and back filling of trenches for cables and earth strips etc. following types of soil except rocks for a maximum depth of 1.25 m for cables / 0.6 mtr. for earth strips including shoring, strutting, dewatering, consolidation and disposal of surplus earth upto100 m leads including all labour and materials to complete installation in all respect. <b>Soft soil</b>	1700.000	CuM		0.00	0.00	0.00	INR Zero Only
34.02	Excavation and back filling of trenches for cables and earth strips etc. following types of soil except rocks for a maximum depth of 1.25 m for cables / 0.6 mtr. for earth strips including shoring, strutting, dewatering, consolidation and disposal of surplus earth upto100 m leads including all labour and materials to complete installation in all respect. <b>Back filling with excavated earth in trench including consolidating each deposited layer by ramming, dressing etc.</b>	1485.000	CuM		0.00	0.00	0.00	INR Zero Only
<b>35.0</b>	<b>FINE RIVER SAND</b>							
35.01	Supply & Spreading of approved fine river sand in cable trenches up to a depth of 250 mm (100 mm below the centre line of cable and 150 mm above cable the centre line of cable) including all labour and materials to make the installation complete in all respect as per approved drawings, specifications and directions of engineer-in-charge.	95.000	CuM		0.00	0.00	0.00	INR Zero Only
<b>36.0</b>	<b>BRICKS</b>							
36.01	Supply & Spreading of approved first class bricks of dimension 230mmx115mmx75mm in cable trenches for cable protection including all labour and materials to make installation complete in all respect.	62300.000	Nos.		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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<b>37.0</b>	<b>SAFETY EQUIPMENT</b>							
37.01	Supplying and installing the following including the supply of necessary clamps, raw plugs etc., breaking the walls if required and making good the walls after completion of work, including all materials and labour etc. and as per site instructions. <b>CO2 type fire extinguishers (4.5 Lt capacity) with horn type (with handle) outlet</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
37.02	Vitreous enamel caution boards (HINDI/ ENGLISH/ODIYA) as per IS 2551 including fixing on the wall with all required hardware etc. complete. <b>11 V</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
37.03	Vitreous enamel caution boards (HINDI/ ENGLISH/ODIYA) as per IS 2551 including fixing on the wall with all required hardware etc. complete. <b>440 V</b>	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
37.04	Supply of fire retardant / extinguishing Elect. Insulated Synthetic Mat suitable for all voltages not exceeding 11 KV System (with H.T. Trolley movement) Electrically insulated PVC synthetic sheet along with suitable Resin/ Chemical bound (Hardener)/ Adhesive /Pigment/ PVC Strip etc & having minimum current leakage as per IS with dielectric strength test at 22KV, breakdown strength of 45KV and without adverse effect of mineral oil, high insulation resistance (min. 600 Mega ohm per Km.) including material for water proofing of floor & sealing of all joints having Min. width of 1000 mm ± 20mm. Mats shall conform to BIS: DOC NO. ET-02 (5440) Dt.30/04/04, meet requirements of IS 15652:2006, 5216 (part-1, 2&3), IS 8437, IS 3043 & IEC 479 Pub-1 & tested for Tensile/ Elongation properties, Insulation Resistance, effects of Acid Alkaline Diesel & Transformer Oil, Leakage Current Test, Fire Test etc. <b>11KV Voltage grade having nominal thickness of 2.5mm ± 10%</b>	4.000	Mtrs.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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37.05	Supply of fire retardant / extinguishing Elect. Insulated Synthetic Mat suitable for all voltages not exceeding 11 KV System (with H.T. Trolley movement) Electrically insulated PVC synthetic sheet along with suitable Resin/ Chemical bound (Hardener)/ Adhesive /Pigment/ PVC Strip etc & having minimum current leakage as per IS with dielectric strength test at 22KV, breakdown strength of 45KV and without adverse effect of mineral oil, high insulation resistance (min. 600 Mega ohm per Km.) including material for water proofing of floor & sealing of all joints having Min. width of 1000 mm ± 20mm. Mats shall conform to BIS: DOC NO. ET-02 (5440) Dt.30/04/04, meet requirements of IS 15652:2006, 5216 (part-1, 2&3), IS 8437, IS 3043 & IEC 479 Pub-1 & tested for Tensile/ Elongation properties, Insulation Resistance, effects of Acid Alkaline Diesel & Transformer Oil, Leakage Current Test, Fire Test etc. <b>Up to 3.3KV Voltage grade having nominal thickness of 2.0mm ± 10%</b>	40.000	Mtrs.		0.00	0.00	0.00	INR Zero Only
37.06	4 Nos. round bottom sand buckets with handle on floor mounted stand. The buckets to be marked "FIRE" in ENGLISH/ HINDI including supply and fixing with necessary clamps, bolts and all other hardware as required.	3.000	Set		0.00	0.00	0.00	INR Zero Only
37.07	First aid boxes with necessary medicine on suitable wall mounting stands.	3.000	Nos.		0.00	0.00	0.00	INR Zero Only
37.08	Shock treatment chart conforming to Indian Electricity Rules in Aluminum frame with glass.	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
37.09	Do & Don't chart as per Indian Electricity Rules in Aluminum frame with glass.	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
37.10	Exit Route / Emergency Exit Route Signage.	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
<b>38.0</b>	<b>STRUCTURAL STEEL</b>							
38.01	Supply, Fabrication and installation of MS frame supports and brackets base frame, hanger, risers, clamps, etc. for different electrical equipment as and where required. The job will include cutting, drilling, welding, reverting, bolting, grouting etc steel structural with a coat of epoxy primer and two coats of epoxy paint including supply of all consumable necessary hardware, paints etc.of various size of steel structure as required at site.	3.000	Ton		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

