NOTICE INVITING TENDER

FOR

SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

NIT NO. : PNPM/PC-183/E/8006/NCB DATED 11.05.2024

PREPARED AND ISSUED BY

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

Date of Issue: 11.05.2024

MASTER INDEX

NIT NO. **:PNPM/PC-183/E-8006/NCB DATED 11.05.2024**

NIT DESCRIPTION **: "Supply cum Erection of Electrical works at CISF Barrack, Quarter Guard and other allied buildings for OSBL facilities on Item Rate basis at Talcher Fertilizers Limited, Talcher, Odisha"**

SECTION-I

INVITATION FOR BID (IFB)

SECTION-I

"INVITATION FOR BID (IFB)"

Ref No: PNPM/PC-183/E-8006/NCB **Date: 11.05.2024**

To,

PROSPECTIVE BIDDERS

SUB: : "Supply Cum Erection of Electrical works at CISF Barrack, Quarter Guard and other allied buildings for OSBL facilities on Item Rate basis at Talcher Fertilizers Limited, Talcher, Odisha"

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) and PDIL website (www.pdilin.com),

2.0 The brief details of the tender are as under:

(A)	NAME OF WORK / BRIEF SCOPE OF WORK/JOB	**"Supply Cum Erection of Electrical works at CISF Barrack, Quarter Guard and other allied buildings for OSBL facilities on Item Rate basis at Talcher Fertilizers Limited, Talcher, Odisha"**
(B)	TENDER NO. & DATE	**PNPM/PC-183/E-8006/NCB dated 11.05.2024**
(C)	TYPE OF BIDDING SYSTEM	SINGLE BID SYSTEM: ☐ TWO BID SYSTEM: √
(D)	TYPE OF TENDER	E-TENDER (CPP PORTAL): √ MANUAL: ☐

(E)	COMPLETION PERIOD	10 (Ten) months from date of issuance of FOA (Fax of Acceptance)
(F)	BID VALIDITY	The bid validity period shall be 90 Days from Bid due date.
(G)	BID SECURITY / EARNEST MONEY DEPOSIT (EMD)	APPLICABLE ✔ NOT APPLICABLE ✘ Amount: **Rs.15.00 Lakh (Rupees Fifteen Lakh Only)**. Exempted Bidders (i.e. Start-up & Govt. Dept./PSUs) are required to submit declaration for Bid security as per Form F-2B. **Note:** Considering the Tender falls under "Works Contract", submission of EMD is applicable for ***all MSEs Bidder***. Hence, all MSEs Bidder shall ensure the submission of EMD along with Bid as per Terms & condition of NIT. (Also refer clause no.16 of ITB)
(H)	AVAILABILITY OF TENDER DOCUMENT ON WEBSITE(S)	From 11.05.2024 (09:00 Hrs, IST) to 31.05.2024 (15:00 Hrs, IST) on following websites: (i) Govt. CPP Portal https://eprocure.gov.in (ii) TFL Website - http://tflonline.co.in (iii) PDIL website - www.pdilin.com
(I)	DATE, TIME & VENUE OF PRE-BID MEETING	On 17.05.2024 (14:30 Hrs, IST), through Physical mode at PDIL, Noida office.
(J)	START OF BID SUBMISSION ON CPP PORTAL	20.05.2024 at 15:00 Hrs. (IST)
(K)	DUE DATE & TIME OF BID-SUBMISSION	Date : 31.05.2024 Time : 15:00 Hrs (IST)
(L)	DATE AND TIME OF UN-PRICED BID OPENING (IN PRESENCE OF AUTHORIZED REPRESENTATIVE OF BIDDERS)	Date: 01.06.2024 Time :15:00 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)

(M)	ADDRESS FOR COMMUNICATION WITH PDIL	Projects & Development India Limited, (Project Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida , (India) Fax no.:0120-2529801 Kind Attention: 1) Mr. Kailash Joshi- Project Manager Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 314 Mob. No. : 9718762091 Fax no. : +91-120-2529801 E-mail : kjoshi@pdilin.com 2) Mr. Abhilesh Kumar- Dy.C.E (PM deptt.) Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 316 Mob. No. : 8178085434 Fax no. : +91-120-2529801 E-mail : abhilesh@pdilin.com
	ADDRESS FOR COMMUNICATION WITH OWNER (TFL) AT PROJECT OFFICE	M/s Talcher Fertilizers Ltd. (TFL), Administrative Building, Talcher, Post: Vikrampur, Dist: Angul, Pincode-759106, Odisha Kind Attention : Mr. Sujit Kumar Hota AGM(Civil)/Plant Manager Tel No. : +91-9422383101 E-mail : skhota@rcfltd.com vivekmishra@tflonline.co.in
(O)	ADDRESS FOR COMMUNICATION WITH OWNER (TFL) AT SITE FOR SITE VISIT	M/s Talcher Fertilizers Ltd. (TFL), Administrative Building, Talcher, Post: Vikrampur, Dist: Angul, Pincode-759106, Odisha Kind Attention : Mr. Sujit Kumar Hota AGM(Civil)/Plant Manager Tel No. : +91-9422383101 E-mail : skhota@rcfltd.com
(P)	Reverse Auction	APPLICABLE: ✗ NOT APPLICABLE: √ (Also refer Clause No. 26.3 of ITB)

(Q)	Original Documents to be submitted at	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) Kind Attention: Mr. Kailash Joshi, Project Manager Mob.no.: 9718762091

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 Bid must be submitted only on CPP Portal (https://eprocure.gov.in/eprocure/app). Further, the following documents in addition to uploading the bid on CPPP's 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 e-tender by the bidder along with e-bid within the due date and time to the address mentioned in Clause no. 2.0 (Q) of IFB:-

i) EMD (for all bidders except exempted category) /Declaration for Bid Security (for exempted bidders)
ii) Power of Attorney
iii) Integrity Pact
iv) Line of credit (if any)

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 along with 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.

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 (Section-III of tender).

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 Any revision, clarification, corrigendum, time extension, etc. to this Tender Document will be hosted on the website(s) only as mentioned at 2.0 (H) of IFB. Bidders are requested to visit the CPP Portal regularly to keep themselves updated. No complaint/representation shall be entertained from bidders in case they do not see / download the amendments, etc. issued to the tender document by TFL from time to time on the CPP Portal.

9.0 All bidders who are willing to submit their bid are required to submit F-6 (Acknowledgement cum Consent letter) duly filled within 7 days from date of 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 Sl 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

Thanking You,
For and on behalf of
Talcher Fertilizers limited

(Kailash Joshi)
Project Manager
Projects & Development India Limited
E-mail ID : kjoshi@pdilin.com
Contact No. :0120-2529842/ Ext. 314

DO NOT OPEN - THIS IS A QUOTATION
PHYSICAL DOCUMENTS

Tender Document No. : .....

Description : **"Supply Cum Erection of Electrical works at CISF Barrack, Quarter Guard and other allied buildings for OSBL facilities on Item Rate basis at Talcher Fertilizers Limited, Talcher, Odisha"**

Due Date & Time : ***31.05.2024 at 15:00 Hrs.***

From:	***To:***
.....	Projects & Development India Limited, (Project Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida , (India) Fax no.:0120-2529801 Kind Attention: 1) Mr. Kailash Joshi- Project Manager Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 314 Mob. No. : 9718762091 Fax no. : +91-120-2529801 E-mail : kjoshi@pdilin.com 2) Mr. Abhilesh Kumar- Dy.C.E (PM deptt.) Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 316 Mob. No. : 8178085434 Fax no. : +91-120-2529801 E-mail : abhilesh@pdilin.com

(To be pasted on the envelope containing Physical Document)
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SECTION-II

BID EVALUATION CRITERIA
&
EVALUATION METHODOLOGY

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.

1.0 Technical Criteria:

1.1 The bidder must have experience as under, during the last Seven (07) years reckoned from the original bid due date.

"Similar work" shall mean the following:

"The bidder must have completed Supply and Erection of Electrical works (which must include Supply & Erection of Panels/ Distribution board, Transformer & Switch Gears) in Industrial / Infrastructure/ Residential township Sectors."

Bidder meeting the criteria above must have completed

The bidder must have completed One "Similar work", having completed value not less than INR 6.91Crore (including all applicable taxes & duties).

(OR)

The bidder must have completed Two "Similar works", each having completed value not less than INR 4.32Crore (including all applicable taxes & duties).

(OR)

The bidder must have completed Three "Similar works", each having completed value not less than INR 3.45 Crore (including all applicable taxes & duties).

Note:

In case bidder has executed and completed composite works which includes any of the qualifying works(s) stated above i.e. (A.1), then value of such qualifying works out of the total value of composite works shall be considered for the purpose of qualification.

1.2 The bidder must have valid 'A' Class Electrical Contractors License or equivalent to 'A' Class Electrical License issued from any State Government Agency/Authority.

1.3 Applicability of Policy for providing preference to domestically manufactured Iron & Steel (DMI & SP) products.

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-I mentioned in the policy document.

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 in NIT.

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

Notes for 1.1 above:

I. Job completed by a Bidder for its own plant/ project cannot be considered as experience for the purpose of meeting BEC of the tender. However, jobs completed 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 completed for Subsidiary/ Fellow subsidiary/ Holding company. Such Bidders to submit these documents in addition to the documents specified to meet BEC.

II. The bidder must submit the completion certificate/acceptance certificate issued by Order issuing authority/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.

III. 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.
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.

IV. Experience of bidder acquired as a sub-contractor is acceptable against submission of certificate from end user by such bidder along with other specified documents.

V. Bids from Consortium / Joint Venture shall not be accepted

VI. If a Bidder has executed "Similar work" in the capacity of Joint Venture/ Consortium Partner, his experience shall be considered to the extent of scope of work defined under the Joint Venture/ Consortium Agreement.

2.0 Financial Criteria:

2.1 The Average Annual financial Turnover during the three preceding financial years of the bidder should be minimum **INR 4.32 Crore.**

2.2 Net Worth of the bidder should be positive as per last audited financial year.

2.3 The Bidder should have minimum working capital equal to **INR 86.40 Lakh** as per last audited financial year. 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 Crore (or equivalent USD), confirming the availability of line of credit for INR **86.40 Lakh**. The line of credit from bank shall be submitted strictly as per prescribed format.

"Notes for 2.1, 2.2 & 2.3"

Annual Turnover: Preceding 3 financial years mentioned in aforesaid BEC refer to immediate 3 preceding financial years wherever the closing date of the bid is after 30th Sept. of the relevant financial year. In case the tenders having the due date for submission of bid up to 30th September of the relevant financial year, and audited financial results of the immediate 3 preceding financial years are not available, the audited financial results of the 3 years immediately prior to that will be considered.

In case the date of constitution/incorporation of the bidder is less than 3 years old, the average turnover in respect of the completed financial years after the date of constitution/ incorporation shall be taken into account for minimum Average Annual Financial Turnover criteria.

Net Worth/Working Capital: Immediate preceding financial year mentioned in aforesaid BEC refer to audited financial results for the immediate preceding financial year wherever the closing date of the bid is after 30th September of the relevant financial year. In case the tenders having the due date for submission of bid up to 30th Sep. of the relevant financial year, and audited financial results of the immediate preceding financial year is not available, in such case the audited financial results of the year immediately prior to that year will be considered. Bidder is to submit Audited Financial Statement of immediate preceding financial years (as mentioned above) along with format F-10 accordingly for Networth / Working Capital.

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 equivalent in 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 at F-9. Declaration Letter/Certificate for line of credit due to short fall of working capital shall be from single bank only. Letters from multiple banks shall not be applicable. However, banking syndicate will also be acceptable wherein a group of banks can jointly provide line of credit to the bidder. The bank shall be required to issue the letter for declaration/ certificate of line of credit on their letter head along with the contact details of the issuing authority like email id, contact number etc.

Any shortfall information / documents on the Audited Annual Report / Financial Statement of the Bidder and/or line of credit for working capital issued on or before the final bid due date can only be sought against Commercial queries (CQs). Any information/ documents issued post final bid due date shall not be considered for evaluation.

3.0 General Notes (for both Technical BEC and Financial BEC):

Exchange rate for conversion of currency for evaluation of documents relating to BEC:

Exchange rate for Conversion of Currency for evaluation of documents submitted by bidders for BEC which are in a currency other than INR, shall be as follows:

a) BEC (Technical): Bill Selling (foreign exchange) Rate of State Bank of India as prevailing on the date of award of order / contract submitted by bidder.

b) BEC (Financial)

(i) **For Annual Turnover**: The average of Bill Selling (foreign exchange) Rate of State Bank of India as prevailing on the First date and Last date of the respective Financial Year**.**

(ii) **For Net Worth & Working Capital**: The Bill Selling (foreign exchange) Rate of State Bank of India as prevailing on the Last date of the respective Financial Year

c) In case, the SBI Selling rate is not available as on the date of conversion as specified above for respective cases, the exchange rate for conversion of currency shall be taken from the internet, such as

https://www.xe.com/currencyconverter
https://economictimes.indiatimes.com/markets/forex/currency-converter
https://www.oanda.com/currency/converter

4.0 BEC for START-UPS:

The Technical and Financial BEC as stipulated above shall also be applicable for start-ups.

5.0 Documents to be submitted for Compliance to BEC

(i) Technical Criteria of BEC:

a) To meet the criteria of **1.1** above, Bidder must submit copy of Detailed Letter of Acceptance (DLOA) / Work Order /relevant extract of work Order/ Contract Agreement along with detailed scope of work and Completion / Acceptance Certificate. Such certificate shall be issued by Owner/End user.

The Detailed Letter of Acceptance (DLOA) / Work Order / Contract Agreement must *inter alia* include Scope of work, completion time, contract value, etc. Similarly, the Completion Certificate/ Acceptance Certificate must clearly indicate reference of relevant work order/DLOA/Contract Agreement, Name of Work, Completed order value and date of completion.

b) In cases where bidder has executed the work as a sub-contractor, such Completion certificate (for compliance to **1.1**) issued by the "Order issuing Authority "is also acceptable, provided that a certificate or letter from end user/Owner is submitted that the bidder has worked as a sub-contractor for that project.

c) To meet the criteria **1.2**, bidder shall submit valid 'A' Class Electrical Contractors License or equivalent to 'A' Class Electrical License issued from any State Government Agency/Authority

d) To meet the criteria **1.3** above, Bidder shall submit affidavit from the domestic manufacturers of Iron & steel products as per the Form-I enclosed with the policy documents. 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 prescribed format.

(ii) Financial Criteria of BEC:

(a) To meet the criteria for Sr. No. **2.1,** Bidder shall submit the Audited Financial Statements of the company for the preceding three (03) financial years.

(b) To meet the criteria for Sr. No. **2.2**, Bidder shall submit the Audited Financial Statements of the last financial year.

(c) To meet the criteria for Sr. No. **2.3,** Bidder shall submit the Audited Financial Statements of last financial year along with (i) Bank's Letter (if applicable).

(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 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 prescribed format.

For 5 (ii) above, the "Notes for (2.1), (2.2) & (2.3) under 2.0" (Financial Criteria of BEC) shall apply.

(iii) Bidder shall submit Checklist as per prescribed format in respect of documents to be submitted by bidder towards BEC.

6.0 Authentication of documents submitted against BEC

6.1 Technical BEC

All documents in support of Sl. No. 1.1, 1.2 & 1.3 of Technical Criteria of BEC to be furnished by the Bidder shall necessarily be duly certified/ attested by Chartered Engineer as well as Notary Public with legible stamp.

6.2 Financial BEC

Bidder shall submit "Details of financial capability of Bidder" in prescribed format (F-10) duly signed and stamped by a chartered accountant/ Certified Public Accountant (CPA).

Further, copy of audited annual financial statements submitted in bid shall be duly certified/ attested by Notary Public with legible stamp.

7.0 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 BOQ 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).

IV. The Price Evaluation will be subject to applicability of Purchase Preference Policies as mentioned in the tender document.

8.0 Applicability of Public Procurement (Make in India) Policy

The said policy shall be applicable for this package. Further, as the work is non divisible/non-splittable, therefore, the relevant provisions of policy shall be applicable. The minimum local content and all other provisions shall be as per Public Procurement (Make in India) Policy latest policy no. P-45021/2/2017-PP (BE-II) dated 16th September, 2020 or as updated from time to time.

9.0 Applicability of purchase preference of MSE's

Considering that the subject work falls under "Works Contract", Purchase preference & exemption of EMD to MSEs Bidders shall not be applicable as per government guidelines.

10.0 E-Reverse Auction (eRA)- Not Applicable for this tender.

11.0 Bidder shall submit CBA Format as per attached Appendix-II.

Appendix-I

POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS IN GOVERNMENT PROCUREMENT

रजिस्ट्री सं० डी० एल०-33004/99 REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण
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इस्पात मंत्रालय

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 वरीयता 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 वरीयता 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 परिशष्ट 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 पुन: 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 (एस ई जैड) 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 हैं।

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 अध्यधीन छूट प्रदान की जाएगी।

3.1.1 जहां विशिष्ट ग्रेडों 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 शिकायत 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 उसे 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 वरीयता 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 पुन: 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 पुन: 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 एस) 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 किसी 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/उससे 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 अध्यधीन 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 एस 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 एस 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 उस 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 (सितंबर 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 सत्यतता की जांच करे। इसकी सत्यतता 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 अध्यधीन) 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 एस पी नीति के अंतर्गत सभी लागू एजेंसियां इस नीति का कार्यान्वयन सुनिश्चित करेंगी और वार्षिक रूप से जून के महीने में एक घोषणा भेजेंगी 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

किसी ऐसे प्रश्न की स्थिति में कि क्या खरीदी जा रही मद इस नीति के अंतर्गत शामिल किए जाने वाले डी एम आई एंड एस पी है, इस मामले को स्पष्टीकरण के लिए इस्पात मंत्रालय के पास भेजा जाएगा।

परिशिष्ट क – घरेलू स्तर पर निर्मित उत्पादों के लिए अनन्य

क्र. सं.	लौह एवं इस्पात उत्पादों की सांकेतिक सूची	लागू एच एस कोड	न्यूनतम घरेलू मूल्यवर्धन आवश्यकता
1	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, हॉट रोल्ड, 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 रोल्ड (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. कम की चौड़ाई का लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोड किया हुआ	7212	35%
6	लौह एवं गैर एलॉय इस्पात का अनियमित रूप से ऐंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोल्ड	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 रोल्ड, हॉट ड्रॉन अथवा हॉट एक्सट्रूडेड परंतु रोलिंग के बाद उसे टिविस्ट 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 सेक्शन्स	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 रोल्ड इस्पात	7219	50%
12	600 मि. मी. से कम की चौड़ाई का स्टेनलैस इस्पात का फ्लेट रोल्ड इस्पात	7220	50%
13	स्टेनलैस स्टील का अन्य बार्स और रोड्स; स्टेनलैस स्टील का एंगल शेप और सेक्शन्स	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 ट्यूब, पाइप और होलो पाइप	7303	35%
17	लौह (कास्ट आयरन को छोड़कर) अथवा इस्पात का ट्यूब पाइप और होलो प्रोफाइल, सीमलैस	7304	35%
18	लौह अथवा इस्पात का सर्कुलर क्रॉस सेक्शन वाले अन्य ट्यूब और पाइप (उदाहरण के लिए, वेल्ड किया हुआ, रिवेट किया हुआ अथवा समान रूप से बंद किया गया हुआ), जिसकी बाहरी त्रिज्या 406.4 मि. मी. से अधिक हो	7305	35%
19	लौह अथवा इस्पात के अन्य ट्यूब, पाइप और होलो प्रोफाइल (उदाहरण के लिए ओपन सीन अथवा वेल्ड किया हुआ, रिवेट किया हुआ अथवा समान रूप से बंद किया गया हुआ)	7306	35%
20	लौह अथवा इस्पात का ट्यूब अथवा पाइप फिटिंग (उदाहरण के लिए, कनेक्टर/कप्लिंग, एल्बो स्लीव्स)	7307	35%
21	स्टेनलैस स्टील का अनियमित रूप से ऐंठा हुआ कुंडलों 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 ऐंठा 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 ड्रील बार्स और रोड्स	7228	35%
27	लौह अथवा इस्पात की शीट पाइलिंग, चाहे ड्रील 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 प्रीफेबरिकेटिड 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 विद्युतीय रूप से इन्सुलेट न किया गया	7312	15%
33	लौह अथवा इस्पात का फेनसिंग के लिए उपयोग किये जाने वाला बार किया हुआ वायर; ट्विस्ट किया हुआ हूप अथवा सिंगल फ्लेट वायर, बार्स किया हुआ अथवा नहीं और लूज तरीके से ट्विस्ट किया हुआ डबल वायर	7313	15%
34	लौह अथवा इस्पात तार का ड्रील, 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, ग्रेपनेल्स 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 लीव्स	7320	15%
41	लौह अथवा इस्पात का स्टोव्स, रेंज, ग्रेड, कूकर (केंद्रीय हिटिंग के लिए सहायक बायलरों के साथ उन वस्तुओं सहित), बारबेक्यूज, 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 एस 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 बियेरिंग, हाइड्रोलिक डिस्क ब्रेक्स, टेंकर एंड कंटेनर, पाइप कंवेयर के लिए कंवेयर बेल्ट, हाई एंगल कंवेयर प्रणाली, क्रशर्स, क्रेन रेल लुब्रिकेशन, चार गरडर ग्राइडर ई ओ टी क्रेन, क्रेन वेइंग प्रणाली, क्रेन ऐयर कंडीशनिंग, फ्यूड कप्लिंग, 4 लिफ्ट ट्रक्स, हाइड्रोलिक मोटर्स, हाइड्रोलिक सिस्टम, लॉकिंग एसेम्बली (फ्रिक्शन ग्रिप), लोड सेल्स, लेवल सेन्र्सस, पाइप कंवेयर प्रणाली, प्लग/पाडेल फीडर, न्यूमेटिक हुलाई – घना एवं लिन फेस, रिक्लेमर्स, रेडियो रिमोट कंट्रोल, रेल फिक्सिंग व्यवस्था (विशेष), रेपिड/फ्लेड लोडिंग प्रणाली, स्टेकर्स, स्पेशल स्क्रीन, स्लिव रिंग बियरिंग, ट्रिप्पलर्स, ट्रांसफर कार, टॉग्स (स्पेशल), वाइब्रेशन, आइसोलेशन प्रणाली (स्परिंग डम्पर) वेगन टिप्पलर्स, वेगन लोडर	50%
2	मिनिरल बेनिफेक्शन (लौह अयस्क और कोयला) उपकरण	इंडस्ट्रीयल क्रशर्स, ग्राइनडिंग मिल, परम्परागत स्क्रीन, स्लूरी पम्पस, हिरेंट थिकनर्स, फिल्टर्स, हाइड्रोक्लोन्स	50%

3	कॉक अवेन	कोक ओवन सिलिका रिफेक्टरी, एन्करेज सिस्टम, ब्रस्च नरडन के साथ वेस्ट गैस वाल, फ्लेस प्लेट, डोर फ्रेम, डोर बॉडी, माइनर कास्टिंग: गुजनेक, वाल बॉक्स, ए पी लिड, चार्जिंग और इंस्पेक्शन होल लिड एंड फ्रेम रिवर्सिंग मेकेनिजम, केंद्रीकृत लूब्रिकेशन प्रणाली हाइड्रोजेट डोर क्लीनिंग तंत्र, कोड कंवेयर सिस्टम, स्किप होइस्ट, डोर लोवरिंग रैक, आइसोलेशन/रिवर्सिंग कॉक्स, II ऑटोमेशन, अवेन मशीन	50%
4	उप-उत्पाद संयंत्र	प्राथमिक गैस कूलर, इलेक्ट्रोस्टेटिक तार प्रेसिपिटेटर, H2S, NH3 और नप्थलिन स्कूबबर, कोम्बी स्ट्रीप्पर, फ्लेशिंग लिकर पम्प, क्लास किन, क्लाक रियेक्टर, वेस्ट हीट बायलर, डिकेंटर्स	50%
5	सिंटर संयंत्र उपकरण	पेलेट कार, ड्राइव/डिस्चार्ज इंड स्प्रोकेट ऐसेम्बली कब्ड रेल, स्लाइड रेल, हॉट सिंटर ब्रेकर और ग्रिजली, डिप रेल एंड रनिंग रेल, प्रोसेस फेन के लिए इम्पेलर एसेम्बली, सिन्टर मशीन का ड्राइव एसेम्बली, उच्च तीव्रता वाला मिक्सर और नोडूलाइजर	50%
6	पेलेट संयंत्र उपकरण	पेलेट कार, ड्राइव/डिस्चार्ज इंड स्प्रोकेट ऐसेम्बली कब्ड रेल, स्लाइड रेल, रनिंग रेल वरटिकल 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 वाल 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 क्लिलिंग प्लांट प्रणाली, इसके बाइस-पास वाल सहित टॉप रिकवरी टूबाइन सिस्टम, डि-ब्रिकिंग मशीन, रि-रेलिंग उपकरण, पी सी आई प्रणाली, पी सी आई के लिए ग्राइनडिंग मिल, स्टॉक लेवल इंडिकेटर, टूयेरे स्टाक एसेम्बली, वेस्ट हीट रिकवरी प्रणाली, बी एफ एवं हॉट ब्लास्ट स्टोव प्रौद्योगिकीय वाल, एब्व ब्रर्डन प्रोब्स, स्लग ग्रेन्यूलेशन यूनिट, टूयेरे एंड टूयेरे कूलर, टोरपेडो लेडल कार, बी एफ हरथ रिफेक्ट्री	50%
8	डायरेक्ट रिडक्शन प्लांट उपकरण	चार्ज डिस्ट्रीब्यूटर, अपर एंड लोअर सील लेग, रिफोमर एंड रि-क्यूरेटर सिस्टम, बर्डन फिडर्स, ट्रबो-एक्सपेंडर, प्रोसेस गैस कम्प्रेशर, सील गैस कम्प्रेशर एवं बोटम सील गैस कम्प्रेशर, सील गैस जेनरेटर एवं डायर्स, प्रोसेस गैस हीटर, CO2 रिमूवल प्लांट	50%
9	बेसिक ऑक्सीजन फर्नेस उपकरण	मुख्य और अनुरक्षण उपकरण जिसमें कंवेटर, गनिंग मशीन, रिफेक्ट्री/स्लग मॉनीटरिंग उपकरण, कंवेटर वेसेल, ट्रनिअन रिंग एंड सस्पेशन 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 ब्लोविंग/बोटम स्टीरिंग के लिए वाल स्टेशन, सब-लान सिस्टम, प्रोसेस मॉड्यूल अर्थात प्रोसेस साफ्टवेयर/हार्डवेयर के साथ ऑफ गैस एनेलाइजर, कंटेनर लैब मेजरमेंट प्रोब, स्विच ओवर स्टेशन, प्राइमरी गैस के लिए आई डी फेन, होट मेटल और स्टील लेडल, लेडल ट्रांसफर कार, लेडल अनुरक्षण उपकरण, सूलेग पोट, स्लग पोट ट्रांसफर कार, स्क्रेप 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 डस्टिंग सक्शन हूड, टीमिंग/एच एम, लेडल रिलाइनिंग स्टेंड, स्टेंड कूलिंग स्टेक इंस्पेक्शन उपकरण, हूड ट्रेवर्स केरेज, रिफेक्ट्री, बाइपास एवं आइसोलेशन वाल्व, फ्लेयर स्टेक एवं इगनिगेशन सिस्टम, स्क्रबिंग टोवर सेल – वेट गैस क्लीनिंग सिस्टम, डॉग हाउस लेडल ड्रायर, लेडल	50%

		प्री-हीटर, लेडल कूलर, फ्यूम कॉलेक्शन हूड्स, क्लीन गैस स्टेक, डस्ट सिलो, बेग ब्रिज, स्लग रिटेनिंग उपकरण	
10	इलेक्ट्रिक आर्क फर्नेस	फर्नेस प्रोपर (जिसमें फ्रनेस लोवर सेल, अपर सेल और रूफ, टिलटिंग प्लेटफार्म, फ्रनेस गेन्ट्री शामिल है) और ट्रांसफार्मर, इलेक्ट्रोल रेगूलेशन प्रणाली, , हाइड्रोलिक सिस्टम, रिफेक्ट्री, लेवल I एंड II आटोमेशन सिस्टम के पार्टस। एल एफ – वाटर कूल्ड लेडल रूफ, इलेक्ट्रोड मास्ट एंड आमर्स, इलेक्ट्रोड रेगूलेटिंग सिस्टम, बायर फिडिंग सिस्टम, बोटम इनइरट गैस स्टिरिंग बाल सिस्टम पोरूस प्लग और टॉप लांस के लिए, इमरजेंसी लांसतंत्र, ड्राइव यूनिट के साथ लांस केरेजि सिस्टम, स्वचालित तापक्रम, सेम्पिलिंग 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, वेक्यूम वेसेल, वेसेल लिफिटिंग 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, रिफेक्ट्री लांस, हाइड्रोलिक सिलेंडर, लेडल रूफ लिफटिंग सिलेंडर, लूब्रिकेशन प्रणाली, सक्शन हूड, डम्पर, वाइब्रो फीडर, वेइंग होपर, बायर फिडिंग प्रणाली, इलेक्ट्रोड निपिलिंग स्टेड, क्रेन, होइस्ट, तापमान और सेम्पलिंग टिप्स, लेडल स्टेंड, ई एस पी, डिडक्टिंग हूड, रिफेक्ट्री, बेग फिल्टर, क्रेन इत्यादि।	50%
11	सतत कास्टिंग उपकरण	लाडले 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 ब्रिक चेंज डिवाइस, मोल्ड ओसीलेटर एंड ई एम एस सिस्टम, इलेक्ट्रो-मेगेनेटिक ब्रेकिंग सिस्टम, स्ट्रेड गाइड सेगमेंट, विदड्राबल 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 रिफेक्ट्रीज, स्ट्रेंड गन्डे सेग्मेंट, टनडिश, लाडले कवर, रोलर टेबल एंड आक्सीलिरीज, माल्ड एंड सेग्मेंट मेनटेनेस इक्यूपमेंट टनडिस मेनटेनेस इक्यूपमेंट, ई एम बी आर सिस्टम	50%
12	फ्लेट प्रोडक्ट मिल	लार्ज कास्टिंग एंड फाजिंग लाइक मिल हाउसिंग, बेड प्लेट्स वर्क्स रोल, बेकअप रोल, इंड स्पिंडल्स; रोलर टेबल, बेकअप रोल एंड वर्क रोल चक्स क्वाडलर/टेनशन रिल/अनक्वाइलर, ए जी सी सिलंडर, 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	लॉंग प्रोडक्ट मिल	मिलस हाउसिंग, बेड प्लेट, वर्क रोल, बेकअप रोल, स्पिनडेल्स; रोलर टेबल, कॉयलर /टेशन रिल /अनकॉयलर, शेयर्स, बिल्डट वेल्डर, पेकेजिंग मशीन, नान-कानटेक्ट गॉज/प्रोफाइल गॉज, एंटी-फ्रिक्शन रोल नेक बियरिंग, आयल फिल्म बियरिंग, फिनिशिंग ब्लाक्स, गियर बॉक्स, मिल मोटर	50%

** परिशिष्ट ख में मदें 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 वरीयता के लिए विचार किया जाएगा।*

फार्म - 1

100/- **रुपए के स्टाम्प पेपर पर दिए जाने के लिए लौह एवं इस्पात उत्पादों/पूंजीगत 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 घोषणा 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 होउंगा।

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 हूं।

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 सत्यतता के लिए जिम्मेदार हूं।

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 वरीयता 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 जब्त करे। मैं यह भी वचन देता हूं 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 हूं 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

$$\%\ Domestic\ value\ addition = \frac{Net\ selling\ price\ of\ final\ product - Landed\ cost\ of\ imported\ iron\ or\ steel\ at\ plant}{Net\ selling\ price\ of\ final\ product} \times 100\%$$

For Capital Goods

$$\%\ Domestic\ value\ addition = \frac{Net\ selling\ price\ of\ final\ product - Landed\ cost\ of\ imported\ input\ materials\ at\ plant}{Net\ selling\ price\ of\ final\ product} \times 100\%$$

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 1** 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, tipplers, transfer cars, tongs (special), vibration, isolation system (spring damper), wagon tipplers, wagon loaders	
2	Mineral benefaction (iron ore and coal) equipment	Industrial crushers, grinding mills, conventional screens, slurry pumps,hirate 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,H2S, NH3 & 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 stave coolers, Copper stave 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 distributer, 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, CO2 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 nipiling stand, Cranes, hoist, Temperature & sampling tips, ladle stands, ESP, Deducting 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.>

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Annexure-1

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

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EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (i)
PART II—Section 3—Sub-section (i)

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इस्पात मंत्रालय

अधिसूचना

नई दिल्ली, 31 दिसम्बर, 2020

सा.का.नि. 1(अ).—सरकारी प्रापण में देशी निर्मित लोहा और इस्पात उत्पादों को प्राथमिकता प्रदान करने हेतु नीति (डीएमआई एंड एसपी नीति) – परिशोधित, 2019 में संशोधनों को आम सूचना के लिए एतद्वारा प्रकाशित किया जाता है:

"सं. S-13026/1/-2020-आईडीडी

इस्पात मंत्रालय

आईडी प्रभाग

उद्योग भवन,

नई दिल्ली 31 दिसंबर, 2020

विषय : सरकारी खरीद में घरेलू निर्मित लौहा और इस्पात उत्पादों को प्राथमिकता प्रदान करने की नीति-परिशोधित, 2019-में संशोधन/परिवर्धन

सरकारी खरीदमें स्वदेशी निर्मित लौहा और इस्पात उत्पादों को प्राथमिकता प्रदान करने की नीति-परिशोधित, 2019-(डीएमआईएंडएसपी परिशोधित, 2019) में निम्नलिखित संशोधन/ परिवर्धन तत्काल प्रभाव से लागू हैं। ये संशोधन/

परिवर्धन ऐसी निविदा या खरीद पर लागू नहीं होंगे जिनके लिए निविदा आमंत्रित करने वाला नोटिस अथवा अन्य प्रकार का खरीद अधियाचन इस अधिसूचना के जारी होने से पूर्व जारी हुआ है।

I – संशोधन:तालिका 1

क्रम सं.	डीएमआईएंडएसपी परिशोधित 2019 ,में मौजूदा खंड	डीएमआईएंडएसपी परिशोधित 2019 ,में संशोधित खंड
1	**खंड 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 वित्तपोषित परियोजनाओं पर लागू है। हालांकि, यह नीति वाणिज्यिक पुन: 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।	**खंड 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। केन्द्रीय क्षेत्र की सभी योजनाएं (सीएस)/ केन्द्रीय प्रायोजित योजनाएं (सीएसएस) जिनके लिए राज्यों और स्थानीय निकायों द्वारा खरीद की जाती है, इस नीति की परिधि में आएंगी यदि उस परियोजना/योजना को भारत सरकार द्वारा पूर्णतया/ अंशत: वित्तपोषित किया जाता है। हालांकि, यह नीति वाणिज्यिक पुन: 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	**खंड 2.13:** घरेलू मूल्यवर्धन निवल बिक्री कीमत(निवलघरेलू 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 अनुरूपहोगी और उसमें भविष्य में डी पी आई आई टी द्वारा परिवर्तन किये जाने की स्थिति में उपयुक्त रूप से संशोधन किया जायेगा। इस नीति दस्तावेज के प्रयोजन के लिए घरेलूमूल्यवर्धन और स्थानीय विषय वस्तु का उपयोग एक दूसरे के स्थान पर किया गया है।	**खंड 2.13:** घरेलू मूल्यवर्धन का तात्पर्य है- भारत में वर्धित मूल्य की राशि जो खरीदी/बेची जाने वाली वस्तुओं का कुल मूल्य होगा (निवल घरेलू अप्रत्यक्ष करों को छोडकर)- खरीदी/बेची जाने वाली वस्तुओं के कुल मूल्य के समानुपात के रूप में प्रतिशत में मद में आयातित सामग्री का मूल्य (सभी सीमा शुल्कों सहित)। 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 जायेगा। इस नीति दस्तावेज के प्रयोजन के लिए घरेलू मूल्यवर्धन और स्थानीय विषय वस्तु का उपयोग एक दूसरे के स्थान पर किया गया है।

3	**खंड 5.1.5** यह नीति सरकार के मंत्रालय अथवा विभाग के द्वारा वित्त-पोषित सभी परियोजनाओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/ प्रतिष्ठानों पर लौह एवं इस्पात उत्पादों की खरीद के लिए लागू है।	**खंड 5.1.5** यह नीति सरकार के मंत्रालय अथवा विभाग के द्वारा वित्त पोषित सभी परियोजनाओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/ प्रतिष्ठानों पर लौह एवं इस्पात उत्पादों की खरीद के लिए लागू है।केन्द्रीय क्षेत्र की सभी योजनाएं (सीएस)/ केन्द्रीय प्रायोजित योजनाएं (सीएसएस) जिनके लिए राज्यों और स्थानीय निकायों द्वारा खरीद की जाती है, इस नीति की परिधि में आएंगी यदि उस परियोजना/योजना को भारत सरकार द्वारा पूर्णतया/ अंशत: वित्तपोषित किया जाता है
4	**खंड 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।	**खंड 5.1.6** यह नीति उन परियोजनाओं पर लागू होगी जहां लौह एवं इस्पात उत्पादों (डीएमआई एंड एसपी नीति का परिशिष्ट-क) का खरीद मूल्य 5लाख 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 5 लाख करोड़ रुपए से अधिक होता हो। तथापि, प्रापण इकाइयों द्वारा इस बात को सुनिश्चित किया जाएगा कि इस नीति के प्रावधानों से बचने के प्रयोजनार्थ खरीद का विभाजन न किया जाए।
5	**खंड 7.2** घरेलू मूल्यवर्धन निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजककीमत) होगी जिसमें से प्रतिशत में निवल बिक्री कीमत के एक अनुपात केरूप में भारत में निर्माण करने वाले संयंत्र में आयात की गई इनपुट सामग्री की पहुंच लागत (सभी सीमा शुल्कों को शामिल करते हुए) घटाई जायेगी।	**खंड 7.2** घरेलू मूल्यवर्धन का तात्पर्य है- भारत में वर्धित मूल्य की राशि जो खरीदी/बेची जाने वाली वस्तुओं का कुल मूल्य होगा (निवल घरेलू अप्रत्यक्ष करों को छोडकर)- खरीदी/बेची जाने वाली वस्तुओं के कुल मूल्य के समानुपात के रूप में प्रतिशत में मद में आयातित सामग्री का मूल्य (सभी सीमा शुल्कों सहित)।
6	**खंड 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** अंतिम उत्पाद की निवल बिक्री कीमत- संयंत्र में आयात किये गये लौह अथवा इस्पात की पहुंच लागत----------X100%	**खंड 7.3** यह सिफारिश की जाती है कि प्रापण करने वाली सरकारी एजेंसी/ 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 तथा पूंजीगत माल के लिए** **% घरेलू मूल्यवर्धन** खरीदी/बेची जाने वाली वस्तु का कुल मूल्य (निवल घरेलू अप्रत्यक्ष करों को छोड़कर - मद में आयातित सामग्री का मूल्य (सभी सीमा शुल्कों सहित) ----------X100%

	अंतिम उत्पाद की निवल ब्रिकी कीमत **पूंजीगत माल के लिए** **% घरेलू मूल्यवर्धन** अंतिम उत्पाद की निवल ब्रिकी कीमत- संयंत्र में आयात किये गये इनपुट सामग्री की पहुंच लागत----------X 100% अंतिम उत्पाद की निवल ब्रिकी कीमत	खरीदी/बेची जाने वाली वस्तु का कुल मूल्य

II डीएमआईएंडएसपी परिशोधित, 2019 के परिशिष्ट क में निम्नलिखित संशोधन किया जाता है:- जहां कहीं न्यूनतम घरेलू मूल्य वर्धन आवश्यकता कॉलम के अंतर्गत डीएमआईएंडएसपी परिशोधित, 2019 के परिशिष्ट क में 15% का न्यूनतम घरेलू मूल्य वर्धन विनिर्दिष्ट होगा, वहां उसे 20% न्यूनतम घरेलू मूल्यवर्धन से प्रतिस्थापित कर दिया जाएगा (परिशोधित परिशिष्ट-क संलग्न है)

III– परिवर्धन/सन्निवेशन: तालिका 2

क्रम सं	डीएमआईएंडएसपी परिशोधित, 2019 में शामिल/जोड़े गये खंड
1	**खण्ड 5.1.13 को खण्ड 5.1.12 के नीचे निम्नवत जोड़ा जाता है:** खण्ड 5.1.13: लोहे और इस्पात उत्पादों की खरीद से संबंधित निविदाओं के लिए कोई वैश्विक निविदा इन्क्वायरी (जीटीई) आमंत्रित नहीं की जाएगी (डीएमआईऔर एसपीनीति का परिशिष्ट-क)। लोहे और इस्पात उत्पादों के विनिर्माण जिनका अनुमानित मूल्य 200 करोड़ रु तक हो, (डीएमआई और एसपी नीति के परिशिष्ट- ख) के लिए पूंजीगत सामानों की खरीद से संबंधित निविदाओं के लिए कोई वैश्विक निविदा इन्क्वायरी (जीटीई) व्यय विभाग द्वारा यथा नाम-निर्दिष्ट सक्षम प्राधिकारी के अनुमोदन के अलावा आमंत्रित नहीं की जाएगी,
2	खंड6.9 को खंड 6.8 के नीचे निम्नवत जोड़ा जाता है: **खंड 6.9: निविदाओं और अन्य खरीद अधियाचनों में विनिर्देशन:** **6.9.1** प्रत्येक क्रय इकाई यह सुनिश्चित करेगी कि किसी भी निविदा या अधियाचन में निर्धारित पिछले अनुभव के संबंध में पात्रता की शर्तों हेतु अन्य देशों में आपूर्ति के प्रमाण या निर्यात के प्रमाण की आवश्यकता नहीं है। **6.9.2** क्रय इकाइयाँ यह देखने का प्रयास करेंगी कि पात्रता की शर्तें, जैसे टर्नओवर, उत्पादन क्षमता और वित्तीय ताकत जैसे मामलों में वैसे स्थानीय आपूर्तिकर्ता का अनुचित अपवर्जन नहीं होता है 'जो आपूर्तिकर्ता की गुणवत्ता या साख संबंधी पात्रता सुनिश्चित करने के लिए जो आवश्यक है, उससे परे अन्यथा पात्र होंगे। **6.9.3** क्रय इकाइयाँ, इस नीति के जारी होने के 2 महीने के भीतर ऊपर उप-पैराग्राफ 6.9.1 और 6.9.2 के संदर्भ में सभी मौजूदा पात्रता मानदंडों और शर्तों की समीक्षा करेंगी। **6.9.4** यदि इस्पात मंत्रालय इस बात से संतुष्ट है कि लौह और इस्पात उत्पादों के भारतीय आपूर्तिकर्ताओं को प्रतिबंधात्मक निविदा शर्तों के कारण किसी भी विदेशी सरकार द्वारा खरीद में भाग लेने और / या प्रतिस्पर्धा करने की अनुमति नहीं है, जिसका भारतीय कंपनियों को प्रतिबंधित करने पर प्रत्यक्ष या अप्रत्यक्ष प्रभाव पड़ता है, जैसे कि प्रापण देश में पंजीकरण, प्रापण देश इत्यादि में विशिष्ट मूल्य की परियोजना का निष्पादन इत्यादि। यदि उपयुक्त समझा जाएगा तो उस देश के बोलीदाताओं को इस्पात मंत्रालय से संबंधित उस वस्तु तथा/ या अन्य वस्तुओं की खरीद के लिए पात्रता से प्रतिबंधित या अपवर्जित किया जा सकता है। **6.9.5** ऊपर उप-पैरा 6.9.4 के प्रयोजन से, किसी आपूर्तिकर्ता या बोलीदाता को उस देश से माना जाएगा यदि (i) इकाई को उस देश में निगमित किया गया है, या (ii) उसकीशेयरधारिता या इकाई काप्रभावी नियंत्रण उस देश से किया जाता है; या (iii) आपूर्ति की जा रही वस्तु के मूल्य का 50% से अधिक उस देश में शामिल किया गया है। भारतीय आपूर्तिकर्ताओं का अर्थ उन संस्थाओं से होगा जो भारत के संबंध में इनमें से किसी भी मानदंड को पूरा करते हैं। किसी देश की'इकाई'(एन्टिटी) शब्द का अर्थ वहीं होगा जो डीपीआईआईटी की एफडीआई नीति के तहत समय-समय पर यथा संशोधित के अंतर्गत है।

3	खंड 6.10 कोखंड 6.9 के नीचे निम्नवत जोड़ा जाता है: **खंड 6.10:** यदि घरेलू आपूर्तिकर्ताओं के खिलाफ प्रतिबंधात्मक या भेदभावपूर्ण शर्तों को बोली दस्तावेजों में शामिल किया जाता है, तो उस के लिए जिम्मेदारी तय करने के लिए खरीद (इसके प्रशासनिक नियंत्रणाधीन किसी ईकाई द्वारा खरीद सहित) करने वाले प्रशासनिक विभाग द्वारा जांच शुरू की जाएगी। तत्पश्चात, संबंधित प्रावधानों के तहत खरीद संस्थाओं के अधिकारियों के खिलाफ उचित, प्रशासनिक या अन्यथा कार्रवाई की जाएगी। ऐसी सभी कार्रवाई की सूचना डीएमआई और एसपी नीति के तहत स्थायी समिति को भेजी जाएगी।

संशोधित परिशिष्ट क – घरेलू स्तर पर निर्मित उत्पादों के लिए विशिष्ट रूप से

क्र. सं.	लौह एवं इस्पात उत्पादों की सांकेतिक सूची	लागू एच एस कोड	न्यूनतम घरेलू मूल्यवर्धन आवश्यकता
1	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, हॉट रोल्ड, 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 रोल्ड (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. कम की चौड़ाई का लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोड किया हुआ	7212	35%
6	लौह एवं गैर एलॉय इस्पात का अनियमित रूप से ऐंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोल्ड	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 रोल्ड, हॉट ड्रॉन अथवा हॉट एक्सटूडेड परंतु रोलिंग के बाद उसे टिविस्ट 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 सेक्शन्स	7216	35%
10	लौह अथवा गैर एलॉय इस्पात का तार	7217	50%
11	600 मि. मी. अथवा उससे अधिक की चौड़ाई का स्टेनलैस इस्पातका फ्लेट रोल्ड इस्पात	7219	50%
12	600 मि. मी. से कम की चौड़ाई का स्टेनलैस इस्पातका फ्लेट रोल्ड इस्पात	7220	50%
13	स्टेनलैस स्टील का अन्य बार्स और रोड्स; स्टेनलैस स्टील का एंगल शेप और सेक्शन्स	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 ट्यूब, पाइप और होलो पाइप	7303	35%
17	लौह (कास्ट आयरन को छोड़कर) अथवा इस्पात का ट्यूब पाइप और होलो प्रोफाइल, सीमलैस	7304	35%
18	लौह अथवा इस्पात का सर्कुलर क्रॉस सेक्शन वाले अन्य ट्यूब और पाइप (उदाहरण के लिए, वेल्ड किया हुआ, रिवेट किया हुआ अथवा समान रूप से बंद किया गया हुआ), जिसकी बाहरी त्रिज्या 406.4 मि. मी. से अधिक हो	7305	35%
19	लौह अथवा इस्पात के अन्य ट्यूब, पाइप और होलो प्रोफाइल (उदाहरण के लिएओपन सीन अथवावेल्ड किया हुआ, रिवेट किया हुआ अथवा समान रूप से बंद किया गया हुआ)	7306	35%
20	लौह अथवा इस्पात का ट्यूब अथवा पाइप फिटिंग (उदाहरण के लिए, कनेक्टर/ कप्लिंग, एल्बो स्लीव्स)	7307	35%
21	स्टेनलैस स्टील का अनियमित रूप से ऐंठा 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 ऐंठा हुआ क्वाइल में बार्स और रोड, हॉट रोल्ड	7227	20%
26	अन्य एलॉय स्टील का अन्य बार्स और रोड्स; अन्य एलॉय स्टील का एंगल, शेप्स और सेक्शन्स; एलॉय अथवा नॉन एलॉय स्टील का होलो ड्रील बार्स और रोड्स	7228	35%
27	लौह अथवा इस्पात की शीट पाइलिंग, चाहे ड्रील 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	20%
28	स्ट्रक्चर्स (9406 के शीर्ष का प्रीफेबरिकेटिड भवनों को छोड़कर) और स्ट्रक्चर्स का हिस्सा	7308	20%
29	300 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	20%
30	अधिकतक 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	20%
31	लौह अथवा इस्पात का कम्प्रेस किया हुआ अथवा सरलीकृत गैस के लिए कन्टेनर	7311	20%