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<b>39.0</b>	<b>Item wise unit prices of following spares for two years operation and maintenance:</b>							
39.01	11 V ICOG Breaker Panel :BREAKER 11 kV - Trip bar spring and any other spring used in the circuit breaker mechanism	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.02	11 V ICOG Breaker Panel :BREAKER 11 kV - Shunt trip coil	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.03	11 V ICOG Breaker Panel :BREAKER 11 kV - Closing coil	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.04	11 V ICOG Breaker Panel :BREAKER 11 kV - Secondary Isolating contact blocks	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.05	11 V ICOG Breaker Panel :BREAKER 11 kV - Micro Switch for Spring Charging	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.06	11 V ICOG Breaker Panel :BREAKER 11 kV - Micro Switch for Service/Test position	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.07	11 V ICOG Breaker Panel :BREAKER 11 kV - Rack in/Rack out handle	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.08	11 V ICOG Breaker Panel :BREAKER 11 kV - Spring Charging handle	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.09	11 V ICOG Breaker Panel :BREAKER 11 kV - Door panel key	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.10	11 V ICOG Breaker Panel : CONTROL SWITCHES- Trip-Neutral-Close Control Switch	1.000	No.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

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39.11	11 V ICOG Breaker Panel : CONTROL SWITCHES- Local-Remote or Auto-Manual Selector Switch	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.12	11 V ICOG Breaker Panel : CONTROL SWITCHES- Ammeter Selector Switch	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.13	11 V ICOG Breaker Panel : CONTROL SWITCHES- Voltmeter Selector Switch	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.14	11 V ICOG Breaker Panel : Push Buttons-Push Button Element of each type	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.15	11 V ICOG Breaker Panel : Push Buttons- Push Button Actuator of each type	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.16	Indication Lamps (1 no. of each type)	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.17	Thermostat	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.18	MINIATURE CIRCUIT BREAKER (OF EACH RATING)	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.19	METERS: Ammeter	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.20	METERS: Voltmeter	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.21	LV Switchboards :BREAKERS (3200 A) -Trip bar spring and any other spring used in the circuit breaker mechanism	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.22	LV Switchboards :BREAKERS (3200 A) - Cluster Contacts	1.000	Set		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