32	लौह अथवा इस्पात का स्टेंडिड वायर, रोप, केबल, प्लेटिड बैंड, स्लिंग और उसके समान वस्तु जिसे विद्युतीय रूप से इन्सुलेट न किया गया	7312	20%
33	लौह अथवा इस्पात का फेनसिंग के लिए उपयोग किये जाने वाला बार किया हुआ वायर; ट्विस्ट किया हुआ हूप अथवा सिंगल फ्लेट वायर, बार्स किया हुआ अथवा नहीं और लूज तरीके से ट्विस्ट किया हुआ डबल वायर	7313	20%
34	लौह अथवा इस्पात तार का ड्रील, नेटिंग और फेनसिंग; लौह अथवा इस्पात का विस्तार किया हुआ धातु	7314	20%
35	लौह अथवा इस्पात का चैन और उसका हिस्सा	7315	20%
36	लौह अथवा इस्पात का टैंकर, ग्रेपनेल्स और उसका हिस्सा	7316	20%
37	लौह एवं इस्पात की वस्तुएं	7317	20%
38	लौह एवं इस्पात की वस्तुएं	7318	20%
39	लौह एवं इस्पात की वस्तुएं	7319	20%
40	लौह अथवा इस्पात का स्प्रिंग और स्प्रिंग के लिए लीव्स	7320	20%
41	लौह अथवा इस्पात का स्टोव्स, रेंज, ग्रेड, कूकर (केंद्रीय हिटिंग के लिए सहायक बायलरों के साथ उन वस्तुओं सहित), बारबेक्यूज, ब्रेजियर्स, गैस रिंग, प्लेट वामर्स और समान गैर-विद्युतीय घरेलू उपकरण और उसका हिस्सा	7321	20%
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	20%
43	लौह अथवा इस्पात का टेबल और समान घरेलू वस्तुएं और उसका हिस्सा	7323	20%
44	लौह अथवा इस्पात का सेनेटरी वेयर और उसकेपार्टस	7324	20%
45	लौह अथवा इस्पात का अन्य कास्ट सामान	7325	20%
46	लौह अथवा इस्पात का विद्युतीय इस्पात और अन्य वस्तु	7326	20%
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 एस कोड के अंतर्गत सभी उत्पादों को परिशिष्ट के भाग के रूप में शामिल किया गया है।"

[फा. सं. एस-13026/1/2020-आईडीडी]

रसिका चौबे, अपर सचिव

MINISTRY OF STEEL

NOTIFICATION

New Delhi, the 31st December, 2020

G.S.R. 1(E).—The amendments in the Policy for providing preference to domestically manufactured Iron & Steel products in Government procurement (DMI&SP Policy)–Revised, 2019 is hereby published for general information.

"No. S-13026/1/2020- IDD

Ministry of Steel

ID Division

Udyog Bhawan,

New Delhi 31st December, 2020

Sub.: Amendments / additions to the Policy for Providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement - revised, 2019

The following amendments / additions to the Policy for Providing Preference to Domestically Manufactured Iron & Steel Products in Government Procurement - revised, 2019 (DMI&SP revised, 2019) are applicable with immediate effect. These amendments / additions 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 notification.

I - Amendments: Table 1

Sl. No.	Existing Clause in DMI&SP revised, 2019	Amended Clause in DMI&SP revised, 2019
1	**Clause 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.	**Clause 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. All Central Sector Schemes (CS)/Centrally Sponsored Schemes (CSS) for which procurement is made by States and Local Bodies, would come within the purview of this Policy, if that project / scheme is fully / partly funded by Government of India. 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	**Clause 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.	**Clause 2.13:** Domestic value addition means - amount of value added in India which shall be the total value of the item to be procured / sold (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 of the item to be procured / sold, 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	**Clause 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.	**Clause 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. All Central Sector Schemes (CS)/Centrally Sponsored Schemes (CSS) for which procurement is made by States and Local Bodies, would come within the purview of this Policy, if that project / scheme is fully / partly funded by Government of India.
4	**Clause 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.	**Clause 5.1.6** The policy shall be applicable to projects where the procurement value of iron and steel products (Appendix - A of the DMI&SP Policy) is greater than Rs. 5 lakhs. The policy shall also be applicable for other procurements (non-project), where annual procurement value of iron and steel products for that Government organization is greater than Rs. 5 lakhs. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this policy.
5	**Clause 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.	**Clause 7.2:** Domestic value addition means - amount of value added in India which shall be the total value of the item to be procured / sold (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 of the item to be procured / sold, in percent.
6	**Clause 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** *Net selling price of final product - landed cost of imported iron or steel at the plant* ---------- *X 100 %* *Net selling price of final product* **For capital goods** **% domestic value addition** *Net selling price of final product - landed cost of imported iron or steel at the plant* ---------- *X 100 %* *Net selling price of final product*	**Clause 7.3:** It is recommended that procuring Government agency / bidder participating in the tender process should calculate the domestic value addition using the below formula so as to ensure that the domestic value addition claimed is consistent with the minimum stipulated domestic value addition requirement of the policy. **For iron and steel products& capital goods** **% domestic value addition** *Total value of the item to be procured / sold (excluding net domestic indirect taxes) - the value of imported content in the item (including all customs duties)* ---------- *X 100 %* *Total value of the item to be procured / sold*

II - Following amendment is made to the Appendix A of the DMI&SP revised, 2019 :- Wherever minimum domestic value addition of **15%** is specified in the Appendix - A of the DMI&SP revised, 2019 under the column Minimum domestic value addition requirement, same shall be replaced with **20%** minimum domestic value addition). (Revised Appendix - A is attached)

III - Additions / Insertions: Table 2

Sl. No.	Added / Inserted Clause in DMI&SP revised, 2019
1	Clause 5.1.13 is inserted below Clause 5.1.12 as: **Clause 5.1.13:** No Global Tender Enquiry (GTE) shall be invited for tenders related to procurement of iron and steel products (Appendix-A of the DMI&SP Policy). No Global Tender Enquiry (GTE) shall be invited for tenders related to procurement of Capital Goods for manufacturing iron & steel products (Appendix- B of the DMI&SP Policy) having estimated value upto Rs. 200 Crore except with the approval of competent authority as designated by Department of Expenditure.
2	Clause 6.9 is inserted below Clause 6.8 as: **Clause 6.9: Specifications in Tenders and other procurement solicitations:** **6.9.1** 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. **6.9.2** 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 local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier. **6.9.3** Procuring entities shall, within 2 months of the issue of this policy review all existing eligibility norms and conditions with reference to sub-paragraphs 6.9.1 and 6.9.2 above. **6.9.4** If Ministry of Steel is satisfied that Indian suppliers of iron and steel products 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 project of specific value in the procuring country etc., it may, if deemed appropriate, restrict or exclude bidders from that country from eligibility for procurement of that item and/ or other items relating to Ministry of Steel. **6.9.5** For the purpose of sub-paragraph 6.9.4 above, a supplier or bidder shall be considered to be from a country if (i) the entity is incorporated in that country, or (ii) a majority of its shareholding or effective control of the entity is exercised from that country; or (iii) more than 50% of the value of the item being supplied has been added in that country. Indian suppliers shall mean those entities which meet any of these tests with respect to India. The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.
3	Clause 6.10 is inserted below Clause 6.9 as: **Clause 6.10:** 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 same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such action shall be sent to the Standing Committee under the DMI&SP Policy.

IV - Revised 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	7209	50%

	mm or more, cold rolled (cold-reduced), not clad, plated or coated		
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	20%

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	20%
28	Structures (excluding prefabricated buildings of heading 9406) and parts of structures	7308	20%
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	20%
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	20%
31	Containers for compressed or liquefied gas, of iron or steel	7311	20%
32	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel, not electrically insulated	7312	20%
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	20%
34	Grill, netting and fencing, of iron or steel wire; expanded metal of iron or steel	7314	20%
35	Chain and parts thereof, of iron or steel	7315	20%
36	Anchors, grapnels and parts thereof, of iron or steel	7316	20%
37	Articles of iron and steel	7317	20%
38	Articles of iron and steel	7318	20%
39	Articles of iron and steel	7319	20%
40	Springs and leaves for springs, of iron or steel	7320	20%
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	20%
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	20%
43	Tables and similar household articles and parts thereof, of iron or steel	7323	20%
44	Sanitary ware and parts thereof, of iron or steel	7324	20%
45	Other cast articles of iron or steel	7325	20%

46	Electrical steel and other articles of iron or steel	7326	20%
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."

[F. No. S-13026/1/2020-IDD]

RASIKA CHAUBE, Addl. Secy.

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Annexure-1 to Appendix-I

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

To,
M/s Talcher Fertilizers Limited
_____

SUB:
TENDER NO:

Dear Sir,

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

APPENDIX-II (COMMERCIAL BID ANALYSIS (CBA) - WORKS)		
TENDER SUBJECT		
TENDER DOCUMENT NUMBER & DESCRIPTION::		
S.NO.	NAME OF BIDDER	M/s. ……
1.0	PARTICULARS	
1.1	ADDRESS OF REGISTERED OFFICE	
1.2	ADDRESS WHERE CONTRACT TO BE PLACED	
1.3	ADDRESS FROM WHERE SERVICES ARE TO BE RENDRED ALONG WITH GST REGISTRATION NO.	ADDRESS: GST NO:
1.4	PHONE NO.	
1.5	E-MAIL	
1.6	NAME, DESIGNATION & CONTACT DETAILS OF CONTACT PERSON AS PER FORM F-3 (LETTER OF AUTHORITY)	
1.7	OFFER NUMBER & DATE	
1.8.1	STATUS OF BIDDER (MSE or Others) In case of MSE, specify the type of MSE i.e. Micro-SC/ST/WOMEN/others OR Small-SC/ST/WOMEN/others	
1.8.2	In case of MSE, submitted Udyam Registration Certificate duly certified by Chartered Accountant and Notary Public with Legible stamp	*Submitted/ Not Submitted*
1.9.1	STATUS OF BIDDER (Start-Up / Non-Start-up) Specify the type of bidder along with documents submitted.	
1.9.2	In case of Start-Up, submited relevant documents duly certified by Chartered Accountant and Notary Public with Legible stamp	*Submitted/ Not Submitted*
2.0	EMD DETAILS (WHEREVER APPLICABLE)	
2.1	Item/ Section/ Group / Part Quoted	
2.2	Required EMD for Quoted Items	
2.3	EMD Amount submitted by the bidder	
2.4	Details of EMD / Bid Security	specify DD/ BG No, DD/BG date, issuing bank, DD/BG validity
2.5	Net Worth Letter for Bank regarding Net Worth >100 Crores (If Applicable)	Submitted/ Not Submitted with appropriate comments (if any)
3.0	BEC FINANCIAL	
3.1	The Minimum Average Annual Turnover: of the Bidder as per their audited financial results in any one of the immediately three preceding financial years.	
3.1.1	Item/ Section/ Group / Part Quoted	
3.1.2	Required Turnover for Quoted Item/ Section/ Group / Part	
3.1.3	Turnover of the bidder	*FY ____-____=INR/USD/Euro _____ FY ____-____=INR/USD/Euro _____ FY ____-____=INR/USD/Euro _____*
3.2	2. Net worth : Net worth of the Bidder shall be positive as per the last audited financial statement.	*Positive/ Negative (Enter the net worth as per Form F-10.)*
3.3	3. Working capital :The minimum working capital of the Bidder as per the last audited financial statement shall be as under: Note: If the bidder's working capital is inadequate, the bidder should supplement this with a letter from the bidder's bank, having net worth not less than Rs.100 Crores (or equivalent in USD), as per provisions of Tender Document.	
3.3.1	Item/ Section/ Group / Part Quoted	
3.3.2	Required Working Capital for Quoted Items	
3.3.3	Working capital of the bidder as per the last audited financial year	*INR /US $/ Euro/ home currency_____as per FY _____ (refer Form F-10)*
3.3.4	Deficiency of Working Capital Amount, if any	*Yes/No (specify amount (if any))*
3.3.5	Working Capital letter from the bank as per Format F-9	*Details of the letter (Amount, Bank, date etc.)*
3.4	Submitted copy of Audited Annual Financial Statement [including Auditor's Report, Balance Sheets, Profit and Loss Accounts statements, Notes & schedules etc.] of three (3) preceding Financial Year(s) . Copy of the audited annual financial statements shall be duly certified / attested by Notary Public with legible stamp.	*Submitted / Not Submitted with appropriate remarks (if any)*
4.0	FORMS & FORMATS	
4.1	FORMAT F-1: BIDDER'S GENERAL INFORMATION	*Submitted/ Not Submitted*
4.1.1	Status of Firm/ Company: Proprietorship Firm / Partnership Firm/ Company (Private or public) (As per Format F-1)	
4.1.2	Name of Proprietor/Partners/Directors (As per Format F-1)	
4.1.3	PAN No. (As per Format F-1)	
4.1.4	GST Registration No. (As per Format F-1)	

(PREPARED BY:) (CHECKED BY:) (VETTED BY:)

TENDER DOCUMENT NUMBER & DESCRIPTION::		
S.NO.	NAME OF BIDDER	M/s. ……
1.0	PARTICULARS	
4.1.5	EPF Registration No.	
4.1.6	ESI code No.	
4.2	FORMAT F-2B:DECLARATION FOR BID SECURITY [applicable for bidders who are exempted from submission of EMD/Bid Security]	*Submitted/ Not Submitted with appropriate comments (if any)*
4.3	FORMAT F-3 LETTER OF AUTHORITY [ON LETTER HEAD]	*Submitted/ Not Submitted*
4.4.	FORMAT-F-5: AGREED TERMS & CONDITIONS (ATC)	*Submitted/ Not Submitted*
4.4.1	Acceptance of Bid validity	*Accepted/ Not Accepted*
4.4.2	Acceptance of payment terms	*Accepted/ Not Accepted*
4.4.3	Acceptance of Contract Performance Security	*Accepted/ Not Accepted*
4.4.4	Acceptance of Completion Schedule	*Accepted/ Not Accepted*
4.4.5	Acceptance of Price Reduction Schedule	*Accepted/ Not Accepted*
4.4.6	Whether bidder is liable to raise E-Invoice as per GST Act.	*Yes/No*
4.4.7	If yes, bidder will raise E-Invoice and confirm compliance to provision of tender in this regard.	*Accepted/ Not Accepted*
4.4.8	Whether in the instant tender services/works are covered in reverse charge rule of GST (CGST & SGST/UTGST or IGST)	*Yes/No*
4.4.9	If yes, Bidder confirms that they have quoted rate of applicable GST (CGST & SGST/ UTGST or IGST) in Price Schedule / Schedule of Rates of Price Bid	*Confirmed / Not Confirmed*
4.5	FORMAT F-9: CERTIFICATE FROM BANK IF BIDDER'S WORKING CAPITAL IS INADEQUATE/NEGATIVE	*Submitted/ Not Submitted with appropriate comments (if any)*
4.6	FORMAT F-10: FORMAT FOR CHARTERED ACCOUNTANT CERTIFICATE FOR FINANCIAL CAPABILITY OF THE BIDDER	*Submitted/ Not Submitted*
4.7	FORMAT F-13: E-BANKING MANDATE FORM	*Submitted/ Not Submitted with appropriate comments (if any)*
4.8	FORMAT-F-14: [IF APPLICABLE] INTEGRITY PACT (ON PLAIN PAPER)	*Submitted/ Not Submitted*
4.9	ANNEXURE-1 to APPENDIX - I: [IF APPLICABLE] SELF-CERTIFICATE TOWARDS POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS IN GOVERNMENT PROCUREMENT	*Submitted/ Not Submitted with appropriate comments (if any)*
5.0	POWER OF ATTORNEY & NAME OF PERSON	*Specify the complete details of the Power of Attorney [like POA is submitted in the name of Mr……..authorized through Board Resolution dated……]*
5.1	NAME OF DIGITAL SIGNATORY	
6.0	IBID DOCUMENT / GCC / REPLY TO BIDDERS QUERIES / PRICE SCHEDULE (WITH PRICES BLANKED OUT)	
6.1	ACCEPTANCE & SUBMISSION OF COMPLETE BID DOCUMENT WITH IFB, ITB, FORMS & FORMATS, GCC, VENDOE PERFORMANCE ETC.	*Accepted/ Not Accepted AND Submitted/Not Submitted*
6.2	ACCEPTANCE & SUBMISSION OF REPLY TO BIDDER QUERIES	*Accepted/ Not Accepted AND Submitted/Not Submitted*
6.3	ACCEPTANCE & SUBMISSION OF CORRIGENDUM	*Accepted/ Not Accepted AND Submitted/Not Submitted*
6.4	SUBMISSION OF COPY OF "SCHEDULE OF RATES" WITH PRICES BLANKED OUT	*Submitted/Not Submitted*
6.5	Name of the bidder is not appearing in Holiday/ Banning list as per provisions of tender	*Yes/No*
7.0	LAND BORDER SHARING	
7.1	submission of certificate as Form-I to Annexure-VII of Section-III w.r.t Provisions of 'Procurement from a Bidder which shares a land border with India'	*Submitted/Not Submitted* *Not from such Country OR from such country*
8.0	PPP-MII POLICY	
8.1	Undertaking as per FORM - II of ANNEXURE - V to Section-III and certificate from Statutory Auditor or Cost Auditor (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of other than companies) as per FORM-I of ANNEXURE -V to Section-III have been submitted.	*Submitted/Not Submitted*
8.2	Class-I Local supplier or Class-II Local Supplier	
9.0	*ADDITIONAL CLAUSES, IF ANY (*)*	
9.1	……	
9.2	……	
9.3	……	
9.4	……	
9.5	……	
10.0	REMARKS	
	(*) Dealing Offciers may add additional clauses, if any, based on requirement of specific tender document.	
	Note: In case of contradiction between the confirmations provided in this format and to confirmations provided in the bid, the confirmations provided in the bid shall prevail.	

(PREPARED BY:) (CHECKED BY:) (VETTED BY:)

SECTION-III

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

SECTION-III

INSTRUCTION TO BIDDERS

INDEX

Content/ Domestic Value Addition (Applicable for all Bidders Including MSEs)

: **FORM-II OF ANNEXURE-V:** Salient Points of Public Procurement (Preference to Make in India) Policy

6. Annexure-VI: PREAMBLE TO SCHEDULE OF RATES

7. Annexure-VII:PROVISION FOR PROCUREMENT FROM A BIDDER WHICH SHARES A LAND BORDER WITH INDIA

: **Form-I to Annexure-VII**: Undertaking on Letter Head

INSTRUCTION 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 Invitation For Bid (the "**Tender Document /Bid Document")** issued by Employer.. Employer/Owner/TFL occurring herein under shall be considered synonymous.

1.1 SCOPE OF BID: The scope of work/ Services shall be as defined in Section-VI of the Tender documents.

1.2 The successful bidder will be expected to complete the scope of Bid within the period stated in Special Conditions of Contract.

1.3 Throughout the Tender 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 Provision for procurement from a bidder which shares a land border with India has been attached as **Annexure-VII** herewith.

2.2 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).

2.3 The Bidder is not put on 'Holiday' by TFL or any of the JV partner 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.. 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.

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 about their status regarding para 1 of clause 2.2 herein above 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.

2.4 The Bidder should not be under any liquidation court receivership or similar proceedings on due date of submission of bid. 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 there status on above 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.

2.5 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 (proposed to be hired) by the Employer as an Engineer/ Consultant for the contract.

2.6 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.

2.7 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.

2.8 **Power of Attorney:**

Power of Attorney (PoA) to be issued by the bidder in favour of the authorised 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).

(I) In case of a Single Bidder, the Power of Attorney shall be issued 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.

(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 of Consortium.

3 BIDS FROM "CONSORTIUM"

Not applicable.

4 ONE BID PER BIDDER

4.1 A 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 A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices. The bidder found to have a conflict of interest shall be disqualified. A bidder shall be considered to have a conflict of interest with one or more bidders in this bidding process, if:

a) they have controlling partner (s) in common; or

b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or

c) they have the same legal representative/authorized signatory/agent for purposes of this bid; or

d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or

e) Bidder participates in more than one bid in bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid.

f) a Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid;

g) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business.

Bidders are required to submit a confirmation for no conflict of interest with other bidders in Format F-5.
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.

5 COST OF BIDDING

The Bidder shall bear all costs associated with the preparation and submission of the Bid including but not limited to Documentation Charges, Bank charges all courier charges translation charges, authentication charges and any associated charges including taxes & duties thereon. 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.

6.3 The Bidder shall not be entitled to hold any claim against TALCHER FERTILIZERS LIMITED 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

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 and Clarification(s)' issued in accordance with "ITB: Clause-8 & 9":

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

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

For participation in e-tender, instructions are mentioned at Annexure-III to Section-III.

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.

7 CLARIFICATION OF TENDER DOCUMENTS

8.1 A prospective Bidder requiring any clarification(s) of the Bidding Documents may notify TFL in writing or through CPP Portal (https://eprocure.gov.in/eprocure/app) 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 scheduled. 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 the websites mentioned at Clause No. 2.0 (G) of IFB. Hence, bidders are requested to regularly visit the said websites for updates.

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".

8 AMENDMENT OF BIDDING DOCUMENTS

9.1 At any time prior to the 'Bid Due Date', Employer 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 corrigendum thus issued shall be integral part of the Tender Document and shall be hosted only on the websites as provided at clause no. 2.0 (H) of IFB. Bidders, in their own interest, are advised to regularly check the websites for any amendment/Corrigendum/Addendum. Bidders have to take into account all such

amendment / corrigendum before submitting their Bid. TFL/PDIL will not take any responsibility or entertain any representation whatsoever, in case bidders have not checked/seen/downloaded such amendment/Corrigendum/Addendum or reply to pre-bid queries uploaded on the said websites.

9.3 The Employer, if it considers necessary, may extend the Bid Due Date in order to allow the Bidders a reasonable time to furnish their most competitive bid taking into account the addenda / corrigendum 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 TFL 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 Indian Chamber of Commerce , in which case, for the purpose of interpretation of the Bid, the English translation shall govern.

11. DOCUMENTS COMPRISING THE BID

11.1 Bidders are requested to refer instructions for participating in e-Tendering (Annexure-I to Section III), Ready Reckoner for Bidders and FAQs available in e-portal and bids submitted manually shall be rejected. All pages of the Bid must be digitally signed by the "authorized signatory" of the Bidder holding Power of Attorney. The bids must be submitted on e-tendering website of CPP portal (https://eprocure.gov.in/eprocure/app) comprising following documents:-

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

(a) 'Covering Letter' on Bidder's 'Letterhead' clearly specifying the enclosed Contents with index.
(b) 'Bidder's General Information', as per 'Form F-1'.
(c) Copies of documents, as specified in tender document
(d) Copy of Schedule of Rate (SOR) with prices blanked out mentioning quoted / not quoted (as applicable) written against each item as a confirmation that the prices are quoted in requisite format.
(e) 'Letter of Authority' on the Letter Head, as per 'Form F-3'
(f) 'Agreed Terms and Conditions', as per 'Form F-5'
(g) 'ACKNOWLEDGEMENT CUM CONSENT LETTER', as per 'Form F-6'
(h) Duly attested documents in accordance with the "BID EVALUATION CRITERIA [BEC]" establishing the qualification.
(i) Copy of Power of Attorney as per 'F-20'/copy of Board Resolution, in favour of the authorized signatory of the Bid, as per clause no. 2.8 of ITB (Original to be submitted physically).
(j) Copy of EMD/ Copy of Declaration for Bid Security in original as per Clause 16 of ITB (Original to be submitted physically)
(k) Certification 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 other than companies) as per Form-I to Annexure-V and Declaration by bidder towards Minimum Local Content as per Form-II of Annexure-V. ***(Applicable for a ll bidders irrespective of seeking purchase preference or not)***.

(l) Undertaking as per Form-I to Annexure VII regarding Provisions for Procurement from a bidder which shares a land border with India.

(m) All forms and Formats including Annexures

(n) 'Integrity Pact' as per 'Fo*rm F-14'*

(o) *'Indemnity Bond' as per 'For*m *F-15'*

(p) Checklist for Bid Evaluation Criteria (BEC) qualifying documents for bidder as per 'Form F-8 & F-8B.

(q) Tender Document, its Corrigendum/Amendment/Clarification(s) duly signed on each page (in case of manual tendering)/ digitally signed (in case of e-Tender) by the Authorized Signatory holding POA.

(r) Additional document specified in BDS, SCC, Scope of Supply or mentioned elsewhere in the Tender Document, its Corrigendum/Amendment/Clarification(s).

(s) Any other information/details required as per Tender Document

Note:

1. All the pages of the Bid must be signed/ digitally signed by the "Authorized Signatory" of the Bidder holding POA.

11.1.2

PART-II: Price Bid

(a) The Prices are to be submitted strictly as per the Schedule of Rate of the bidding documents. TFL shall not be responsible for any failure on the part of the bidder to follow the instructions.

(b) 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.

(c) 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.

(d) 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.

(e) 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.

The Prices are to be filled strictly in the Schedule of Rate of the bidding documents and provision mentioned at para 11.1.2 hereinabove and to uploaded in SOR attachment/Conditions of CPP portal.

11.2 **PART-I: "TECHNO-COMMERCIAL/UN-PRICED BID"** comprising all the above documents mentioned at 11.1.1 along with copy of EMD/Bid Security/Declaration for Bid Security, copy of Power of Attorney and copy of integrity pact should be uploaded in the technical bidin the e-tender portal.

Further, Bidders must submit the original " EMD, Power of Attorney, Integrity Pact (wherever applicable) 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 Part-I of 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.

11.3 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 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.

12.5 Prices quoted by the Bidder, shall remain firm and fixed and valid till completion of the Contract and will not be subject to variation on any account unless any price escalation/variation is allowed elsewhere in Tender Document.

12.6 Deleted

12.7 Bidder shall also mention the **Service Accounting Codes** (SAC) / **Harmonized System of Nomenclature (HSN)** at the designated place in Form F-5.

13 GST (CGST & SGST/ UTGST or IGST)

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

13.2 Please note that the responsibility of payment of **GST (CGST & SGST or IGST or UTGST)** lies with the Contractor only. Contractor providing taxable service shall issue an e- Invoice/ Invoice / Bill, 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 Contractor with requisite details.

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

13.3 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 Contractor has not remitted the amount towards **GST (CGST & SGST/UTGST or IGST)** collected from TFL to the government exchequer, then, that Contractor shall be put under Holiday list of TFL for period of six months after following the due procedure. This action will be in addition to the right of recovery of financial implication arising on TFL.

13.4 For statutory variation in **GST (CGST & SGST/UTGST or IGST), please refer clause no. 48.0 of SCC (Section V of NIT)**

13.5 Where TFL is entitled to avail the input tax credit of **GST (CGST & SGST/UTGST or IGST)**:-

13.5.1 Owner/TFL will reimburse the **GST (CGST & SGST/UTGST or IGST)** to the Contractor at actuals against submission of E-Invoices/Invoices as per format specified in rules/ regulation of GST, to enable Owner/TFL to claim input tax credit of **GST (CGST & SGST/UTGST or IGST)** paid. In case of any variation in the executed quantities, the amount on which the **GST (CGST & SGST/UTGST or IGST)** is applicable shall be modified in same proportion. Returns and details required to be filled under GST laws & rules should be timely filed by supplier with requisite details.

13.6 Where TFL is not entitled to avail/take the full input tax credit of **GST (CGST & SGST/UTGST or IGST)**:

13.6.1 Owner/TFL will reimburse **GST (CGST & SGST/UTGST or IGST)** to the Contractor at actual against submission of E-Invoices/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.

13.7 TFL 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, Bids will be evaluated as per quoted prices without loading of **GST (CGST & SGST/UTGST or IGST)**, if not quoted. 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). Where TFL is entitled for input credit of **GST (CGST & SGST/UTGST or IGST)**, the same will be considered for evaluation of bid as per evaluation methodology of tender document. Further, an unregistered bidder is required to mention its Income Tax PAN in bid document. Further, an unregistered bidder is required to mention its Income Tax PAN in bid document.

13.8 In case TFL 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 TFL has the obligation to discharge **GST (CGST & SGST/UTGST or IGST)** liability under reverse charge mechanism and TFL 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 TFL for any reason which is not attributable to TFL, then TFL shall be entitled to deduct/ setoff / recover such amounts against any amounts paid or payable by TFL to Contractor /Supplier..

13.9 Contractor shall ensure timely submission of correct invoice(s)/e-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 Contractor 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 Contractor under this contract or under any other contract

13.10 **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 Contractor may note the above and quote their prices accordingly.

13.11 In case the GST rating of Contractor on the GST portal / Govt. official website is negative / black listed, then the bids may be rejected by TFL. Further, in case rating of bidder is negative / black listed after award of work, then TFL shall not be obligated or liable to pay or reimburse GST to such Contractor and shall also be entitled to deduct / recover such

GST along with all penalties / interest, if any, incurred by TFL.

13.12 GST (CGST & SGST/UTGST or IGST) is implemented w.e.f. 01.07.2017 which subsumed various indirect taxes and duties applicable before 01.07.2017. Accordingly, the provisions of General Condition of Contract relating to taxes and duties which are subsumed in GST are modified to aforesaid provisions mentioned in clause no. 12 and 13 of ITB.

13.13 GST, as quoted by the bidder in Schedule of Rates, shall be deemed as final and binding for the purpose of bid evaluation (applicable for tenders where bidder quotes the GST rates). In case a bidder enters "zero/blank" GST or an erroneous GST, the bid evaluation for finalizing the L1 bidder will be done considering the "Zero" or quoted GST rate GST rate, as the case may be. No request for change in GST will be entertained after submission of bids. In case GST column is left blank in the SOR, the quoted prices shall be considered as "Inclusive of GST" and evaluation shall be done accordingly.

In cases where the successful bidder quotes a wrong GST rate, for releasing the order, the following methodology will be followed:

- In case the actual GST rate applicable is lower than the quoted GST rate, the actual GST rate will be added to the quoted basic prices. The final cash outflow will be based on actual GST rate.

- In case the actual GST rate applicable is more than the quoted GST rate, the basic prices quoted will be reduced proportionately, keeping the final cash outflow the same as the overall quoted amount.

Based on the Total Cash Outflow calculated as above, TFL shall place orders.

13.14 Wherever TDS under GST Laws has been deducted from the invoices raised / payments made to the Contractors, as per the provisions of the GST law / Rules, Contractors 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).

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

Supplier 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 supplier 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 Supplier of Goods with requisite details.

If input tax credit is not available to TFL for any reason attributable to supplier (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 supplier .

To ensure compliance, undertaking in requisite format is to be submitted by supplier as per format enclosed at Form F-21 along with documents for release of payment.

13.16 **New Taxes & duties:** Any new taxes & duties, if imposed by the State/ Central Govt. of India after the due date of bid submission but before the Contractual Completion Date, shall be reimbursed to the Service Provider on submission of copy of notification(s) issued from State/ Central Govt. Authorities along with documentary evidence for proof of payment of such taxes & duties, but only after ascertaining it's applicability with respect to the Contract.

13.17 Full payment including GST will be released at the time of processing of invoice for payment, where the GST amount reflects in Form GSTR-2A of TFL. However, in case where the GST amount doesn't reflect in Form GSTR-2A of TFL, the amount of GST will be released after reflection of GST amount of corresponding invoice in Form GSTR-2A of 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 Due date of Technical Bid Opening. A Bid valid for a shorter period may be rejected by TFL 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 email. A Bidder may refuse the request without forfeiture of his EMD / Bid Security.

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 Bid must be accompanied with earnest money **[i.e. Earnest Money Deposit (EMD)** also known as **Bid Security]** in the form of **'Demand Draft'** / **'Banker's Cheque'/ 'Insurance Surety Bond'/ Fixed Deposit Receipt' [**in favour of **TALCHER FERTILIZERS LIMITED** payable at place mentioned in **BDS]** or **'Bank Guarantee'** strictly as per the format given in form F -2A (as the case may be) of the **Tender Document**. Bidder shall ensure that EMD submitted in the form of **'Bank Guarantee'** should have a validity of at least 'two [02] months' beyond the validity of the Bid. EMD submitted in the form of **'Demand Draft'** or **'Banker's Cheque'** should be valid for three months**.**

Bid not accompanied with EMD, or EMD not in requisite format shall be liable for rejection.

The EMD shall be submitted in Indian Rupees only.

16.2 The bidder can also submit the EMD through online banking transaction i.e. IMPS/NEFT/RTGS etc. For this purpose, the details of TFL's Bank Account are mentioned under BDS. While remitting, the bidder must indicate EMD and tender/E-tender no. under remarks. Bidders shall be required to submit/ upload the successful transaction details along-with their bid/e-bid in addition to forwarding the details to dealing officer through email/letter with tender reference number immediately after remittance of EMD. In absence of submitting/ uploading the remittance details, the bid is likely to be considered as bid not accompanied with EMD. Further, in case of the online transaction, submission of EMD in original is not applicable.

16.3 OWNER shall not be liable to pay any documentation charges, Bank charges, commission, interest etc. on the amount of EMD. In case EMD is in the form of a "Bank Guarantee", the same shall be from any Indian scheduled Bank(excluding Co-operative banks and regional Rural 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 Guarantee" from Banks other than the Nationalized Indian Banks, the Bank must be commercial Bank having networth in excess of Rs. 100 Crores [Rupees One Hundred 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. Purchaser will verify the BG from issuing bank.

16.4 Any Bid not secured in accordance with "ITB: Clause-16.1 & Clause-16.3" may be rejected by TFL as non-responsive.

16.5 Unsuccessful Bidder's EMD will be discharged/ returned as promptly as possible, but not later than"thirty [30] days" after finalization of tendering process.

16.6 The successful Bidder's EMD will be discharged upon the Bidder's acknowledging the "Award" and signing the "Agreement" (if applicable) and furnishing the Contract Performance Security (CPS)/ Security Deposit" pursuant to clause no. 38 of ITB.

16.7 Notwithstanding anything contained herein, the EMD may also be forfeited in any of the following cases:

(a) If a Bidder withdraws his Bid during the "Period of Bid Validity"
(b) If a Bidder has indulged in corrupt/fraudulent /collusive/coercive practice
(c) If the Bidder modifies Bid during the period of bid validity (after Due Date and Time for Bid Submission).
(d) Violates any other condition, mentioned elsewhere in the Tender Document, which may lead to forfeiture of EMD.
(e) ~~In case of Cartelization of bid.~~
(f) In the case of a successful Bidder, if the Bidder fails to:
  (i) to acknowledge receipt of the "Notification of Award" / Fax of Acceptance [FOA] / Detailed Letter of Acceptance [DLOA]",
  (ii) to furnish "Contract Performance Security / Security Deposit", in accordance with "ITB: Clause-38".
  (iii) to accept 'arithmetical corrections' as per provision of the clause 30 of ITB

16.8 In case EMD is in the form of „Bank Guarantee", the same must indicate the Tender Document No. and the name of Tender Document for which the Bidder is quoting. This is essential to have proper correlation at a later date.

16.9 The Government Departments/PSUs are also exempted from the payment of EMD. Further, Startups are also exempted from the payment of EMD. MSE (Micro & Small Enterprises) are not exempted from submission of EMD as this is works contract.

16.10 In case of forfeiture of EMD/ Bid Security, 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.

16.11 EMD/Bid Bond will not be accepted in case the same has reference of 'remitter'/'financer' other than bidder on the aforementioned financial instrument of EMD/ Bid Bond submitted by the bidder and bid of such bidder will be summarily rejected.

16A DECLARATION FOR BID SECURITY

Start-ups and CPSEs (to whom exemption is allowed as per extant guidelines in vogue) are required to submit, "DECLARATION FOR BID SECURITY" as per prescribed format (F-2B).

17 PRE-BID MEETING (IF APPLICABLE)

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. It is expected that a bidder shall not depute more than 02 representatives for the meeting.

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 and give hands-on e-tendering.

17.3 Text of the questions raised and the responses given, together with any responses prepared after the meeting, will be uploaded on Central Public Procurement (CPP) Portal (https://eprocure.gov.in/eprocure/app) websites. 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 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 unamendable 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 initialed by the person or persons signing the Bid.

18.3 In case of e-tendering, digitally Digitally signed documents to be uploaded as detailed in addendum to ITB (Annexure-III of Section –III).

19 ZERO DEVIATION AND REJECTION CRITERIA

19.1 ZERO DEVIATION: Deviation to terms and conditions of "Bidding Documents" may lead to rejection of bid. TFL will accept bids based on terms & conditions of "Bidding Documents" only. Bidder may note TFL will determine the substantial responsiveness of each bid to the Tender 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. TFL's determination of a bid's responsiveness is based on the content of the bid itself without recourse to extrinsic evidence.
Bidder is requested not to take any deviation(s)/exception(s) to the terms & conditions of Tender Document, and submit all requisite documents as mentioned in this Tender Document, failing which their Bid 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.

As a principle, clarifications from bidders after opening of tenders will not be sought. However, where clarifications / documents from the bidders on important aspects are absolutely necessary for finalization of tender, clarifications from bidder can be asked. The request for clarification shall be given in email/portal, asking the bidder to respond by a specified date, and also mentioning therein that, if the bidder does not comply or respond by the date, his tender will be liable to be rejected. Depending on the outcome, such tenders are to be ignored or considered further. No change in prices or substance of the bid including specifications, shall be offered or permitted. No post-bid clarification at the initiative of the bidder shall be entertained. The shortfall information/ documents should be sought only in case of historical documents which pre-existed bids and which have not undergone change since then.

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

a) Bidder not meeting Bid Evaluation Criteria as per Tender Document
b) Firm Price
c) EMD / Declaration for Bid Security (as applicable)
d) Specifications &Scope of Work
e) Schedule of Rates / Price Schedule / Price Basis
f) Duration / Period of Contract/ Completion Period
g) Payment Terms
h) Period of Validity of Bid
i) Integrity Pact
j) PRS Clause
k) Overall ceiling on total liability
l) Contract Performance Security
m) Guarantee / Defect Liability Period

n) Arbitration / Settlement of Dispute
o) Governing laws, language & measures
p) Force Majeure
q) Undertaking forms, Form I of Annexure VII for provision for procurement from a bidder which shares a land border with India
r) Bidder quoting less than 20% as minimum Local content (as per make in India PPLC policy)
s) Any other condition specifically mentioned in the tender document elsewhere that non-compliance of the clause lead to rejection of bid

Note: Further, it is once again reminded not to mention any condition in the Bid which is contradictory to the terms and conditions of Tender document.

20 E-PAYMENT

OWNER has initiated payments to Contractors electronically, and to facilitate the payments electronically through **'e-banking'.**

[D] – SUBMISSION OF BIDS

21 SUBMISSION, SEALING AND MARKING OF BIDS

21.1 In case of e-tendering, bids shall be submitted through e-tender in the manner specified elsewhere in tender document. No Manual/ Hard Copy (Original) offer shall be acceptable. Physical documents shall be addressed to the owner at address specified in IFB.

21.2 Deleted

21.3 Bids submitted under the name of AGENT/ REPRESENTATIVE /RETAINER/ ASSOCIATE etc. on behalf of a bidder/affiliate shall not be accepted.

22 DEADLINE FOR SUBMISSION OF BIDS

22.1 In case of e-bidding, the bids must be submitted through e-tender mode not later than the date and time specified in the tender document/BDS (Bidding Data Sheet).

22.2 Deleted.

22.3 TFL may, in exceptional circumstances and at its discretion, extend the deadline for submission of Bids (clause 8 and/or 9 of ITB refers). In which case all rights and obligations of TFL 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 only as mentioned in Clause No. 2.0(G) of IFB.

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 In case of e-tendering, e-tendering system of CPP Portal (eprocure.gov.in) shall close immediately after the due date for submission of bid and no bids can be submitted thereafter.

23.3 Physical documents 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.

23.4 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 Modification and withdrawal of bids shall be as follows:-

24.1.1 IN CASE OF E- TENDERING

The bidder may withdraw or modify its bid after bid submission but before the due date and time for submission as per tender document.

24.1.2 IN CASE OF MANUAL BIDDING

Deleted.

[E] – BID OPENING AND EVALUATION

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

25.1 TFL 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(s) or any obligations to inform the affected Bidder(s) of the ground for TFL's action. However, Bidder if so desire may seek the reason (in writing) for rejection of their Bid to which TFL shall respond quickly.

25.2 A bidder is to be permitted to send his representation in writing to dealing officer specified in tender for rejection of bid. But, such representation has to be sent upto 10(ten) days from the date of Notification of Award/FOA.A decision on representation will be taken by TFL within 15 (fifteen) days of the receipt of the representation. Only a directly affected bidder can represent in this regard:

i) Only a bidder who has participated in tender can make such representation

ii) In case technical bid has been evaluated before the opening of the financial bid, an application for review in relation to the financial bid may be filed only by a bidder whose technical bid is found to be acceptable

25.3 However, following decisions of TFL shall not be subject to review:

a) Determination of the need for procurement;
b) Selection of the mode of procurement or bidding system;
c) Choice of selection procedure;
d) Provisions limiting participation of bidders in the procurement process;
e) The decision to enter into negotiations with the L1 bidder;

f) Cancellation of the procurement process except where it is intended to subsequently re-tender the same requirements;
g) Issues related to ambiguity in contract terms may not be taken up after a contract has been signed, all such issues should be highlighted before consummation of the contract by the vendor/ contractor; and
h) Complaints against specifications except under the premise that they are either vague or too specific so as to limit competition may be permissible.

26 BID OPENING

26.1 **Unpriced Bid Opening:**

TFL/ PDIL will open bids in the presence of bidders' designated representatives who choose to attendant 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 TFL will open the price bids of those Bidders who meet the qualification requirement and whose bid is determined to be technically and commercially responsive. Techno-commercial bid evaluation status will be are to be informed to all bidders (including informing the techno-commercially not qualified Bidders). Price bids are to be opened in the presence of only techno-commercially acceptable bidders, who are willing to attend the bid opening, at a pre-publicised date, time and place or on the portal in case of e-procurement. The bidder's name, bid price, discount (if any) and any such details considered appropriate shall be read out during the price bid opening. Offers should not, repeat not, be circulated amongst the bidder's representative.Bidders selected for opening of their price bid shall be informed about the date & time of price bid opening. Bidders may depute their authorized representative to witness the price bid opening. The Bidders' representatives, who are present shall sign a Price Bid Opening Register evidencing their attendance and may be required to be present even 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 **Reverse Auction**~~

~~26.3.1 OWNER 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, number of technically & commercially acceptable offers are less than 04 (four), then no reverse auction will be conducted (but the OWNER/CONSULTANT 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. The due date and time of conducting the event of Reverse Auction (if conducted) shall be intimated well in advance to the techno-commercially acceptable bidders, through email.~~

~~26.3.2 **Detailed methodology of Reverse Auction**~~

~~With the assistance of RA system provider, training to all eligible bidders on the Online Reverse Auction process shall be facilitated prior to conduct of Online Reverse Auction.~~

~~a) Computerized Reverse Auction shall be conducted by PDIL through M/s e-Procurement Technologies Limited, on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice.~~

~~b) The due date and time of conducting the event of Reverse Auction shall be intimated at least 2 (two) days in advance to the techno-commercially acceptable bidders, through email / letter. For better understanding of Reverse Auction by the bidders, one day online training shall be conducted by M/s e-Procurement Technologies Limited i.e. the agency conducting the Reverse Auction, for all the techno-commercially qualified bidders. Reverse Auction Training and Demo auction shall be conducted through Video conferencing only.~~

~~c) A user-ID and a password shall be created for each techno-commercially qualified bidder by the M/s e-Procurement Technologies Limited and the same shall be communicated to the bidders during the training process. A Valid Digital Signature Certificate is required to take part in Reverse Bidding process.~~

~~**d) Display of Details during Reverse Auction(RA)**~~

~~The bidder will be able to view the following details on their screen during RA:~~
~~1) "Total basic Price" (i.e. Total Price excluding GST)~~
~~2) "Loading factor"~~
~~3) "Total Evaluated Price" (i.e. Total Basic Price x Loading factor, calculated by system)~~
~~4) "Rank of the bidder" (i.e. present rank, auto updated by system)~~
~~5) "L1 price" (i.e. Present Lowest Total Evaluated Price, auto updated by system)~~
~~The "Total basic Price", Loading factor and the "Total Evaluated Price" before RA shall be informed to individual bidders shortly after completion of the RA training. The "Total basic Price" before RA shall be the "Start price" of each bidder. During RA, the bidder will be able to reduce only the "Total Basic Price". The "Total Evaluated Price" will be automatically calculated by the system and system will then compare it with "Total Evaluated Price" of other bidders to arrive at Rank and L1 price after every price change during the RA.~~
~~After completion of RA, the "Total Evaluated Price" of the lowest bidder shall be considered as the L-1 price after RA.~~
~~However, at no point of time will any bidder see names of other bidders, or prices of bidders other than the lowest bid. The Bidder has to out-bid his own previous price & try to reach Number-1 rank.~~
~~The tender shall be processed further for award or otherwise based on L-1 prices received at the end of Online Reverse Auction. Price reasonableness will still need to be established by PDIL/TFL even though the bidding is through Online Reverse Auction and TFL will reserve the right to negotiate with the L1 bidder as per CVC guidelines.~~

~~e) All timings of the online bid shall be based on the time indicated by the Server hosting the Auction Engine which would reflect as closely as possible the Indian Standard Time (IST) i.e. GMT+05:30 hrs. However, in the event of any deviations between the Server Time and the Indian Standard Time, the functioning of the Auction Engine (launch, operation and closure) would be guided by the Server time. Bidders should be advised to refresh the window of the Auction module and check the exact server Time.~~

f) The start price of bidders will be automatically populated by system at the time of start of Reverse Auction. The same will be considered as participation by bidder in Online Reverse Auction process. In case any bidder emerges lowest bidder after RA based on their start price(s), the same will be considered as their final price(s) taking into consideration respective loading factor (to arrive at "Total Evaluated Price") for award of contract/ order irrespective of whether bidder had actually logged in RA portal or not. In case bidder does not accept the same, such bidder will be considered as errant bidder and action will be taken against bidder as per provision in this regard.

g) During Reverse Auction, a bidder can reduce his prices repeatedly. The minimum percentage reduction in each step namely, the bid decrement' shall not be less than 0.5% of the last bid of the respective bidder. Bidders are allowed to submit/accept first price without decrement amount but afterwards participation in reverse auction is allowed only with minimum decrement amount /percentage.

h) The process of Online Reverse Auction shall initially be held for a period of 30 minutes. In the event of a bid received in the last 5 minutes resulting in a change of prevailing L1 price, the period of the auction shall get extended automatically by 8 minutes from the time of submission of such bid. This process will continue till no change in L-1 price takes place in last 5 minutes after which the auction will close. All bidders regardless of their previous position can submit their bid during the extended period also.

i) In case of a tie during auction i.e. two bidders entering same lowest price, the bidder who enters the prices first in the system would be taken as L-1 and the other bidder would see their ranking as L-2.

j) Internet connectivity shall have to be ensured by bidders themselves. Bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the Reverse Auction successfully.

k) Bidders in their own interest should ensure uninterrupted internet connectivity at their end during the reverse auction with necessary backups to take care of any connectivity problem. No request for any extension of RAP due to internet connectivity issues or for any other reason at bidders end shall be entertained by PDIL/TFL.

l) In case of disruption of service at the service provider's end i.e. M/s e-Procurement Technologies Limited while the RAP (Reverse Auction Process) is online, due to any technical snag or otherwise attributable to the system failure at the server end, the RAP process will start all over again, through a fresh RAP (hereinafter referred to as "Restarted RAP"), the time and date of which will be intimated in writing to all bidders. In such a situation, the last recorded lowest price of prematurely ended RAP, will be the 'Start Bid Price' for the "Re-started RAP". The prices quoted in the prematurely ended RAP will be binding on all the bidders for consideration. All the time stipulations of normal RAP will be applicable to the "Restarted RAP".

m) Communication with any official with service provider/PDIL/TFL when the RAP is online is strictly prohibited. Bidders in their own interest will have to get themselves satisfied on any queries that they may have during the RAP training session. No query when the RAP is online will be entertained.