<b>Name of the Bidder/ Bidding Firm / Company :</b>	
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**SCHEDULE OF RATE** (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )

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Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
39.23	LV Switchboards :BREAKERS (3200 A) - Arc Chute Assembly	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.24	LV Switchboards :BREAKERS (3200 A) - Shunt trip Coil	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.25	LV Switchboards :BREAKERS (3200 A) - Closing Coil	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.26	LV Switchboards :BREAKERS (3200 A) - Motors for MWS operated breakers	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.27	LV Switchboards :BREAKERS (3200 A) - Secondary Isolating Contact Blocks	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.28	LV Switchboards :BREAKERS (3200 A) -Shutter Assembly	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.29	LV Switchboards :BREAKERS (800 A)- Trip bar spring and any other spring used in the circuit breaker mechanism	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.30	LV Switchboards :BREAKERS (800 A)- Cluster Contacts	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.31	LV Switchboards :BREAKERS (800 A)- Arc Chute Assembly	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.32	LV Switchboards :BREAKERS (800 A)- Shunt trip Coil	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.33	LV Switchboards :BREAKERS (800 A)- Closing Coil	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.34	LV Switchboards :BREAKERS (800 A)- Motors for MWS operated breakers	1.000	No.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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39.35	LV Switchboards :BREAKERS (800 A)- Secondary Isolating Contact Blocks	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.36	LV Switchboards :BREAKERS (800 A)- Shutter Assembly	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.37	LV Switchboards :SWITCHES - Trip-Neutral-Close Control Switch	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.38	LV Switchboards :SWITCHES - Local-Remote or Auto-Manual Selector Switch	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.39	LV Switchboards :SWITCHES - Thermostat	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.40	LV Switchboards :SWITCHES - Ammeter Selector Switch	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.41	LV Switchboards :SWITCHES - Voltmeter Selector Switch	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.42	LV Switchboards : INDICATION LAMPS- Indicating Lamp Globes of each colour	1.000	Set		0.00	0.00	0.00	INR Zero Only
39.43	LV Switchboards : INDICATION LAMPS- Indication Lamp Fittings	2.000	No.		0.00	0.00	0.00	INR Zero Only
39.44	LV Switchboards : INDICATION LAMPS- Indicating Lamp Bulbs	2.000	No.		0.00	0.00	0.00	INR Zero Only
39.45	LV Switchboards : METERS - Ammeter (0-3200 A)	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.46	LV Switchboards : METERS - Ammeter (0-800 A)	1.000	Nos.		0.00	0.00	0.00	INR Zero Only