~~n) Upon completion of reverse auction, rate of individual items of SOR shall be worked out applying uniform reduction (reduction being derived from the original Total Evaluated Price & final Total Evaluated Price after RA).~~

~~o) While working out rate of individual items, unit rate upto two decimals only will be considered and the figures beyond two decimals shall be ignored without rounding off (e.g. if item rates after applying uniform reduction works out to 10.910 or 10.912 or 10.915 or 10.919, the rate will be considered as 10.91). Above prices shall be the final prices of lowest bidder against the tender for all the purposes and the original quoted prices against tender shall no more be valid for tender for which Reverse Auction was held.~~

~~26.3.3 Preferences: Purchase Preference shall be applicable as defined in tender document.~~

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 bidders or any other person not officially concerned with such a process until the award to the successful bidder.

28 CONTACTING THE EMPLOYER

28.1 From the time of bid opening to the time of contract award, no bidder shall contact TFL on any matter related to the bid, except on request and prior written permission.

28.2 Any effort by the bidder to influence TFL in bid evaluation, bid comparison or contract award decisions will vitiate the process and will result in the rejection of the bidder's bid and action shall be initiated as per the TFL's procedure for action in case Corrupt / Fraudulent / Collusive / Coercive practices in this regard apart from forfeiture of EMD/ Bid Security, if any.

29 EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS

29.1 The employer'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 / Bid Security Declaration'
(d) Is substantially responsive to the requirements of the Bidding Documents ; and
(d) 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 for evaluation of bid.

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 Tenders that do not meet the basic requirements specified in the bid documents are to be treated as unresponsive {both during Techno-commercial evaluation and Financial Evaluation incase of Two Bid System) and will be ignored. All tenders received will first be scrutinized to see whether the tenders meet the basic requirements as incorporated in the Bid document and to identify unresponsive tenders, if any. Unresponsive offers may not subsequently be made responsive by correction or withdrawal of the non-conforming stipulation. Some important points on the basis of which a tender may be declared as unresponsive and be ignored during the initial scrutiny are:

i) The tender is not in the prescribed format or is unsigned or not signed as per the stipulations in the bid document;
ii) The required EMD has not been provided or exemption from EMD is claimed without acceptable proof of exemption;
iii) The bidder is not eligible to participate in the bid as per laid down eligibility criteria
iv) The bid departs from the essential requirements specified in the bidding document (for example, the tenderer has not agreed to give the required contract performance security); or
v) Against a schedule in the list of requirements in the tender enquiry, the tenderer has not quoted for the entire requirement as specified in that schedule (example: in a schedule, it has been stipulated that the tenderer will supply the equipment, install and commission it and also train the TFL's personnel for operating the equipment. The tenderer has, however, quoted only for supply of the equipment).

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.

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 on lowest bid basis.

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

In case there is a tie at the lowest bid (L1) position between only startup bidders and none of them has past turnover, the order/FOA will be placed on the startup who is registered earlier with Department for Promotion of Industry and Internal Trade (wherever applicable).

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33 COMPENSATION FOR EXTENDED STAY

Not Applicable

34 PURCHASE PREFERENCE

Purchase Preference as per Policy to Provide Purchase Preference as per Public Procurement (Preference to Make in India), Order 2017 shall be allowed as per Government instructions in vogue, as applicable from time to time

The Policy to Provide Purchase Preference as per Public Procurement (Preference to Make in India), Order 2017 is enclosed as Annexure V to ITB herewith.

Evaluation and applicability of purchase preference policy will be based on the confirmations & documents submitted by the bidder in their bid.

[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.

"TFL intends to place the contract directly on the address from where Goods are produced / dispatched or Services are rendered. In case, bidder wants 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."

TFL will place the Contract directly on the successful bidder from whom the bid has been received & evaluated and will not place order on other entities such as subsidiary, business associate or partner, dealer/distributor etc. of the Bidder.

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 TFL either by E-mail /Letter or like means defined as the "Fax of Acceptance (FOA)". The Contract shall enter into force on the date of FOA and the same shall be binding on TFL and successful Bidder (i.e. Contractor). The Notification of Award/FOA will constitute the formation of a Contract. The detailed Letter of Acceptance shall be issued thereafter incorporating terms & conditions of Tender Document, Corrigendum, Clarification(s), Bid and agreed variation(s)/acceptable deviation(s), if any. TFL 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 as per "ITB: Clause-37".

36.3 Upon the successful Bidder's / Contractor's furnishing of 'Contract Performance Security / Security Deposit', pursuant to "ITB: Clause-38", TFL will promptly discharge his 'Earnest Money Deposit / Bid Security (if applicable)', pursuant to "ITB: Clause-16".

36.4 The Order/ contract value mentioned above is subject to PRS clause.

36.5 TFL 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 TFL.

37 SIGNING OF AGREEMENT

The successful Bidder/Contractor shall be required to execute an ' Agreement' (in case the individual contract value as specified in Notification of Award is more than INR 10 Lakhs exclusive of GST) in the proforma given in this Bidding Document) 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 of India' 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 / Action as per Bid Security declaration.

38 CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT ((f/SD)

38.1 Within 30 days of the receipt of the notification of Award/ Fax of Acceptance (FOA) by from TFL, the successful bidder shall furnish the Contract Performance Security (CPS) in accordance with of General Conditions of the Contract. The CPS shall be in the form of either Banker's Cheque or Demand Draft or Insurance Surety Bond or Fixed Deposit Receiptor or Bank Guarantee or Letter of Credit and shall be in the currency of the Contract. However, CPS shall not be applicable in cases wherein the individual ~~order/~~ contract value as specified in Notification of Award is less than INR 5 Lakh (exclusive of GST).

If contractor has failed to submit CPS/ SD within specified time, a penal interest of Marginal Cost of Fund based Lending Rate (MCLR) for one year charged by SBI (applicable on due date of submission of CPBG/SD i.e. 30th day after issuance of FOA/ Notification of award) plus 4.0% p.a (on CPBG/SD amount) shall be charged for delay beyond 30 days i.e. from 31st days after issuance of FOA.

The first payment to contractor/ vendor/supplier is to be released only after submission of Contract Performance Security (CPS)/ Security Deposit (SD) & deduction of applicable interest OR deduction of Contract Performance Security (CPS)/ Security Deposit (SD) along with applicable interest from the due payment as mentioned herein above.

38.2 The CONTRACT PERFORMANCE SECURITY shall be for an amount equal 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)**.

Bank Guarantee towards CPS shall be from any Indian scheduled bank (excluding Co-operative banks and Regional Rural 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 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 consideration of the annulment of the award and Forefeiture of EMD/action as per declaration of Bid Security.

38.4 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.

38.5 Deleted.

38.6 In addition to existing specified form (i.e. Demand Draft (DD)/ Banker's Cheque/ Bank Guarantee/Letter of Credit) mentioned in tender documents for submission of Security Deposit/ Contract Performance Security, the successful bidder can also submit the Security Deposit/ Contract Performance Security through online banking transaction i.e. IMPS/NEFT/RTGS/SWIFT etc. For this purpose, the detail of TFL's Bank Account is mentioned in BDS. Further, in case a successful Bidder is willing to furnish CPS through SWIFT, the details may be obtained from Purchase Officer immediately after receipt of FOA.

While remitting such online transaction, the bidder must indicate "**Security Deposit/ Contract Performance Security against FOA/DLOA no. __ (contractor to specify the FOA/DLOA No.)**" under remarks column of such transaction of respective bank portal. The contractor/vendor shall be required to submit the successful transaction details to the

dealing officer immediately through email/letter and necessarily within 30 days from the date of Fax of Acceptance.

38.7 In case of forfeiture of Contract Performance Security/ Security Deposit in terms of GCC, 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.

38.8 The Contractor will also submit covering letter along with CPS as per format at F-4.

38.9 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 Deposit submitted by the Contractor.

38.10 The first payment to vendor is to be released only after submission of CPS / Security Deposit (SD).

38.11 Before the CPS / Security Deposit (SD) is released a "No Claim Certificate" is to be submitted by the supplier/vendor.

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.

39.4 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 Contractors/Bidders 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 to Section-III), the contractor/bidder shall be banned (in terms of aforesaid procedure) from the date of issuance of such order by TFL, to such Contractors/Bidders.

The Contractor/ Bidder understands and agrees that in such cases where Contractor/ Bidder has been banned (in terms of aforesaid procedure) from the date of issuance of such order by TFL, such decision of TFL shall be final and binding on such Contractor/ Bidder 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 Government of India, vide Gazette of India No. 503 dated 26.03.2012 proclaimed the Public Procurement Policy for Micro and Small Enterprises (MSEs). The following benefit is available in case of work contract also:

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, the Bidder shall submit Udyam Registration Certificate for availing benefit under Public Procurement Policy for MSEs-2012.

Vide Gazette notification dated 18.10.2022 of Ministry of MSME, the following is notified:

"In case of an upward change in terms of investment in plant and machinery or equipment or turnover or both, and consequent re-classification, an enterprise shall continue to avail of all nontax benefits of the category (micro or small or medium) it was in before the re-classification, for a period of three years from the date of such upward change"

Accordingly, in case of upward change in status, MSE bidder is required to submit the previous certificate also to get the MSE benefit.

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 as per provision mentioned at clause no. 40.2 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 are 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.

40.6 Interest payment on delayed payments to MSME is payable in line with Micro, Small and Medium Enterprises Development Act, 2006

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 /latest DSR and 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**

(i) TDS, wherever applicable, shall be deducted as per applicable act/law/rule.
(ii) **Higher rate of TDS for non-filers of ITR**

As per Section 206AB of Income Tax Act, 1961, in case of any vendor/customer who does not filed their Income Tax Return for both of the two previous years preceding to current year and aggregate amount of TDS is more than or equal to 50,000/- in each of those previous two years (or limit defined by Govt. from time to time), then TDS will be deducted at the higher of following rates:

(I) Twice the rate mentioned in relevant TDS section.
(II) Twice the rate or rates in force
(III) 5%

43.4 **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 or as amended from time to time.

Accordingly, contractor should mention their PAN no. in their invoice/ bill for any transaction

exceeding Rs. 2 lakhs or as amended from time to time. As provided in the notification, in case contractors do not have PAN no., they have to submit declaration in Form 60 along with invoice/ bill for each transaction.

Payment of contractor shall be processed only after fulfillment of above requirement.

44. DISPUTE RESOLUTION MECHANISM

44.1 QUARTERLY CLOSURE OF THE CONTRACT

During execution of orders, various issues may arise. In order to timely detect and to address the contractual issue(s) during the execution of contracts, TFL has introduced a mechanism of Quarterly Closure of the contract, under which all the related issues /disputes will be monitored and addressed on quarterly basis for resolution. Vendor (hereinafter referred 'Vendor') should first refer any issues/disputes to Engineer-in-Charge (EIC) for LOA/contracts/ Dealing C&P Executive for Purchase Orders and co-operate them for smooth execution of the contract and to timely address the issues, if any. For applicability of 'Quarterly Closure', please refer BDS.

44.2 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.

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.

44.3 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.

45. DISPUTES BETWEEN CPSE'S/ GOVERNMENT DEPARTMENT'S / ORGANIZATIONS

Subject to conciliation as provided above, 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 only 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 above 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.

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.

TFL'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.

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 ~~**PROVISIONS FOR STARTUPS (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)**~~

~~.As mentioned in Section-II, Technical and Financial BEC shall be applicable for all Startups [whether Micro & Small Enterprises (MSEs) or otherwise].~~

~~Further, the Startups are also exempted from submission of EMDs.~~

~~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 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.~~

50 PROVISION REGARDING INVOICE FOR REDUCED VALUE OR CREDIT NOTE TOWARDS PRS

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

In such cases if service provider fails to submit the invoice with reduced value or does not issue credit note as mentioned above, TFL will release the payment to service provider after giving effect of the PRS clause with corresponding reduction of taxes charged on service provider's invoice, to avoid delay in payment.

In case any financial implication arises on TFL due to issuance of invoice without reduction in price or non-issuance of Credit Note, the same shall be to the account of service provider. TFL 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 service provider's under this contract or under any other contract.

51. 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

52. DOCUMENTS FOR PAYMENT:

Payment terms shall be as mentioned in GCC-Works/SCC.

However, for release of payment, Contractor is required to submit invoice along with other documents as mentioned in SCC. The final bill is to be submitted within one month after completion.

53. SUB-LETTING OF WORKS

The following is added to the Clause no. 37 of General Conditions of Contract (GCC)-Works:

(i) Procurement of material, hire of equipment or engagement of labour will not mean sub-contracting.

(ii) Sub-contracting by the contractor without the approval of TFL shall be a breach of contract, unless explicitly permitted in the contract.

(iii) However, If specified in SCC Sub-contracting for Specialized Items of Work is allowed upto certain percentage of work

Annexure-I to Section-III

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

Annexure-I

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.

A2 "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.

A3 "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 concerns which come within the sphere of effective influence of the banned/suspended agency shall be treated as allied agency. 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 agency;
c) Substantial or majority shares are owned by the banned/ suspended agency and by virtue of this it has a controlling voice.
d) Directly or indirectly controls, or is controlled by or is under common control with another bidder.
e) All successor agency will also be considered as allied agency.

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

A.10 "Obstructive practice": materially impede the procuring entity's investigation into allegations of one or more of the above mentioned practices either by deliberately destroying,

falsifying, altering; or by concealing of evidence material to the investigation; or by making false statements to investigators and/ or by threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or by impeding TFL's rights of audit or access to information.

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 for putting the agency on banning list.

After conclusion of process and issuance of Speaking order for putting party on banning list, 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.

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, the formal communication for suspension of Order (s)/ Contract (s) and payment with immediate effect will be issued by the concerned person of TFL.

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.

In addition to above, Recovery of payments (other than due payments) including balance advance payments, if any, made by along with interest thereon at the prevailing rate shall be recovered.

(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:

S. No.	Description	Period of banning from the date of issuance of Banning order
1	Misrepresentation/False information other than pertaining to BEC of tender but having impact on the selection process. For example, if an agency confirms not being in holiday in TFL/PSU's PMC or banned by PSUs/ Govt. Dept., liquidation, bankruptcy & etc. and subsequently it is found otherwise, such acts shall be considered in this category.	06 Months

2 2.1	Corrupt/Fraudulent (except mentioned sl. no. 1 above) /Collusive/Coercive Practices If an agency again commits Corrupt/Fraudulent (except mentioned sl. no. 1 above) /Collusive/ Coercive Practices in subsequent cases after their banning, such situation of repeated offense to be dealt with more severity	01 year 2 years (in addition to the period already served)
3	Indulged in unauthorized disposal of materials provided by TFL	**2 years**
4	If act of vendor/ contractor is a threat to the National Security	2 years

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. . In case such agency is lowest (L-1), next lowest bidder shall be considered as L-1

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.

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. In case such agency is lowest (L-1), next lowest bidder shall be considered as L-1.

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.

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.

Annexure-II to Section III

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

1.0 GENERAL

A system for evaluation of Vendors/ Suppliers/Contractors/ Consultants and their performance is a key process and important to support an effective purchasing & contracting function of an organization.
Performance of all participating Vendors/ Suppliers/Contractors/ Consultants need to be closely monitored to ensure timely receipt of supplies from a Vendor, completion of an assignment by a Consultant or complete execution of order by a contractor within scheduled completion period. For timely execution of projects and meeting the operation & maintenance requirement of operating plants, it is necessary to monitor the execution of order or contracts right from the award stage to completion stage and take corrective measures in time.

2.0 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 TFL 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.

3.0 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. 50 Lakhs and above is recommended to be drawn up. Further, Performance rating data Sheet for orders/contracts of Vendor/Supplier/Contractor/ Consultant who are on watch list/holiday list/ banning list shall be prepared irrespective of order/ contract value. 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 TFL.

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.

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. 50 Lakhs if Vendor/ Supplier/Contractor/ Consultant is not on watch list/ holiday list/ banning list.
ii) Orders for Misc./Administrative items/ Non stock Non valuated items (PO with material code ending with 9).

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

5.1 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 Annexure-1) for all Orders and Contracts.
iii) Depending upon the Performance Rating, following action shall 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" (as per Performance Rating carried out after execution of Order/ Contract and where no reply/ unsatisfactory reply is received from party against the letter seeking the explanation from Vendor/Supplier/Contractor/ Consultant along with sharing the performance rating)

Recommend such defaulting Vendor / Supplier / Contractor / Consultant for the following action:

1. Poor Performance on account of Quality (if marks obtained against Quality parameter is less than 20):

   (a) First Instance: Holiday (Red Card) for One Year

   (b) Subsequent instance (s) in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: Holiday (Red Card) for Two Years

2. Poor Performance on account of other than Quality (if marks obtained against Quality parameter is more than 20):

   (a) First such instance: Advisory notice (Yellow Card) shall be issued and Vendor/Supplier/Contractor/ Consultant shall be put on watch list for a period of Two (2) Years.

   (b) Second such instance in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: Putting on Holiday (Red Card) for a period of One Year

   (c) Subsequent instances (more than two) in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: Putting on Holiday (Red Card) for a period of Two Years.

B) Where Poor/Non-Performance leading to termination of contract or Offloading of contract due to poor performance attributable to Vendor/Supplier/ Contractor/Consultant (under clause no. 32(C)of GCC)

(a) First instance: **Advisory notice (Yellow Card)** shall be issued and Vendor/Supplier/Contractor /Consultant shall be put on watch list for a period of Two (2) Years.

Further such vendor will not be allowed to participate in the re-tender of the same supply/work/services of that location which has terminated / offloaded. Moreover, it will be ensured that all other action as per provision of contract including forfeiture of Contract Performance Security (CPS) etc. are undertaken.

However, such vendor will be allowed to participate in all other tenders and to execute other ongoing order/ contract (s) or new contract/ order (s).

The Yellow card will be automatically revoked after a period of two years unless the same is converted into Red Card due to subsequence instances of poor/ non-performance in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant.

(b) **Second instances** in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: **Holiday (Red Card)** for period of One Year and they shall also to be considered for Suspension.

(c) **Subsequent instances (more than two)** in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: **Holiday (Red Card) for period of Two Years and they shall also to be considered for Suspension.**

(C) Where Performance rating is "FAIR":

Issuance of warning to such defaulting Vendor/ Supplier/Contractor/ Consultant to improve their performance.

5.2 FOR CONSULTANCY JOBS

Monitoring and Evaluation of consultancy jobs will be carried out in the same way as described in para 5.1 for Projects.

5.3 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 Annexure-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 shall be initiated by EIC:

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" (as per Performance Rating carried out after execution of Order/ Contract and where no reply/ unsatisfactory reply is received from party against the letter seeking the explanation from Vendor/Supplier/Contractor/ Consultant along with sharing the performance rating)

Recommend such defaulting Vendor / Supplier / Contractor / Consultant for the following action:

1. Poor Performance on account of Quality (if marks obtained against Quality parameter is less than 20):
   - **(a) First Instance: Holiday (Red Card) for One Years**
   - **(b) Subsequent instance (s) in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: Holiday (Red Card) for TwoYears**

2. Poor Performance on account of other than Quality (if marks obtained against Quality parameter is more than 20):
   - **(a) First such instance:Advisory notice(Yellow Card)** shall be issued and Vendor/Supplier/Contractor/ Consultantshall be put on watch list for a period of Two(2) Years.
   - **(b) Second such instance in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: Putting on Holiday (Red Card) for a period of One Year**
   - **(c) Subsequent instances (more than two) in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: Putting on Holiday (Red Card) for a period of TwoYears.**

B) Where Poor/Non-Performance leading to termination of contract or Offloading of contract due to poor performance attributable to Vendor/Supplier/ Contractor/Consultant (under clause no. 32(C) of GCC)

(a) First instance: **Advisory notice (Yellow Card)** shall be issued and Vendor/Supplier/Contractor /Consultantshall be put on watch list for a period of Two(2) Years.

Further such vendor will not be allowed to participate in the re-tender of the same supply/work/services of that location which has terminated / offloaded. Moreover, it will be ensured that all other action as per provision of contract including forfeiture of Contract Performance Security (CPS) etc. are undertaken.

However, such vendor will be allowed to participate in all other tenders and to execute other ongoing order/ contract (s) or new contract/ order (s).

The Yellow card will be automatically revoked after a period of two years unless the same is converted into Red Card due to subsequence instances of poor/ non-performance in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant.

(b) **Second instances** in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: **Holiday (Red Card)** for period of One Year and they shall also to be considered for Suspension.

(c) **Subsequent instances (more than two)** in other ongoing order (s)/ contract (s) or new order (s) /contact (s) on such Vendor/ Supplier/ Contractor/ Consultant: **Holiday (Red Card) for period of TwoYears and they shall also to be considered for Suspension.**

(C) Where Performance rating is "FAIR"

Issuance of warning to such defaulting Vendors/Contractors/Consultants to improve their performance.

6.0 REVIEW & RESTORATION OF PARITES PUT ON HOLIDAY

6.1 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.

7.0 EFFECT OF HOLIDAY

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

7.2 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.

7.3. Effect on other ongoing tendering:

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

7.3.2 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.

7.3.3 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. In case such agency is lowest (L-1), next lowest bidder shall be considered as L-1.

8.0 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.

9.0 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 TFL 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.

10. 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 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 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).

11. **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, TFL shall forfeit EMD if paid by the bidder and such bidders shall be debarred from participation in retendering of the same job(s)/item(s).

Further, such bidder will be put on Watch List (Yellow Card) for a period of two years after following the due procedure. However, during the period in watch list such vendor will be allowed to participate in all other tenders and to execute other ongoing order/ contract (s) or new contract/ order (s).

In case of subsequent instances of default in other tender(s) during aforesaid watch list period, the action shall be initiated as per provision of sl. no. 2 of para A of Clause no. 5.1 (v) and 5.3 (v).

The Yellow card will be automatically revoked after specified period unless the same is

converted into Red Card

12. 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/UTGST or IGST) collected from TFL to the government exchequer, then, that Supplier shall be put under Holiday list of TFL for period of six months after following the due procedure. This action will be in addition to the right of recovery of financial implication arising on TFL.

Annexure-1

TALCHER FERTITIZERS 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:

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
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.	**FOR SUPPLIES**	
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

Annexure-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:

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
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.	**FOR SUPPLIES**	
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

Annexure-III

INSTRUCTIONS FOR SUBMISSION OF BID ONLINE THROUGH CPP PORTAL

1. The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.
More information useful for submitting online bids on the CPP Portal may be obtained at: https://eprocure.gov.in/eprocure/app.

2. REGISTRATION

i. Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: https://eprocure.gov.in/eprocure/app) by clicking on the link "Online bidder Enrollment" on the CPP Portal which is free of charge.

ii. As part of the enrollment process, the bidders will be required to choose a unique username and assign a password for their accounts.

iii. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

iv. Bidders are advised to make ensure the accessibility & availability of java software in their system (PC) either download & install the latest version of java software or click on the below link to install the java in their system prior to proceed further.
https://www.oracle.com/technetwork/java/javase/downloads/index.html

v. Upon enrollment, the bidders will be required to register their valid Digital Signature Certificate (Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile.

vi. Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.

vii. Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

3. SEARCHING FOR TENDER DOCUMENTS

i) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.

ii) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / email in case there is any corrigendum issued to the tender document.

iii) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

4. PREPARATION OF BIDS

i) Bidder should take into account any corrigendum published on the tender document before submitting their bids.

ii) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

iii) 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 / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

iv) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" or ''Other Important Documents'' area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

Note: My Documents space is only a repository given to the Bidders to ease the uploading process. If Bidder has uploaded his Documents in My Documents space, this does not automatically ensure these Documents being part of Technical Bid.

5. SUBMISSION OF BIDS

i. Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

ii. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

iii. Bidder should submit Declaration for Bid security strictly as per format Form F-2B provided in the NIT. Otherwise the uploaded bid will be rejected.

iv. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard SOR format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the SOR file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the SOR file is found to be modified by the bidder, the bid will be rejected.

v. The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

vi. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. 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 opener's public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

vii. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

viii. Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

ix. The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

6. ASSISTANCE TO BIDDERS

x. Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

xi. Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk.

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ANNEXURE-IV

BIDDING DATA SHEET (BDS)

ITB TO BE READ IN CONJUNCTION WITH THE FOLLOWING:

A. GENERAL	
ITB clause	**Description**
1.1	The Employer/Owner is: The Employer/Owner is: Talcher Fertilizers Limited
2.1	The name of the Works/Services to be performed is: **"Supply Cum Erection of Electrical works at CISF Barrack, Quarter Guard and other allied buildings for OSBL facilities on Item Rate basis at Talcher Fertilizers Limited, Talcher, Odisha".**
3	BIDS FROM CONSORTIUM/ JOINT VENTURE: APPLICABLE ✗ NOT APPLICABLE ✓
B. BIDDING DOCUMENT	
ITB clause	**Description**
8.1	For **clarification purposes** 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: 1) Mr. Kailash Joshi- Project Manager Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 314, 9718762091 Fax no. : +91-120-2529801 E-mail :kjoshi@pdilin.com 2) Mr. Abhilesh Kumar- Dy.C.E (PM deptt.) Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 316 Mob. No. : 8178085434 Fax no. : +91-120-2529801 E-mail : abhilesh@pdilin.com
C. PREPARATION OF BIDS	
ITB clause	**Description**

11.1.1 (r)	Additional documents to be submitted by the Bidder with its Part-I (Techno-commercial/ Unpriced bid): as per SCC/Scope of Work.
12 & 13	Details of Buyer: Services to be rendered at: M/s Talcher Fertilizers Ltd. (TFL), Administrative Building, Talcher, Post: Vikrampur, Dist: Angul, Pincode-759106, Odisha PAN No.: AAFCT8667A GST no.: 21AAFCT8667A1ZH TFL Bank details: Account No.: 41256023769; Bank & Branch Name: SBI, CAG-II, New Delhi; IFSC Code: SBIN0017313
14	The currency of the Bid shall be INR
15	The bid validity period shall be 90 Days from 'Bid Due Date'.
16.1, 16.10 and 38.6	In case **'Earnest Money / Bid Security' or "Contract Performance Security**" is in the form of **'Demand Draft'** or **'Banker's Cheque', or** '**Insurance Surety Bond' / 'Fixed Deposit Receipt'**, the same should be favor of "Talcher Fertilizers Limited, payable at New Delhi In case of submission through online banking transaction i.e. IMPS / NEFT / RTGS / SWIFT, etc, the details of TFL 's Bank account are as under: Account Holder's Name: Talcher Fertilizers Limited Account No.: 41256023769 Bank & Branch Name: SBI, CAG-II, New Delhi IFSC Code: SBIN0017313 Bidder to mention reference no. "EMD/CPS/……." in narration while remitting the CPS amount in TFL's Bank Account.
D. SUBMISSION AND OPENING OF BIDS	

ITB clause	Description
18	In addition to the original of the Bid, the number of copies required is one. Not applicable in case of e-tendering.
4.0 of IFB	The submission of physical document as per clause no. 4.0 of IFB shall at following address: : Projects & Development India Limited, (Project Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida , (India) Fax no.:0120-2529801 Kind Attention: 1) Mr. Kailash Joshi- Project Manager Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 314, 9718762091 Fax no. : +91-120-2529801 E-mail :kjoshi@pdilin.com 2) Mr. Abhilesh Kumar- Dy.C.E (PM deptt.) Tel no. : +91-120-2529842/43/47/51/53/54 Extn. 316 Mob. No. : 8178085434 Fax no. : +91-120-2529801 E-mail : abhilesh@pdilin.com
E. EVALUATION, AND COMPARISON OF BIDS	
ITB clause	**Description**
32	Evaluation Methodology is mentioned in Section-II.
33	Compensation for Extended Stay: APPLICABLE ✗ NOT APPLICABLE ✓
34	The following Purchase Preference Policy will be applicable as per provisions mentioned in tender: i) Policy to Provide Purchase Preference as per Public Procurement (Preference to Make in India), Order 2017
F. AWARD OF CONTRACT	
ITB clause	**Description**
37	State of India of which stamp paper is required for Contract Agreement: **Odisha/ State where Bidder's registered office is located.**

38	Contract Performance Security/ Security Deposit APPLICABLE ✓ NOT APPLICABLE ✗ The value/ amount of Contract Performance Security/ Security Deposit: SD/ CPBG @10% of Total order/ contract value within 30 days of FOA/ notification of award. Or, Initial Security Deposited (ISD) @ 5% of Total Contract value within 30 days of FOA/ notification of Award and deduction @ 10% of the RA Bill subsequently from RA bills till the total amount of security deposite (including ISD and deducted amount) reaches 10% of total contract value.)
41	Provision of AHR Item : APPLICABLE ✓ NOT APPLICABLE ✗
44.1	Quarterly Closure of Contract: APPLICABLE ✓ NOT APPLICABLE ✗
49	Applicability of BEC relaxation relating to Startups: APPLICABLE ✗ NOT APPLICABLE ✓

Annexure-V

PUBLIC PROCUREMENT
(PREFERENCE TO MAKE IN INDIA), ORDER 2017

Annexure - V

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: 16th 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.

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'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.

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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.

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(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

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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.

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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.

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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.

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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

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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 1st 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

FORM – I of ANNEXURE V

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)** meets the following:

Sl. No.	Description	Confirmation
a	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)	Confirmed.
b	The bidder meets mandatory minimum Local content requirement of 50% for claiming purchase preference under Public Procurement (Preference to Make in India) Policy	Confirmed / Not Confirmed

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.		

Name of Audit Firm / Chartered Accountant: [Signature of Authorized Signatory]

Name:
Date: Designation:
Seal:

Membership No.:
UDIN:

FORM-II of ANNEXURE-V

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

Sr. No.	Description	Parameter / Document
1	**Minimum Local Content (LC) for Availing Preference under this Policy**	50%
2	**Margin of Purchase Preference**	20%
3	**Local Content (LC) % declared by bidder** (Documents to be submitted as per Sr. No. 4 below)	[Tick (□) whichever is applicable] a) LC Equal to or more than 50% □ b) LC More than 20% but less than 50% □
4	**Documents to be submitted by bidder under this Policy**	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 Form-I to be submitted by bidder.
5	**Whether tender is divisible or not divisible**	Not Divisible; Clause No. 3A (c) of revised Policy dated 16.09.2020 shall be applicable

FORM-III of ANNEXURE-V

(Not Applicable for this Tender)

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	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)	Confirmed.
B	The bidder meets mandatory minimum Local content requirement of 50% for claiming purchase preference under Public Procurement (Preference to Make in India) Policy	Confirmed / Not Confirmed

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.		

Place:
Date:

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

Note:

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

Annexure-VI

PREAMBLE TO SCHEDULE OF RATES

1. The "Bill of Quantity (BOQ)" will be in Excel format (password protected) and will be uploaded during tender creation. This will be downloaded by the bidder and bidder will quote Price on this Excel file for entire scope of work as per NIT. Thereafter, the bidder will upload the same Excel file during bid submission.

2. The BOQ format is provided in a spread sheet file (BoQ_xxxx.xls). The rates offered should be entered in the allotted space only and uploaded after filling the relevant columns. The BOQ template must not be modified / replaced by the bidder; else the bid submitted shall be rejected.

3. Bidder shall quote all Prices in INR only.

4. BOQ consists of following one sheets:
   - Schedule of Rates containing Item Rates & GST

5. It is mandatory to quote prices in BOQ and fill up as listed in Para 4. It will be the responsibility of the contractor to quote for all Materials/ Equipments /Services/Civil & Structural Works etc. as per scope of work defined in NIT.

6. BIDDER shall be responsible for payment of all taxes, duties and levies as applicable on performance of WORK under CONTRACT and shall be included in the quoted price.

7. A copy of SOR, with prices/figures completely blanked out but with the word "QUOTED" in all columns is to be uploaded along with the un-priced bid, as a confirmation of price/data quoted against each head.

8. The plans and Tender drawings have been evolved tentatively based on information available with Owner / Consultant but the dimensions and details etc. are liable to changes. The Tenderer 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 work..Detail engineering and fabrication drawings are in the Contractor's scope as per the technical requirement. The same shall be approved by the Owner/PMC. Owner reserves the right to add / delete any of the works mentioned in the N.I.T., during the currency of the contract.

9. The Tenderer 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.***

10. The Tenderer shall be fully responsible for the correct setting out and execution of the work. All tools, tackles, construction equipments etc., required for the successful execution / construction of the complete work shall be responsibility of the Tenderer.

11. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved scope of work. Unless otherwise specified in Tender Documents, measurements of quantities shall be taken as per Indian Standards IS: 1200.

12. 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 detail design and 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.

13. In case of any discrepancy between the description of items given in the "Schedule of Rates" and Specifications, Tender drawings and other documents, the decision of the Owner / Consultant in writing shall be final, binding and conclusive for the purpose of this contract.

14. Only good earth shall be stacked in within the plant & Township leads & the spaces/locations shall also be undertaken during the execution of the contract as per site requirement.

15. The CONTRACTOR shall dispose-off all surplus and unserviceable earth (if any), outside the plant in accordance to local Governing authority, Disposal shall be doneat a place outside the plant, with the consent of the OWNER. Location of disposal area shall be decided by the CONTRACTOR and the required necessary approvals from the local bodies shall be the CONTRACTOR's responsibility.

16. Quantities mentioned in SOR are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used/certified at site.

17. Unit rates shall include the cost of labour, supervision and consumables, cost towards providing necessary tools and tackles, fabrication drawings, bar bending schedule, providing all the required facilities for execution and inspection, testing, guarantees etc. as per scope of work and Technical specification and other relevant sections / sub sections etc. listed in NIT. Minor repair and touch painting work towards providing all required facilities for execution shall be in bidder's scope.

18. Owner reserve their right to execute any additional works / extra works, during the execution of work, either by themselves or by appointing any other agency, even though such works are incidental to and necessary for the completion of works awarded to the Contractor. In the event of such decisions taken by Owner, Contractor is required to extend necessary cooperation, and act as per the instructions of Engineer-in-Charge.

19. The Contractor must visit TFL sites to assess the quantum and nature of work before quoting. However, the Contractor shall inform PDIL / TFL, 1 week prior to their visit to the site.

20. Schedule of Rates is to be read in conjunction with all the sections/sub-sections or Part of this contract document and NIT

    Note: The quantities mentioned in the SOR (Section-VII) are tentative. Contractor to take confirmation for firm quantity from Owner/Consultant before placement of order against the supply items

Annexure-VII

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

1. OM no. 7/10/2021-PPD(1) dated 23.02.2023, Department of Expenditure, Ministry of Finance, Govt. of India refers. The same are available at website https://doe.gov.in/procurement-policy-divisions.

2. 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. 4) dated 23.02.2023.

Further, any bidder (including bidder from India) having specified Transfer of Technology (ToT) arrangement with an entity from a country which shares a land border with India, shall also require to be registered with the same competent authority.

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 credit or 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

3. **"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.

4. **"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

5. **"Beneficial owner"** for the purpose of above (4) will be as under:

i. 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—

a) "Controlling ownership interest" means ownership of, or entitlement to, more than twenty-five per cent of shares or capital or profits of the company;

b) "Control" shall include the right to appoint the majority of the directors or to control the management or policy decisions, including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

ii) 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;

iii) 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;

iv) Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

v) 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.

6. **"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

Note :

(i) A person who procures and supplies finished goods from an entity from a country which shares a land border with India will, regardless of the nature of his legal or commercial relationship with the producer of the goods, be deemed to be an Agent for the purpose of this Order.

(ii) However, a bidder who only procures raw material, components etc. from an entity from a country which shares a land border with India and then manufactures or converts them into other goods will not be treated as an Agent.]

7. **"Transfer of Technology"** means dissemination and transfer of all forms of commercially usable knowledge such as transfer of know-how, skills, technical expertise, designs, processes and procedures, trade secrets, which enables the acquirer of such technology to perform activities using the transferred technology independently. (Matters of interpretation of this term shall be referred to the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade, and the interpretation of the Committee shall be final.)

8. **"Specified Transfer of Technology"** means a transfer of technology in the sectors and/ or technologies, specified at Schedule-I, II & 3 of this order.

9. **SUBMISSION OF CERTIFICATE IN BIDS:**

Bidder shall submit a certificate in this regard as Form-I.

For cases falling under the category of Transfer of Technology, Bidder shall submit a certificate in this regard as Form-II.

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.

10. 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.

11. **PROVISION TO BE IN WORKS CONTRACTS, INCLUDING TURNKEY CONTRACTS:**

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 4 herein above. A Certificate to this regard is to be submitted by bidder is placed at Form-I.

[Note: Procurement of raw material, components, etc. does not constitute sub-contracting]

Form-I

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 of a country which shares a land border with India and on sub-contracting to contractors from such countries; 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 further 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.

We hereby certify that bidder **M/s_____ (Name of Bidder)** fulfills all requirements in this regard and is eligible to be considered.

Place:
Date:

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

Form-II

UNDERTAKING ON LETTERHEAD

(Applicable in case of Transfer of Technology cases only)

To,

M/s TALCHER FERTILIZERS LIMITED

_____

SUB:
TENDER NO:

Dear Sir

We have read the clause regarding Provisions for Procurement from a Bidder having Transfer of Technology (ToT) arrangement which shares a land border with India, we certify that, bidder M/s_____ ***(Name of Bidder)*** is :

(i) Does not have ToT with such a country [ ]

(ii) If having ToT 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 (✓) 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:
Date:

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

Schedule I

List of Category-I Sensitive sectors:

Sr. No.	Sector
(i)	Atomic Energy
(ii)	Brocasting/ Print and Digital Media
(iii)	Defense
(iv)	Space
(v)	Telecommunications

Schedule II

List of Category-II Sensitive sectors:

Sr.No.	Sector
(i)	Power and Energy (including exploration/ generation/transmission/ distribution/ pipeline)
(ii)	Banking and Finance including Insurance
(iii)	Civil Aviation
(iv)	Construction of ports and dams & river valley projects
(v)	Electronics and Microelectronics
(vi)	Meteorology and Ocean Observation
(vii)	Mining and extraction (including deep sea projects)
(viii)	Railways
(ix)	Pharmaceuticals & Medical Devices
(x)	Agriculture
(xi)	Health
(xii)	Urban Transportation

Schedule III

List of Sensitive Technologies:

Sr.No.	Sensitive Technologies
(i)	Additive Manufacturing (e.g. 30 Printing)
(ii)	Any equipment having electronic programmable components or autonomous systems (e.g. SCADA systems)
(iii)	Any technology used for uploading and streaming of data including broadcasting, satellite communication etc.
(iv)	Chemical Technologies
(v)	Biotechnologies including Genetic Engineering and Biological Technologies
(vi)	Information and Communication Technologies
(vii)	Software

FORMS & FORMATS

LIST OF FORMS & FORMATS

Form No.	Description
F-1	BIDDER'S GENERAL INFORMATION
F-2A	PROFORMA OF "BANK GUARANTEE"FOR "EARNEST MONEY / BID SECURITY"
F-2B	FORMAT OF " DECLARATION FOR BID SECURITY "
F-3	LETTER OF AUTHORITY
F-4	PROFORMA OF "BANK GUARANTEE" FOR "CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT"
F-4 (a)	MATTER TO BE MENTIONED IN COVERING LETTER TO BE SUBMITTED BY VENDOR ALONG WITH BANK GUARANTEE (BG)
F-5	AGREED TERMS & CONDITIONS
F-6	ACKNOWLEDGEMENT CUM CONSENT LETTER
F-7	BIDDER'S EXPERIENCE
F-8	CHECKLIST
F-8(B)	CHECKLIST FOR BID EVALUATION CRITERIA (BEC) QUALIFYING DOCUMENTS
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	FORMAT FOR CONSORTIUM AGREEMENT(ON NON- JUDICIAL STAMP PAPER OF APPROPRIATE VALUE) CONSORTIUM/ JV AGREEMENT- **NOT APPLICABLE**
F-12	BIDDER'S QUERIES FOR PRE BID MEETING
F-13	E-BANKING FORMAT
F-14	INTEGRITY PACT
F-15	INDEMNITY BOND
F-16	FREQUENTLY ASKED QUESTIONS (FAQS)
F-17	PROFORMA OF BANK GUARANTEE FOR MOBILISATIONS ADVANCE PAYMENT **NOT APPLICABLE**
F-18	PROFORMA OF BANK GUARANTEE FOR PAYMENTS TOWARDS PLACEMENT OF ALL PURCHASE ORDERS OF MAJOR TAGGED ITEMS **NOT APPLICABLE**
F-19	LETTER OF NO DEVIATIONS
F-20	FORMAT FOR POWER OF ATTORNEY
F-21	UNDERTAKING REGARDING SUBMISSION OF ELECTRONIC INVOICE(E-INVOICE AS PER GST LAW)

F-22	UNDERTAKING REGARDING SUBMISSION CONTRACT PERFORMANCE SECURITY (CPS) / SECURITY DEPOSIT (SD) WITHIN STIPULATED TIME LINE
F-23	PROFORMA FOR CONTRACT AGREEMENT
F-24	NO CLAIM CERTIFICATE

FORMAT F-1

BIDDER'S GENERAL INFORMATION

To,
M/s TALCHER FERTILIZERS LIMITED,
TALCHER

TENDER NO:

1	Bidder's Name	M/s……
2	Status of Firm	Proprietorship Firm/Partnership firm/ Limited Liability Partnership (LLP) firm/ Public Limited/ Pvt. Limited/ Govt. Dept. / PSU/ Others If Others Specify:_____ [Enclose relevant certificates / partnership deed/certificate of Registration, as applicable]
3a	Name of Proprietor/ Partners/ Directors of the firm/company including their Father's Name and residential address, Aadhar No., Pan Card Details & DIN Nos. [As per clause for 'One Bid Per Bidder' under Section-III of Tender Document] If required, a separate sheet may be enclosed for providing the above details.	1. 2. 3.
3b	Name of Power of Attorney holders of Bidder	
4	Number of years in operation	
5	Address of Registered Office:	 City: District: State: PIN/ZIP:
6	Bidder's address where order/contract is to be placed *	 City: District: State: PIN/ZIP:
7	Address from where Goods/ Services are to be dispatched/ provided along with GST no. (In case supply of Goods / Services are from multiple locations, addresses and GST no. of all such locations are to be provided).	City: District: State: PIN/ZIP: GST No.:
8	Telephone Number & Contact Information address where Order/Contract is to be placed	_____ (Country Code) (Area Code) (Telephone No.) Mobile No. : …… e-mail ID: ……
9	Website details	

10	Mobile Number of concerned personnel/authorized signatory	_____
11	ISO Certification, if any	Yes / No *[If yes, please furnish details]*
12	PAN No.	
13	GST No. (refer sl. no. 7 above)	
14a	Whether Micro or Small Enterprise	Yes / No (*If Yes, Bidder to submit requisite documents as specified it ITB:Clause No. 40*)
14b	Whether MSE is owned by SC/ST Entrepreneur(s)	Yes / No (*If Yes, Bidder to submit requisite documents as specified it ITB:Clause No. 40*)
14c	Whether MSE is owned by Women	Yes / No (*If Yes, Bidder to submit requisite documents as specified it ITB:Clause No. 40*)
14d	Details of registration in TReDS	…… *(Bidder to provide name of the portal along with details)*
15a	Whether Bidder is a Startup or not	Yes / No *(, Bidder to submit requisite documents as specified it ITB: Clause No. 49)*
15b	In case Bidder is a Startup, confirm the following: (i) Date of its incorporation/ registration [The certificate shall only be valid for the entity upto ten years from the date of its incorporation/ registration] (ii) Whether turnover for any financial years since incorporation/ registration has exceeded Rs.100 Crores.	

Note: * *TFL intends to place the Order/Contract directly on the address from where Goods are produced/dispatched. In case, Bidder intends to haveOrder/ Contract with some other address and also for supply of Goods from multiple locations, Bidder is required to provide the address on which Order/ Contract is to be placed as mentioned at sl.no.6 above and details of locations as mentioned at sl. no. 7 above.*

Place:
Date:

[Signature of Authorized Signatory of Bidder]

Name:
Designation:
Seal:

FORMAT F-2A
PROFORMA OF "BANK GUARANTEE"
FOR "EARNEST MONEY / BID SECURITY"

(To be stamped in accordance with the Stamp Act)

To, Talcher Fertilizers Limited (TFL) Talcher	**Bank Guarantee No.**	
	Date of BG	
	BG Valid up to (Expiry date)	
	Claim period up to (indicate date of expiry of claim period which includes minimum three months from the expiry date)	
	Stamp Sl. No./e-Stamp Certificate No.	

Dear Sir(s),

In accordance with Letter Inviting Tender under your reference No _____ M/s. _____
having their Registered / Head Office at _____ (hereinafter called the Tenderer), wish to participate in the said tender for _____

As an irrevocable Bank Guarantee against Earnest Money for the amount of _____ is required to be submitted by the Tenderer as a condition precedent for participation in the said tender which amount is liable to be forfeited on the happening of any contingencies mentioned in the Tender Document.

We, the _____ Bank at _____having our Head Office _____ (Local Address) guarantee and undertake to pay immediately on demand without any recourse to the tenderers by Talcher Fertilizers Limited, the amount _____ _____ without any reservation, protest, demur and recourse. Any such demand made by TFL, shall be conclusive and binding on us irrespective of any dispute or difference raised by the Tenderer.

This guarantee shall be irrevocable and shall remain valid up to _____ [this date should be two (02) months beyond the validity of the bid].If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instructions from M/s. _____ whose behalf this guarantee is issued.