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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39.47	LV Switchboards : METERS - Ammeter (0-250 to 600 A)	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.48	LV Switchboards : METERS - Voltmeter	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.49	LV Switchboards : CURRENT TRANSFORMERS - Current Transformer 3200/1 A	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.50	LV Switchboards : CURRENT TRANSFORMERS - Current Transformer 800/1 A	1.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.51	LV Switchboards : CURRENT TRANSFORMERS - Current Transformer 250-600/1 A	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.52	LV Switchboards :MCCB / RCCB/ MCB - 4 P MCCB 250 A	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.53	LV Switchboards :MCCB / RCCB/ MCB - 4 P MCCB 125 A	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.54	LV Switchboards :MCCB / RCCB/ MCB - 4 P MCCB 63 A	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.55	LV Switchboards :MCCB / RCCB/ MCB - DP RCBO 63 A	3.000	No.		0.00	0.00	0.00	INR Zero Only
39.56	LV Switchboards :MCCB / RCCB/ MCB - DP MCB, 16 A	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.57	LV Switchboards :MCCB / RCCB/ MCB - DP MCB, 32 A	4.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.58	Transformer : Complete set of Gaskets	1.000	Set		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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39.59	Transformer : Oil level gauge	1.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.60	Transformer : Complete charge of silica gel with breather	1.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.61	Transformer : Buchhloz relay	1.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.62	Transformer : Analog type OTI	1.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.63	Transformer : Analog type WTI	1.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.64	Transformer : CT for WTI	1.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.65	Transformer : Magnetic oil level gauge	1.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.66	Batteries and Battery Chargers: Battery Cell of each type	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
39.67	Batteries and Battery Chargers: Insulators Interconnector (each type)	1.000	No.		0.00	0.00	0.00	INR Zero Only
39.68	Batteries and Battery Chargers: Connectors with Nuts & Bolts (each type)	1.000	No.		0.00	0.00	0.00	INR Zero Only
40.00	<b>TRANSFORMER</b> - Supply, Handling, Installation, Testing and Commissioning of 11kV/0.433kV, 2000KVA, ONAN Distribution Transformer and its accessories excluding Supply, filtration and dehydration of oil/winding, power and control cable termination but including transportation of transformer and its accessories from owner's stores, dressing of foundation, placing in position on MS base channel/flat, assembly of all accessories supplied loose, topping up with tested oil, all labour and material complete as per drawings/specification and direction of the transformer manufacturer.	2.000	No.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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40.01	<b>TRANSFORMER</b> - Supply, Filtration and Dehydration of oil/winding of transformer with streamline filter machine (to be arranged by the Contactor) for bringing the dielectric strength of the oil to the required level as per IS, complete with all labour and material including transportation oil drums from stores.	4000.000	Liters		0.00	0.00	0.00	INR Zero Only
41.0	<b>11 kV PANEL</b> : Supply, Handling, Installation, Testing and Commissioning of Incoming cum Outgoing 11kV 3Ph 50Hz 31.5kA 1250 A VCB Panel complete with metering and protection system free standing floor mounting cubical type as per SLD & Specification Sheet and Technical specification - Electrical System (Doc No. PC183-TS-0805) and SLD No. PC183-7411-0985E including transportation from owner's stores, dressing of foundation, placing in position on MS base channel/flat, assembly of all accessories supplied loose, all labour and material complete as per drawings/specification and direction of the manufacturer.	2.000	No.		0.00	0.00	0.00	INR Zero Only
42.0	<b>PUSH BUTTON</b> : Supply, installation, testing and commissioning of weather proof emergency stop push button (Mushroom type) for transformer with lockable facility in OFF position suitable for outdoor installation with Die cast Aluminium alloy enclosure having rain protection hood fabricated out of 14 SWG Aluminium sheet including shifting of control stations from store to the site of erection, fixing control stations with nuts & bolts, on already erected supports/nearby structure/walls etc. connecting control cable and testing to make the installation complete in all respect as per approved drawings, specifications and direction of engineer-in-charge. Supply of all required hardware for mounting shall be in Contractor's scope.	2.000	No.		0.00	0.00	0.00	INR Zero Only
<b>43.0</b>	<b>CABLES (HT)</b>							
43.01	Supply of 11 KV (UE) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification. <b>3C x 240 sq. mm (Al)</b>	100.000	Mtrs		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