Notwithstanding anything contained herein:

a) The Bank's liability under this Guarantee shall not exceed (currency in figures) . . . . . (currency in words only) . . . . .
b) This Guarantee shall remain in force upto _____ (this expiry date of BG should be two months beyond the validity of bid) and any extension(s) thereof; and

c) 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.

In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this _____day of _____ 20__ at _____.

Details of next Higher Authority of the Officials who have issued the Bank Guarantee:

Name …….
Designation ……..

WITNESS:

(SIGNATURE)
(NAME)

(SIGNATURE)
(NAME)
Designation with Bank Stamp

(OFFICIAL ADDRESS)

Attorney as per
Power of Attorney No. _____
Date: _____

INSTRUCTIONS FOR FURNISHING "BID SECURITY / EARNEST MONEY" BY "BANK GUARANTEE"

1. The Bank Guarantee by Bidders will be given on non-judicial stamp paper as per "Stamp Duty" applicable. The non-judicial stamp paper should be in the name of the issuing Bank.
2. The expiry date should be arrived at in accordance with "ITB: Clause-16.1".
3. The Bank Guarantee by bidders will be given from Bank as specified in "ITB Clause-16.2”.
4. A letter from the issuing Bank of the requisite Bank Guarantee confirming that said Bank Guarantee / all future communication relating to the Bank Guarantee shall be forwarded to the Employer at its address as mentioned at "ITB".
5. Bidders must indicate the full postal address of the Bank along with the Bank's E-mail / Fax / Phone from where the Earnest Money Bond has been issued as per proforma provided below.
6. If a Bank Guarantee is issued by a commercial Bank, then a letter to Employer confirming its net worth is more than Rs. 1,000,000,000.00 [Rupees One Hundred Crores] or equivalent along with documentary evidence in the Bank Guarantee itself.

MATTER TO BE MENTIONED IN COVERING LETTER TO BE SUBMITTED BY VENDOR ALONG WITH BANK GUARANTEE

1	**BANK GUARANTEE NO**	**:**				
2	**VENDOR NAME**	**:**				
3	**BANK GUARANTEE AMOUNT**	**:**				
4	**TENDER NO**	**:**				
5	**NATURE OF BANK GUARANTEE**	**:**				
	(Please Tick (√) Whichever is Applicable		**PERFORMANCE BANK GUARANTEE**	**SECURITY DEPOSIT**	**EMD**	**ADVANCE**
6	**BG ISSUED BANK DETAILS**					
		(A)	**EMAIL ID :**			
		(B)	**ADDRESS :**			
		(C)	**PHONE NO :**			

FORMAT F-2B

DECLARATION FOR BID SECURITY

(To be submitted on Letter head of Bidder)

To,

M/s TALCHER FERTILIZERS LIMITED

_____

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 polices 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

F-3

LETTER OF AUTHORITY

[Pro forma for Letter of Authority for Attending 'Pre-Bid Meetings' /'Un-priced Bid Opening' / 'Price Bid Opening']

Ref: Date:

To,
M/s TALCHER FERTILIZERS LIMITED,
TALCHER

SUB:
TENDER NO:

Dear Sir,
I/We, _____ hereby authorize the following representative(s) for attending any 'Meetings [Pre-Bid Meeting]', 'Un-priced Bid Opening' and 'Price Bid Opening' against the above Tender Documents:

[1] Name & Designation _____ Signature _____
Phone/Cell:

E-mail: …….. @ ……

[2] Name & Designation _____ Signature _____
Phone/Cell:

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:

(i) Note: This "Letter of Authority" should be on the **"letter head"** of the 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 'Pre-Bid Meetings' /'Un-priced Bid Opening' / 'Price Bid Opening'..

(ii) Bidder's authorized representative is required to carry a copy of this authority letter while attending the 'Pre-Bid Meetings' /'Un-priced Bid Opening.

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, Talcher	**Bank Guarantee No.**	
	Date of BG	
	BG Valid up to	
	Claim period up to (There should be three months gap between expiry date of BG & Claim period)	
	Stamp Sl. No./e-Stamp Certificate No.	

Dear Sir(s),

M/s. _____ having registered office at _____ (herein after called the "contractor" which expression shall wherever the context so require include its successors and assignees) have been placed/ awarded the job/work of _____ vide LOA /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 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 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 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 contractor is unable to complete the 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 contractor fails to perform the work fully, the bank hereby agrees to further extend this guarantee at the instance of the 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 contractor and notwithstanding any security or other guarantee that TFL may have in relation to the /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.

8. Therefore, we hereby affirm that we are guarantors and responsible to you on behalf of the 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 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 by the Bank.

10. Notwithstanding anything contained herein:

a) The Bank's liability under this Guarantee shall not exceed (currency in figures) _____ (currency in words only) _____
b) 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
c) 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.

Details of next Higher Authority of the Officials who have issued the Bank Guarantee:

Name …….
Designation ……..

Yours faithfully,

_____
Bank by its Constituted Attorney

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

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..

2. The Bank Guarantee by Bidders will be given from bank as specified in Cl no. 38.3 of ITB [Section-III] of Tender Document .

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 OR in the Bank Guarantee itself.

5. Contractor shall submit attached cover letter (Annexure) while submitting Contract Performance Security.

Form-4 (a)

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

1	**BANK GUARANTEE NO**	**:**				
2	**VENDOR NAME**	**:**				
3	**BANK GUARANTEE AMOUNT**	**:**				
4	**TENDER NO**	**:**				
5	**NATURE OF BANK GUARANTEE**	**:**				
	(Please Tick (√) Whichever is Applicable		**PERFORMANCE BANK GUARANTEE**	**SECURITY DEPOSIT**	**EMD**	**ADVANCE**
6	**BG ISSUED BANK DETAILS**					
		(A)	**EMAIL ID :**			
		(B)	**ADDRESS :**			
		(C)	**PHONE NO :**			

F-5
AGREED TERMS & CONDITIONS

To,
M/s TALCHER FERTILIZERS LIMITED
TALCHER

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.

Sl.	DESCRIPTION	BIDDER'S CONFIRMATION
1	Bidder's name, Vendor Code of TFL (If any) and address	Bidder's Name: Address:
2.	Bidder confirms the currency of quoted prices is in Indian Rupees	
3.	Bidder confirms quoted prices will remain firm and fixed till complete execution of the order (except where price escalation/variation is allowed in the Tender).	
4.	Bidder confirms that they have quoted GST **(CGST & SGST/ UTGST or IGST)** in Price Schedule / Schedule of Rates (SOR) of Price bid.	Confirmed
4.1	Whether in the instant tender services/works are covered in reverse charge rule of **GST (CGST & SGST/UTGST or IGST)** If yes, Bidder confirms that they have quoted rate of applicable GST (CGST & SGST/ UTGST or IGST**)** in Price Schedule / Schedule of Rates of Price Bid	
4.2	Indicate Harmonized System of Nomenclature (HSN)/Service Accounting Codes (SAC).	HSN/SAC Code (as applicable): _____
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 (Anti-profiteering clause).	
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. _____
5.	Bidder confirms acceptance of relevant Terms of Payment specified in the Bid Document.	
6.	Bidder confirms that Contract Performance Security will be furnished as per Bid Document within 30 days of FOA in case of successful bidder..	
7.	Bidder confirms that Contract Performance Security shall be from any Indian scheduled bank (excluding Co-operative banks and Regional Rural bank) or a branch of an International bank situated	

Sl.	DESCRIPTION	BIDDER'S CONFIRMATION
	in India and registered with Reserve bank of India as scheduled foreign bank. However, in case of bank guarantees from banks other than the Nationalised 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 and the same shall be reckoned from the date of Fax of Acceptance.	
9.	(i) Bidder confirms acceptance of Price Reduction Schedule for delay in completion schedule specified in Bid document. (ii) In case of delay, the bills/invoices shall be submitted after reducing the price reduction 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.	Bidder have furnished Bid security Declaration	
13.	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.	
14.	Bidder confirms that (i) none of Directors (in Board of Director) of bidder is a relative of any Director (in Board of Director) of TFL or (ii) the bidder is not a firm in which any Director (in Board of Director) of TFL or their relative is a partner.	Confirmed ☐ Not confirmed ☐
15.	All correspondence must be in ENGLISH language only	
16.	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.	
17.	Bidder confirms that all Bank charges associated with Bidder's Bank regarding release of payment etc. shall be borne by Bidder.	
18.	No Deviation Confirmation: 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 any 'deviation / exception' is mentioned or noticed, Bidder's Bid	

Sl.	DESCRIPTION	BIDDER'S CONFIRMATION
	may be rejected.	
19.	If Bidder becomes a successful Bidder pursuant to the provisions of the Tender Document, the following Confirmation shall be automatically become enforceable: "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 & agreed that the Government of India is not a party to the Contract/Agreement and has no liabilities, obligations or rights thereunder. 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."	
20.	Bidder to ensure all documents as per tender including clause 11 of Section III and all Formats are included in their bid.	
21.	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 Bidding document, the quoted rates will deemed to be inclusive of cost incurred for such activities unless otherwise specifically excluded. Bidder confirms to perform for fulfilment of the contract and completeness of the supplies in all respect within the scheduled time frame and quoted price.	
22.	Bidder hereby confirms that they are not on 'Holiday' by OWNER or any of the JV partners of TFL (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. Further, Bidder confirms that neither they 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 TFL viz. GAIL, RCF, CIL, FCIL.	

SI.	DESCRIPTION	BIDDER'S CONFIRMATION
	Bidder also confirms that they are not under any liquidation, court receivership or similar proceedings or 'bankruptcy'. 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. 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.	
23	Bidder certifies that they would adhere to the Fraud Prevention Policy of TFL ~~[available on TFL's website (www. https://tflonline.co.in/)]~~ and shall not indulge themselves or allow others (working in TFL) to indulge in fraudulent activities and that they would immediately apprise TFL of the fraud/suspected fraud as soon as it comes to their notice. Concealment of facts regarding their involvement in fraudulent activities in connection with the business transaction(s) of TFL is liable to be treated as crime and dealt with by the procedures of TFL as applicable from time to time.	
24	Bidder confirms that (i) any variation in GST at the time of supplies for any reasons, other than statutory, including variations due to turnover, shall be borne by them and (ii) any error of interpretation of applicability of rate of GST (CGST & SGST/ UTGST or IGST) on components of an item and/or various items of tender by them shall be dealt as per clause no. 13.13 of Section-III.	
25	Bidders confirm to submit signed copy of Integrity Pact (wherever included in tender). If Bidder is a partnership concern or a consortium, this agreement must be signed by all partners or consortium members.	
26.	Bidder confirms that there is no conflict of interest with other bidders, as per clause no.4.2 of Section-III (ITB) of Tender Document.	
27.	Bidder confirms that, in case of contradiction between the confirmations provided in this format and to the 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:

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 to concerned executive in TFL/PDIL issued the tender, by filling up the Format)

To,
M/s TALCHER FERTILIZERS LIMITED
TALCHER

SUB:
TENDER NO:

Dear Sir,

We hereby acknowledge receipt of a complete set of bidding documents 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 : .....
  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 : .....

F-7

BIDDER'S EXPERIENCE

To,

M/s TALCHER FERTILIZERS LIMITED
TALCHER

SUB:
TENDER NO:

Sl. No	Detailed Description of Job	LOA /WO No. and date	Full Postal Address & phone nos. of Client. *Name, designation and address of Engineer/ Officer-in-Charge*	Capacity	Value of Contract/ Order (*Specify* Currency Amount)	Date of Commencement	Scheduled Completion Time (Months)	Date of Actual Completion	Reasons for delay in execution, if any	Details of satisfactory operation from the date of Acceptance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

Place:
Date:

[Signature of Authorized Signatory of Bidder]

Name:
Designation:
Seal:

F-8(A)

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
1.0	Digitally Signing (in case of e-bidding)/ Signing and Stamping (in case of manual bidding) on each sheet of offer, original bidding document including SCC, ITB,GCC, SOR DRAWINGS Corrigendum (if any)	
2.0	Confirm that the following details have been submitted in the Un-priced part of the bid	
i	Covering Letter, Letter of Submission	
ii	EMD / Declaration for Bid Security as per provisions of Tender	
iii.	Digitally signed (in case of e-tendering) or 'signed & stamped (in case of Manual tender) tender document along with drawings and addendum (if any)	
iv	Power of Attorney in the name of person signing the bid.	
v	Confirm submission of document alongwith un-priced bid as per bid requirement (including cl.no.11.1.1 of Section-III).	
3.0	Confirm that all format duly filled in are enclosed with the bid duly Digitally Signed (in case of e-bidding)/ / Signed and Stamped (in case of manual bidding) by authorised person(s)	
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 Undertaking as per *Form-II to Annexure-V to Section-III* and Certification 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 other than companies) as per *Form-I to Annexure-V to Section-III* are submitted. (Applicable for all bidders)	
6.0	Confirm that Undertaking as per Form-1 to Annexure-VII have been submitted by the bidder (Guidelines from Procurement from a Country sharing a Land Border with India)	
7.0	Confirm submission of Checklist against Bid Evaluation Criteria as per format F-8(B)	

Place:
Date:

[Signature of Authorized Signatory of Bidder]

Name:
Designation:

F-8(B)

CHECKLIST FOR BID EVALUATION CRITERIA (BEC) QUALIFYING DOCUMENTS
(refer Section II of Tender document)

BEC Clause No.	Description	Documents required for qualification	Documents Submitted by Bidder	Documents attested as per Section-II of Tender	Reference Page No. of the Bid submitted
	Technical BEC				
1.	**Experience**	*(a) To meet the criteria 1.1 above, Bidder must submit Copy of Detailed Letter of Acceptance (DLOA) / Work Order / relevant extract of work Order/ Contract Agreement along with detailed scope of work and Completion / Acceptance Certificate.* *The Detailed Letter of Acceptance (DLOA) / Work Order / Contract Agreement must clearly indicate nature of Work, period and contract value. Similarly, the Completion Certificate/ Acceptance Certificate must clearly indicate reference of relevant work order/ DLOA/ Contract Agreement, Name of Work, Contract Value, Completed order value and date of completion.*		Yes/No	
2	**Experience of bidder acquired as a subcontractor**	Certificate from End User			
3.	**Job executed for Subsidiary / Fellow subsidiary/ Holding company.**	*Tax paid invoice(s) duly certified by statutory auditor of the bidder towards payment of statutory tax in support of the job executed for Subsidiary / Fellow subsidiary/ Holding company.*		Yes/No	
4.	**Any other technical criteria in BEC**			Yes/No	
	Financial BEC				

1.	**Average Annual Turn Over**	Audited Financial Statements [including Auditor's Report, Balance sheet, Profit & Loss Accounts statements, Notes & schedules etc.] for preceding three Audited Financial Years	Submitted	Yes/No	
2.	**Net Worth**	*Audited Financial Statements [including Auditor's Report, Balance sheet, Profit & Loss Accounts statements, Notes & schedules etc.] for last Audited Financial Year.*	Submitted (*Mention specific year ……*)	Yes/No	
3.	**Working Capital**	*Audited Financial Statements [including Auditor's Report, Balance sheet, Profit & Loss Accounts statements, Notes & schedules etc.] for last Audited Financial Year.* *If the bidder's working capital is negative or inadequate, the bidder shall submit a letter (in prescribed format) from their bank having net worth not less than Rs.100 Crores, confirming the availability of line of credit for at least working capital requirement as stated above.*	Submitted (*Mention specific year……*) Submitted/ Not Applicable *(Bidder to tick appropriate option)*	Yes/No	
4.	**Format for Details of financial capability of Bidder**	*Bidder shall submit "Details of financial capability of Bidder" in prescribed format duly signed and stamped by a chartered accountant / Certified Public Accountant (CPA).*	Submitted		

Place:
Date:

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

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 FERTILIZERS LIMITED
TALCHER

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 TFL'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

Note:
This Declaration Letter for line of credit shall be from single bank only. Letters from multiple banks shall not be applicable. However, banking syndicate will be acceptable wherein a group of banks can jointly provide line of credit to the bidder.

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:	
Total (A)	
Average Annual Financial Turnover during the last three financial years (A/3)	

B. NETWORTH* AS PER AUDITED FINANCIAL STATEMENT OF PRECEDING FINANCIAL YEAR:

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 the 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.

Name of Audit Firm:
Chartered Accountant/CPA
Date:

Membership No.:

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

Instructions for Format F-10:

1. The Separate Pro-forma shall be used for each member in case of JV/ Consortium (If applicable).

2. The financial year would be the same as one normally followed by the bidder for its Annual Report.

3. 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.

4. For the purpose of this Tender document:

   (i) **Annual Turnover** shall be "Revenue from Operations" as per profit & Loss account of audited annual financial statements.

   (ii) **Working Capital** shall be "Current Assets less Current liabilities" and

   (iii) **Net Worth** shall be Aggregate value of the paid-up share capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated losses, deferred expenditure and miscellaneous expenditure not written off, if any, but does not include reserves created out of revaluation of assets, write back of depreciation and amalgamation.

In case the date of constitution/incorporation of the bidder is less than 3 years old, the average turnover in respect of the completed financial years after the date of constitution/ incorporation shall be taken into account for minimum Average Annual Financial Turnover criteria.

5. 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.

6. This certificate is to be submitted on the letter head of Chartered Accountant/CPA.

F-11

FORMAT FOR CONSORTIUM AGREEMENT
(ON NON- JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)
CONSORTIUM/JV AGREEMENT-

Not Applicable

F-12

BIDDER'S QUERIES FOR PRE BID MEETING

To,

M/s TALCHER FERTILIZERS LIMITED
TALCHER

SUB:

TENDER NO:

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

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

SIGNATURE OF BIDDER: _____

NAME OF BIDDER**:** _____

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E-Banking Mandate Form

(To be issued on vendors 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 TFL 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 TFL 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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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.

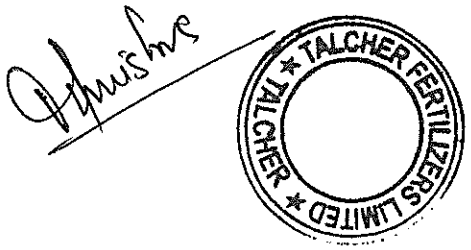
e) The Counterparty shall inform the Independent External Monitor.
   i) If it received any demand, directly or indirectly, for a bribe/ favour or any illegal gratification/ payment / benefit;
   ii) If it comes to know of any unethical or illegal payment / benefit;
   iii) If it makes any payment to 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 Sanjeev Prasad Narain Singh (Email ID: spns108@gmail.com)
ii) Shri Anil Kumar Sharma (Email ID: aksharma1512@gmail.com)

This panel is authorised to examine / consider all references made to it under this tender/ contract. "The bidder(s), in case of any dispute(s) / complaint(s) pertaining to this tender falling under provisions of Integrity Pact may raise the same either directly with the IEMs on the panel viz Shri Sanjeev Prasad Narain Singh (Email ID: spns108@gmail.com) & Shri Anil Kumar Sharma (Email ID: aksharma1512@gmail.com) or with CC to them through their Nodal Officer - Sh. Vivek Mishra, Sr. Mgr. (C&P) – Email: vivekmishra@tflonline.co.in, Address: Talcher Fertilizers Limited, Administrative Building, Post – Vikrampur, Dist. Angul, Odisha - 759106. On receipt of such complaints/representations, Nodal Officer shall coordinate with IEM Panel and TFL authorities concerned for their disposal as per extant guidelines."

ANNEXURE-2

INTEGRITY PACT

(To be executed on plain paper)

Between Talcher Fertilizers Limited (TFL) [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.

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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,

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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"

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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 IP by the sub-contractor. It is to be ensured by him that all sub-contractors also sign the IP.

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 documents / records pertaining to the contract for which a complaint or issue is raised before them, as and when warranted. However, the documents / records / information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed. It will be obligatory for him/her to treat the information and documents of the Bidders / Contractors as confidential. He / she reports to 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

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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 MD, TFL within 30 days 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 MD, TFL, a substantiated suspicion of an offence under relevant IPC/PC Act, and MD, TFL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, then, onlv in case of very serious issue having a specific verifiable Vigilance angle, the matter should be reported directly to the Central Vigilance Commission.

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.

10. After award of contract, the IEMs shall look into any issue relating to execution of contract, if specifically raised before them. As an illustrative example, if a contractor who has been awarded the contract, during the execution of contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs.

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 MD, TFL.

Section 10 – Miscelleneous provisions

TALCHER FERTILIZERS LIMITED * TALCHER *

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 Joint Venture or 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.

Vivek Mishra
Senior Manager (C&P)
Talcher Fertilizers Limited
Talcher, Odisha

(For & on Behalf of Principal)

(For & on Behalf of Bidder/Contractor)

(Office Seal)

(Office Seal)

Place ----------
Date ----------

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

B. SUNIL PATRO, DY. MGR.
TFL, TALCHER, ANGUL, ODISHA

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 wo rk 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 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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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.	Refer FAQs as available on CPP Portal e-Procurement).
6.0	Are there are any MSE (Micro & Small Enterprises) benefits available?	Refer Clause No. 40 of Instructions to Bidders of Tender Document.
7.0	Are there are any benefits available to Startups?	Refer Clause No. 49 of Instructions to Bidders of Tender Document.

All the terms and conditions of Tender remain unaltered.

Form F-17

(Not Applicable for this Tender)

PROFORMA OF BANK GUARANTEE FOR MOBILISATION ADVANCE
(ON NON-JUDICIAL PAPER OF APPROPRIATE VALUE)

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

Dear Sir(s),

In consideration of the Talcher Fertilizers Limited, hereinafter called the "Owner" which expression shall unless repugnant to the context or meaning thereof include its successors, executors, administrators and assignees, having awarded to M/s..... having its registered office at ..... hereinafter referred as the 'CONTRACTOR', which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assignees, a contract hereinafter referred to as the 'Contract' for related works..... referred to as the 'WORK' on terms and conditions set out, inter-alia in the Owner's Contract / DLOA / FOA No.....dated..... valued at..... (in words & figures) and as the Owner having agreed to make an advance payment (herein after referred as Mobilization advance) for the performance of the above contract to the CONTRACTOR amounting to.....(in words & figures) as an advance against Bank Guarantee to be furnished by the CONTRACTOR.

We..... hereinafter referred to as the BANK which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assignees having our office at..... do hereby undertake to give the irrevocable and unconditional guarantee and do hereby undertake to pay the OWNER on first demand without any demur, reservation, contest, recourse, protest and without reference to the CONTRACTOR any and all monies payable by the CONTRACTOR by reason of any breach by the said CONTRACTOR of any of the terms and conditions of the said Contract to the extent of..... till the said advance is adjusted as aforesaid at any time upto..... We agree that the guarantee herein contained shall continue to be enforceable till the sum due

to the Owner on account of the said advance is adjusted/ recovered in full as aforesaid or till the Owner discharges this guarantee **in writing.**

The OWNER shall have the fullest liberty without affecting in any way the liability of the BANK under this guarantee, from time to time to vary the advance or to extend the time for performance of the works by the CONTRACTOR. The BANK shall not be released from its liability under these presents by any exercise of the Owner of the liberty with reference to the matter aforesaid.

The Owner shall have the fullest liberty, without reference to CONTRACTOR and without affecting this guarantee to postpone for any time or from time to time the exercise of any powers vested in them or of any right which they might have against the CONTRACTOR, and to exercise the same at any time in any manner, and either to enforce or to forebear to enforce any power, covenants contained or implied in the Contract between the OWNER and the CONTRACTOR or any other course or remedy or security available to the OWNER and the BANK shall not be released of its obligations under these presents by any exercise by the OWNER of its liberty with reference to matters aforesaid or other acts of omission or commission on the part of the OWNER or any other law would, but for this provision, have the effect of releasing the BANK.