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43.02	Laying (horizontal & vertical), testing and commissioning of 11 KV Grade, XLPE Insulated, PVC inner sheathed, armoured, FRLS PVC outer sheathed cables including its termination in new & readymade trenches, on pre-fabricated/ site-fabricated cable trays/ racks, on already installed risers, support, hangers, saddles / directly buried up to 1000mm depth etc. pulling through pipes on walls/columns, steel structures including transportation of cable drums from storage yard to site, unrolling the drum, including supply & fixing of cable tags, AI clamps with all labour, consumable materials and necessary hardware to make installation complete in all respect as per direction of engineer-in-charge. <b>3 x 240 mm2 (AI)</b>	100.000	Mtrs.		0.00	0.00	0.00	INR Zero Only	
43.03	End termination and subsequent testing of 11KV(UE) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables using suitable Heat Shrink Raychem / 3M Termination Kit, including supply of termination kit, glands & lugs & glanding , all labour and consumable materials to make installation complete in all respect. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge. <b>3C x 240 sq. mm (AI)</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only	
43.04	Supply & fixing of Heat Shrinkable Raychem make straight through jointing kit suitable for 11 KV grade (UE) XLPE-A-FRLSPVC insulated armoured cables of following sizes including cutting, stripping of cable insulation complete with supply of compression / crimping type ferrules, plastic mould and epoxy resin compound etc., including all labour and materials, as per approved drawings, specifications and directions of Engineer-in-Charge. <b>3C x 240 sq. mm (AI, 11 KV)</b>	2.000	No.		0.00	0.00	0.00	INR Zero Only	
<b>44.0</b>	<b>PLANT LIGHTING POLES</b>								
44.01	Supply & fixing of hot dip galvanized MS tubular swaged lighting poles of following types suitable for wind velocity of 150 Km/Hr and along with suitable pole junction box. <b>5M high ground mounted poles</b>	16.000	Nos		0.00	0.00	0.00	INR Zero Only	

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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<b>45.0</b>	<b>CABLE TRAYS (PREFABRICATED LADDER TYPE GI CABLE TRAYS) &amp; ACCESSORIES</b> (Supply, installation & fixing of prefabricated ladder GI cable trays and their accessories i.e. supply of all hardware required i.e. J-hooks, GI Nut, Bolt, Washers,coupling plate etc. of width 150 mm, 300 mm, 450 mm & 600 mm as per site requirement for laying of cables with standard rung spacings. Load for support span of 2.5 meter as 30, 60, 75 & 90 (in Kg/Mtr) respectively with concentric static load as 70 Kg at the centre, with materials, labour, tools and tackles, consumables etc. as per drawings, specification and directions of Site Engineer / Engineer-in-Charge.The rates shall be valid for all mounting heights)							
45.01	Straight Run Cable Trays - <b>600mm wide</b>	50.000	Mtrs.		0.00	0.00	0.00	INR Zero Only
45.02	Straight Run Cable Trays - <b>300 mm wide</b>	50.000	Mtrs.		0.00	0.00	0.00	INR Zero Only
45.03	Horizontal Bends- <b>600mm wide</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
45.04	Horizontal Bends- <b>300 mm wide</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
45.05	Vertical Inside Bends - <b>600 mm wide</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
45.06	Vertical Inside Bends - <b>300 mm wide</b>	2.000	Nos.		0.00	0.00	0.00	INR Zero Only
<b>46.0</b>	<b>LT CABLE STRAIGHT THROUGH JOINT (1.1 KV):</b> Supply and Making of heat shrinkable type straight-through joint for 1.1 KV (E) Voltage Grade Aluminium XLPE insulated, armoured cable, including cutting, stripping of cable insulation complete with supply of compression / crimping type ferrules, plastic mould and epoxy resin compound etc., including all labour and materials, as per approved drawings, specifications and directions of Engineer-in-Charge.							
46.01	3.5 x 150 mm <sup>2</sup> (Al)	4.000	Nos.		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

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46.02	3.5 x 120 mm2 (Al)	8.000	Nos.		0.00	0.00	0.00	INR Zero Only	
46.03	3.5 x 70 mm2 (Al)	4.000	Nos.		0.00	0.00	0.00	INR Zero Only	
46.04	10C x 2.5 sq. mm (Cu)	2.000	Nos.		0.00	0.00	0.00	INR Zero Only	
46.05	12C x 2.5 sq. mm (Cu)	2.000	Nos.		0.00	0.00	0.00	INR Zero Only	
<b>47.0</b>	<b>DC SYSTEM</b>								
47.01	Supply, Installation & Commissioning of medium discharge Nickel Cadmium type, 110 V, 75 AH battery bank with 40 A Battery Charger complete with one no. cell booster as per specification in Technical specification - Electrical System . The item includes batteries with all accessories including Battery Stand ; Main Float cum Load cum Boost charger, Standby Float cum Load cum Boost charger; interconnecting Power copper cables between Charger to Batteries and Charegr to DCDB, insulated copper links, earthing of battery Charger and battery stand, connection and termination of power and control cables of battery charger, battery bank and etc., supply of double compression rolled aluminium cable glands and suitable cable lugs (Bi metallic), plugging of all unused cable entries etc., all consumables, materials, labour, tools and tackles, etc. for the completeness of system as per drawings, specification and directions of Engineer-in-Charge etc.	1.000	Nos		0.00	0.00	0.00	INR Zero Only	
<b>48.0</b>	<b>HIGH MAST</b>								
48.01	Erection and commissioning of the high mast with the help of suitable equipment alongwith all its accessories such as head frame, SS wire rope, double drum winch etc. This includes supply of foundation bolts manufactured from special steel along with nuts, washers, anchor plates and templates.	5.000	Nos.		0.00	0.00	0.00	INR Zero Only	



**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

**NOTE :** Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

Name of the Bidder/ Bidding Firm / Company :								
<b>SCHEDULE OF RATE</b> (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )								
NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	NUMBER #	TEXT #
SI. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words
48.02	Installation, testing and commissioning of specially designed non-integral flood light luminaries 9 nos. 2X400W, 3 Nos. 1X400W SON T lamps and its control gear boxes. Installation, testing & commissioning of aviation obstruction lights with neon spiral light source (1 no. fitting per mast is necessary).	5.000	Nos.		0.00	0.00	0.00	INR Zero Only
48.03	Installation, testing and commissioning of high powered three phase flameproof power tool for electrical operation of raising and lowering of lantern carriage with its FLP starter, FLP plug, FLP DOUBLE COMPRESSION ROLLED Aluminum cable glands & lugs suitable for 3.5Cx50 Sq. mm (Al) XLPE cable, supporting trolley, torque limiter and fixing chain.	5.000	Nos.		0.00	0.00	0.00	INR Zero Only
<b>49.0</b>	<b>LAN &amp; EPABX WORKS (PART - III)</b>							
<b>50.0</b>	<b>For All Building's</b>							
50.01	1/2" PVC CONDUIT PIPE	1444.000	Mtrs.		0.00	0.00	0.00	INR Zero Only
50.02	1" CONDUIT PIPE(6KG/CM2 WORKING PRESSURE )	405.000	Mtrs.		0.00	0.00	0.00	INR Zero Only
50.03	2" CONDUIT PIPE(6KG/CM2 WORKING PRESSURE )	345.000	Mtrs.		0.00	0.00	0.00	INR Zero Only
50.04	4 x 4" PVC BOX	196.000	NOS		0.00	0.00	0.00	INR Zero Only

**Item Rate BoQ**

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR RENOVATION WORKS FOR BARRACK BUILDINGS ALONG WITH CONSTRUCTION OF NEW QUARTER GUARD BUILDING AND ALLIED WORKS AT TALCHER FERTILIZER COMPLEX - ANGUL

Contract No: PNP/PC183/E/203/NCB

NOTE : Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site by Owner's Engineer-in-charge. Quantities indicated in Schedule of Rates are approximate and subject to variation on either side. The quantity of individual item may be deleted. Contractor shall not be entitled for any compensation on this account and the quoted rates shall hold good for such quantity variations etc. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. **Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract).**

Name of the Bidder/ Bidding Firm / Company :									
<b>SCHEDULE OF RATE</b> (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )									
NUMBER	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	GST @ 18% in RS. P	TOTAL AMOUNT Incl. All taxes & duties (Excl. GST) in Rs. P	TOTAL AMOUNT Incl. All taxes , duties and GST in Rs. P	TOTAL AMOUNT Incl. All taxes, duties and GST In Words	
<b>Total in Figures</b>						<b>0.00</b>	<b>0.00</b>	INR Zero Only	
<b>Quoted Rate in Words</b>				<b>INR Zero Only</b>					