The right of the OWNER to recover the outstanding sum of advance upto Rs.....from the BANK in the manner aforesaid **is absolute and unequivocal and** will not be affected or suspended by reason of the fact that any dispute or disputes has or have been raised by the CONTRACTOR and/or that any dispute or disputes is or are pending before any officer, tribunal or court **or arbitrator or any other authority/forum** and any demand made by OWNER on the BANK shall be conclusive and binding.

The BANK further undertakes not to revoke this guarantee during its currency without previous consent of the OWNER and further agrees that the guarantee contained shall continue to be enforceable **until it is discharged by TFL in writing.**

The BANK also agrees that the OWNER shall at its option be entitled to enforce this guarantee against the BANK as a principal debtor, in the first instance, notwithstanding any other security or guarantee that OWNER may have in relation to the CONTRACTOR's liabilities towards the said advance.

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.

Therefore, we hereby affirm that we are guarantors and responsible to you on behalf of the 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 Contractor to be in default under the contract and without caveat or argument, any sum or sums within the limits of _____(amount of guarantee) as aforesaid, without your needing to prove or show grounds or reasons for your demand or the sum specified therein.
We have power to issue this guarantee in your favour under Memorandum and Articles of Association and the undersigned has full power to do so under the Power of Attorney/ resolution of the Board of Directors dated..... accorded to him by the BANK.

Notwithstanding anything contained herein:

a) The Bank's liability under this Guarantee shall not exceed (currency in figures) _____ (currency in words only) _____

b) This Guarantee shall remain in force upto _____ (three months beyond Completion Period) and any extension(s) thereof; and

c) 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.

Dated.....this.....day of.....20 .....

Signed by

(Person duly authorised by Bank)

Place:

WITNESS :

1..... (Signature)

..... (Printed Name)

..... (Designation)

2..... (Signature)

..... (Printed Name)

..... (Designation)
(Common Seal)

F-17 (A)

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

1. Bank Guarantee No.	
2. Vendor Name	
3. Nature of Bank Guarantee [Please Tick (□) whichever is applicable]	Contract Performance Security (CPS) □ Advance □
Purchase Order (PO) / Fax of Acceptance (FOA) / Detailed Letter of Acceptance (DLOA) No.	
Details of Bank issuing Bank Guarantee (BG)	
A. Name	
B. E-mail ID	
C. Address	
D. Phone No. / Mobile No.	

F-18

(Not Applicable for this Tender)

PROFORMA FOR BANK GUARANTEE FOR PAYMENTS TOWARDS PLACEMENT OF ALL PURCHASE ORDERS OF MAJOR TAGGED ITEMS.

(To be submitted on Rs. 500/-(five hundred) non judicial stamp paper)

Ref.....
Bank Guarantee No.--------- Date.....

To,
M/s Talcher Fertilizers Limited

_____

Dear Sir(s),

In consideration of the Talcher Fertilizers Limited, hereinafter called the "Owner" which expression shall unless repugnant to the context or meaning thereof include its successors, executors, administrators and assignees, having awarded to M/s..... having its registered office at ..... hereinafter referred as the 'CONTRACTOR', which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assignees, a contract hereinafter referred to as the 'Contract' for related works..... referred to as the 'WORK' on terms and conditions set out, inter-alia in the Owner's Contract / DLOA / FOA No.....dated..... valued at..... (in words & figures) and as the Owner having agreed to make milestone payments (for the performance of the above contract to the CONTRACTOR amounting to.....(in words & figures) against Bank Guarantee to be furnished by the CONTRACTOR.

We..... hereinafter referred to as the BANK which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assignees having our office at..... do hereby undertake to give the irrevocable and unconditional guarantee and do hereby undertake to pay the OWNER on first demand without any demur, reservation, contest, recourse, protest and without reference to the CONTRACTOR any and all monies payable by the CONTRACTOR by reason of any breach by the said CONTRACTOR of any of the terms and conditions of the said Contract to the extent of.....We agree that the guarantee herein contained shall continue to be enforceable till the Owner discharges this guarantee **in writing.**

The OWNER shall have the fullest liberty without affecting in any way the liability of the BANK under this guarantee, from time to time to vary the amount or to extend the time for performance of the works by the CONTRACTOR. The BANK shall not be released from its liability under these presents by any exercise of the Owner of the liberty with reference to the matter aforesaid.

The Owner shall have the fullest liberty, without reference to CONTRACTOR and without affecting this guarantee to postpone for any time or from time to time the exercise of any powers vested in them or of any right which they might have against the CONTRACTOR, and to exercise the same at any time in any manner, and either to enforce or to forebear to enforce any power, covenants contained or implied in the Contract between the OWNER and the CONTRACTOR or any other course or remedy or security available to the OWNER and the BANK shall not be released of its obligations under these presents by any exercise by the OWNER of its liberty with reference to matters aforesaid or other acts of omission or commission on the part of the OWNER or any other law would, but for this provision, have the effect of releasing the BANK.

The right of the OWNER to recover the outstanding sum upto Rs..... from the BANK in the manner aforesaid **is absolute and unequivocal and** will not be affected or suspended by reason of the fact that any dispute or disputes has or have been raised by the CONTRACTOR and/or that any dispute or disputes is or are pending before any officer, tribunal or court **or arbitrator or any other authority/forum** and any demand made by OWNER on the BANK shall be conclusive and binding.

The BANK further undertakes not to revoke this guarantee during its currency without previous consent of the OWNER and further agrees that the guarantee contained shall continue to be enforceable **until it is discharged by TFL in writing.**

The BANK also agrees that the OWNER shall at its option be entitled to enforce this guarantee against the BANK as a principal debtor, in the first instance, notwithstanding any other security or guarantee that OWNER may have in relation to the CONTRACTOR's liabilities towards the said milestone payment .

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.

Therefore, we hereby affirm that we are guarantors and responsible to you on behalf of the 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 Contractor to be in default under the contract and without caveat or argument, any sum or sums within the limits of _____(amount of guarantee) as aforesaid, without your needing to prove or show grounds or reasons for your demand or the sum specified therein.

Notwithstanding anything contained hereinabove, our liability under this guarantee is restricted to _____ and it will remain in force upto and including _____ (this date shall be initially 15 months from date of FOA) and shall be extended from time to time for such periods as may be advised by M/s_____ on whose behalf this guarantee has been given.

We have power to issue this guarantee in your favour under Memorandum and Articles of Association and the undersigned has full power to do so under the Power of Attorney/ resolution of the Board of Directors dated..... accorded to him by the BANK.

Notwithstanding anything contained herein:

9.

a) The Bank's liability under this Guarantee shall not exceed (currency in figures) _____ (currency in words only) _____

b) This Guarantee shall remain in force upto _____ (this date shall be initially 15 months from date of FOA) and any extension(s) thereof; and

c) 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.

Dated.....this.....day of.....20 .....

Signed by

(Person duly authorised by Bank)

Place:

WITNESS :

1..... (Signature)
..... (Printed Name)
..... (Designation)

2..... (Signature)
..... (Printed Name)
..... (Designation)

(Common Seal)

F-19

FORMAT OF LETTER OF NO DEVIATIONS
(ON BIDDER'S LETTERHEAD)

(NIT NO : ……. DATED …….)

We * hereby agree to fully comply with, abide by and accept without variation, deviation or reservation all technical, commercial and other condition whatsoever of the Bidding Documents and all Addenda / Corrigenda / Amendment/ Clarifications issued by OWNER.

We further hereby confirm that the bid is submitted in accordance of Tender Document and contains no deviation and the price bid submitted may be treated to conform to, in all respects, with the terms and conditions of the said tender documents including all Addenda / Corrigenda/ Amendment /Clarifications.

For and on behalf of* : ……..……
Stamp & Signature** : ……
Name : ……
Designation : ……
Date : ……

*Here fill in the name of bidder.
**The Letter of *No Deviation* must be signed by the person (s) authorized to sign as per POA.

F-20

POWER OF ATTORNEY (POA)

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

TENDER NO:

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.

(*) In case of a single Bidder, the Power of Attorney shall be issued 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.

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.: _____

F-21

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:
LOA 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:

Form F-22

UNDERTAKING REGARDING SUBMISSION OF 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:

F-23

PROFORMA FOR CONTRACT AGREEMENT

(To be executed on non-judicial stamp paper of appropriate value)

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.

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.

   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
on behalf of EMPLOYER

TALCHER FERTILIZERS LIMITED

_____

Date :_____

Place:_____

Signed and Delivered for and
on behalf of the CONTRACTOR.

NAME OF CONTRACTOR

_____

Date :_____

Place:_____

IN PRESENCE OF TWO WITNESSES

1._____

2._____
_____
_____

1. _____

2. _____
_____
_____

F-24

NO CLAIM CERTIFICATE
(TO BE SUBMITTED BEFORE RELEASE OF CPS/SECURITY DEPOSIT)

[On the Letter-head of Supplier/Vendor]

We, _____, a company incorporated under the laws of India/ a Consortium between *___ and *____ (*name of Consortium partners to be inserted*)/ a Partnership Firm consisting of *___ and *___ (*name of Partners to be inserted*)/ a Sole Proprietorship (as the case may be), having its registered office at _____ and carrying on business under the name and style M/s. _____ were awarded the contract by TFL in reference to Tender No. _____ dated _____ ("Order/Contract").

After completion of the above-said items/job under the Order/Contract, we have scrutinized all our claims, contentions, disputes, issues and we hereby confirm that after adjusting all payments received by us against our R.A. Bills and final bill, we have no claims, dues, issues and contentions from TFL.

We further absolve TFL from all liabilities present or future arising directly or indirectly out of the Contract.

There is no economic duress or any other compulsion on us for submission of this no claim certificate.

Signature with Seal of Supplier/Vendor

Dated:

GENERAL CONDITIONS OF CONTRACT

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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.

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 unforseen 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.

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 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 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 slipring induction motors with suitable starting devices as approved 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 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 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:

a) 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.

b) 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.

c) 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 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:**	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.
		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 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.

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);
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 DOCUMENTS, to have generally obtained his own information in all matters whatsoever that might affect the carrying out of the works at the schedules 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 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 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 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 (*)

(Clause not applicable for this Tender)

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.

(*) 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 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) <u>TO DETERMINE THE CONTRACT</u> 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) <u>WITHOUT DETERMINING THE CONTRACT</u> 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.

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 ensure 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 part without being in any way liable for any compensation payment to the estate of the diseased 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 diseased 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 of 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 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.

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.

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 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 <u>TO THE CONTRACTOR:</u>

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.

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.

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:

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 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 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 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. <u>For Item Rate Contract</u>

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 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. <u>For Lumpsum Contracts</u>

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.

60.3 If, the executed contract value decreases by more than 10% of the original contract value and vendor/contractor request for reduction in Contract Performance Security (CPS)/ Security Deposit (SD) the same is allowed after certification of EIC. In case the CPS/SD is submitted in from of DD or online transfer or deducted from payment CPS/SD amount in excess of required CPS/SD is to be released/returned to contractor/ vendor. In case Contract Performance Security (CPS) is submitted in the form of Bank Guarantee/FDR/ Insurance Surety Bond the Vendor/ Contractor can reduce the Bank Guarantee/FDR/ Insurance Surety Bond and submit amended Bank Guarantee/FDR/ Insurance Surety Bond accordingly. TFL will provide the necessary communication for the same to issuing bank/Insurance company if required. Alternatively Vendor/ Contractor has option to submit the new Bank Guarantee/FDR/ Insurance Surety Bond of requisite value

and upon receipt & confirmation of same the earlier Bank Guarantee/FDR/ Insurance Surety Bond can be returned.

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 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, 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

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

Tender)

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 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 form 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 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 dismantling:

69.1 If the CONTRACTOR in the course of execution of the WORK is called upon to 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 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 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 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 (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 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) <u>CONTRACTOR'S REMUNERATION:</u>

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 to the CONTRACTOR under the CONTRACT.

ii) <u>SCHEDULE OF RATES TO BE INCLUSIVE:</u>

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.

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 sixtuplicate 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 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 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 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 <u>APPLICATION FOR COMPLETION CERTIFICATE:</u>

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.

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 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 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:

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 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 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 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.

ii) <u>PAYMENT OF CLAIMS AND DAMAGES:</u>

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.

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 <u>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:</u>

"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 safety provisions as per safety codes of C.P.W.D., Indian Standards Institution. The Electricity Act, The Mines Act and such other acts as applicable.

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 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 of 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.

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 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:

a) 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.

b) 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.

c) 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.

d) 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.

e) 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 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.

117 Care in handling inflammable gas:

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

118 Temporary combustible structures:

118.1 Temporary combustible structures will not be built near or around work site.

119 Precautions against fire:

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.

120 Explosives:

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.

121 Mines act:

121.1 SAFETY CODE: 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.

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 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.

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 **"Supply Cum Erection of Electrical works at CISF Barrack, Quarter Guard and other allied buildings for OSBL facilities on Item Rate basis at Talcher Fertilizers Limited, Talcher, 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 21º 10" N Latitude and 82º 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.

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 over-ride 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/Project Manager 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/Project Manager, 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).

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, 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.

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 anywise 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.

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, and 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 anywise 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

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 PMC / 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/PMC 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

Construction water & power shall be provided by TFL at single point on chargeable basis. Further distribution of water and power shall be arranged by contractor itself. Presently @ of Rs 7.20/Cum for Construction Water and Rs 10.00/KVAH for Construction Power is applicable .In case of any escalation by statutory authorities in the unit rates during execution of Contract, the same shall be borne by Contractor

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

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 quantity shown against the various items are only approximate and may vary to any extent individually or may be deleted all together, subject to conditions given in General Conditions of Contract in Bidding Document. No claim shall be entertained during currency of this Contract towards any items due to the above.

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:

Sr. No.	Description of Work	Completion Time
1.	**"Supply Cum Erection of Electrical works at CISF Barrack, Quarter Guard and other allied buildings for OSBL facilities on Item Rate basis at Talcher Fertilizers Limited, Talcher, Odisha"**	**10 Months**

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.

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 issued by the CONTRACTOR. Approved working drawings submitted by the CONTRACTOR progressively during the pendency of the contract, shall be approved/ marked "Good for execution/ construction" by Owner/ Consultant after due diligence. The Contractor shall not be entitled to put forth any claim whatsoever on account of delay in getting approval of the drawings to the Owner/ Consultant, if contractor fails to incorporate the OWNERs/PMC comments timely.

Fabrication drawing, if any shall be prepared by the contractor itself and submitted to the Owner/PMC for information

12.0 SERVING OF NOTICES

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 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

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 MEASURMENT OF WORKS

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.

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

Defect Liability Period shall be 12 months from the date of completion of works in all respects as declared by EIC/PROJECT MANAGER.

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.

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 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, 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)

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 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 there 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 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 7th 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 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

Payment shall be released after submitting valid Tax Invoice. GST no. of Contractor as well as Owner should be mentioned by the Contractor on Invoice.

Following terms of payment shall be applicable:

40.1 **Mobilization Advance:** Not Applicable

40.2 **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:

A) FOR CIVIL & STRUCTURAL WORKS:

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.

B) FOR ELECTRICAL WORK:

i. For Only Supply Items

- 80% upon receipt of material at site and acceptance of equipment/materials
- 10% after completion of the erection
- 5 % after Inspection and Testing
- Balance 5% (Retention Money) shall be released along with final bill

ii. For Only Erection Items

- 80% on completion of erection / Installation

- 15% after inspection/testing
- Balance 5% (Retention Money) shall be released along with final bill

iii. For Items involving both Supply & Erection

- 65% on receipt and acceptance of material at site.
- 20% on completion of erection / Installation.
- 10% on Inspection & testing.
- Balance 5% (Retention Money) shall be released along with final bill

C) For Lumpsum Item:

- 60% shall be paid after material receipt at site
- 30 % shall be paid after completion of erection / Installation.
- 5% on Inspection & testing.
- Balance 5% (Retention Money) shall be released along with final bill.

Note: For Material supplied in "Lot": Payment shall be done on pro-rata basis as approved & certified by Engineer In-charge. However, Bidder shall submit the billing break-up for "Lot Items" for approval of Engineer In-charge.

.40.3 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 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.

40.4 **PAYING AUTHORITY**

Director (Finance),
Administrative Building,
Talcher Fertilizers Limited, Talcher,
Post: Vikrampur, Dist. Angul,
Odisha-759106

40.5 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.

40.6 **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/ARPFC
iv. Insurance Contractor All Risk (CAR) Policy
v. Workmen compensation policy

40.7 Balance 10% (Retention Money) shall be released along with final bill subject to the following:

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 10% 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.

40.8 The contractor shall raise invoices on fortnightly basis. Bidder shall enclose all documents as per check list issued by CONSULTANT/TFL. However, EIC/Project Manager may authorize payments for bills more frequently i.e. periodicity of less than fortnight, depending on site requirements.

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.

However, in addition of Running Account Bill, the contractor has to submit the Monthly Progress Report. This report will acts as a mandatory document for submission of the bill. Failing in submission of the report, the invoice will not be processed further for payment

40.9 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.

40.10 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.

However, 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 10% of contract price in such case where recovery is required to be affected by the encashment as soon as the contractor receives such intimation from the owner / consultant.

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

42.1 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.

42.2 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.

42.3 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 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.

42.4 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.

42.5 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.

42.6 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.

42.7 All works and operations necessary to lift and to remove the material from port, ware-house, 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.

42.8 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).

42.9 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.

42.10 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 anywise 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.

42.11 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 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 APPROVAL OF MAJOR SUB-CONTRACTOR/VENDOR~~

~~Considering the multidisciplinary scope of work, Post award sub-contracting upto 50% of Contract value should be allowed subject to fulfillment of qualifying criteria of NIT as per Annexure-I to SCC and prior approval of PMC/ OWNER.~~

~~45.1 CONTRACTOR's entering into any SUB-CONTRACT shall require the prior approval of PMC/ OWNER. Contractor to submit duly filled and signed Format Annexure-I to SCC (APPROVAL OF CONSTRUCTION SUB-CONTRACTOR) for PMC/OWNER/ review and approval. CONTRACTOR shall provide name, address, fax/telex number and name of contact person of major VENDOR/SUB-CONTRACTOR as per Format.~~

~~45.2 The review, approval and consent by PMC/ OWNER as to the agreed SUB-CONTRACTOR's List or as to CONTRACTOR's entering into any SUB-CONTRACT shall not relieve CONTRACTOR of any of its duties, liabilities or obligations under this CONTRACT and CONTRACTOR shall be liable hereunder to the same extent as if any such Subcontract had not been entered into.~~

~~45.3 (a) CONTRACTOR shall supervise and direct the work of all SUB-CONTRACTORS and shall be responsible for all design, procurement; manufacturing; transportation; delivery; fabrication; construction; commissioning; start-up and testing means, erection; and for co-coordinating the work of SUB-CONTRACTORS.~~

~~(b) If CONTRACTOR fails to correct, or commence to correct and execute the correction with due diligence of deficient or defective work performed by any SUB-CONTRACTOR within reasonable time (provided it doesn't materially impact safe operation of plant), after receipt by CONTRACTOR of a notice from OWNER with respect thereto, OWNER may (but shall not be obligated to), after seven days following receipt by CONTRACTOR of an additional notice, and without prejudice to any other right or remedy take all reasonable steps to remedy such defective or deficient work at risk and cost of CONTRACTOR.~~

~~(c) CONTRACTOR shall require all SUB-CONTRACTORS to perform the SUB-CONTRACTS in accordance with the relevant requirements of the CONTRACT~~

~~including FINAL PROPOSAL, all APPLICABLE LAWS and APPLICABLE PERMITS, Prudent Utility Practice, Good Engineering Practices, the requirements of the NIT, and all Warranties of SUB-CONTRACTORS and Manufacturers and all insurance policies relating to the PLANT or the WORK.~~

~~(d) CONTRACTOR shall be solely responsible for paying each SUB-CONTRACTOR and any other person to whom any amount is due from CONTRACTOR for services, equipment, construction equipment, materials or supplies otherwise related to the PLANT or the WORK. CONTRACTOR shall take all reasonable steps and actions to ensure that such service, equipment, construction equipment materials and supplies and the like have been or will be received, inspected and approved and that such services have been or will be properly performed.~~

~~(e) In performing the duties incidental to its responsibilities hereunder, CONTRACTOR shall issue to the SUB-CONTRACTORS such directives and impose such restrictions as may be required to obtain such compliance herewith and with the terms of the SUBCONTRACTS.~~

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 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.

48.0 STATUTORY VARIATION IN TAXES AND DUTIES

48.1 No variation on account of taxes and duties, statutory or otherwise, (other than due to change in turnover) shall be payable by OWNER to CONTRACTOR, except for GST. Any statutory variation in GST, shall be payable up to COMPLETION PERIOD against documentary evidence. 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 Goods and Services provided to the OWNER shall be refundable to the OWNER at actuals within the COMPLETION PERIOD and also during the delayed contractual Project completion, if any. The CONTRACTOR 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.

48.2 Any new taxes, duties, cess, levies notified or imposed after the submission of Price Bid but before COMPLETION PERIOD shall be to OWNER's Account.

48.3 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 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.

48.4 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.

ANNEXURE - I

TO

SPECIAL CONDITIONS OF CONTRACT

SPECIFICATION

FOR

HEALTH, SAFETY AND

ENVIRONMENT (HSE) MANAGEMENT

Abbreviations:

AERB	:	Atomic Energy Regulatory Board
ANSI	:	American National Standards Institute
BARC	:	Bhabha Atomic Research Centre
BS	:	British Standard
PDIL	:	Projects & development India Limited
ELCB	:	Earth Leakage Circuit Breaker
EPC	:	Engineering, Procurement and Construction
EPCC	:	Engineering, Procurement, Construction and Commissioning
ESI	:	Employee State Insurance
GCC	:	General Conditions of Contract
GM	:	General Manager
GTAW	:	Gas Tungsten Arc Welding
HOD	:	Head of Department
HSE	:	Health, Safety & Environment
HV	:	High Voltage
IS	:	Indian Standard
IE	:	Indian Electricity
JSA	:	Job Safety Analysis
LOTO	:	Lock Out & Tag Out
LPG	:	Liquefied Petroleum Gas
LSTK	:	Lump Sum Turn Key
MV	:	Medium Voltage
PPE	:	Personal Protective Equipment
RCM	:	Resident Construction Manager or Site-in-Charge, as applicable
ROW	:	Right of Way
SCC	:	Special Conditions of Contract
SLI	:	Safe Load Indicator
TBM	:	Tool Box Talks

Construction Standards Committee

Convenor : Sh.

Members : Sh.
Sh.
Sh
Sh.
Sh.
Sh.

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STANDARD SPECIFICATION FOR HEALTH, SAFETY & ENVIRONMENT MANAGEMENT AT CONSTRUCTION SITES

1.0 SCOPE

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied by Contractors/Vendors including their sub-contractors/sub vendors during construction.

This specification is not intended to replace the necessary professional judgment needed to design & implement an effective HSE system for construction activities and the contractor is expected to fulfill HSE requirements in this specification as a minimum. It is expected that contractor shall implement best HSE practices beyond whatever are mentioned in this specification.

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 (Technical) Specifications. Where different documents stipulate different requirements, the most stringent shall apply.

2.0 REFERENCES

The document should be read in conjunction with following:

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Building and other construction workers Act,
- Indian Factories Act
- Job (Technical) specifications
- Relevant International / National Codes (refer Appendix-A for standards/codes on HSE)
- Relevant State & National Statutory requirements.
- Operating Manuals Recommendation of Manufacturer of various construction Machineries

3.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENT (HSE) MANAGEMENT SYSTEM TO BE COMPLIED BY BIDDERS

3.1 Management Responsibility

3.1.1 HSE Policy & Objectives

The Contractor should have a documented HSE policy duly & objectives to demonstrate commitment of their organization to ensure health, safety and environment aspects in their line of operations.
HSE Policy of the contractor shall be made available to Owner / PDIL at the place of execution of specific contract works, as a valid document.

3.1.2 Management System

The HSE management system of the Contractor shall cover the HSE requirements & commitments to fulfill them, including but not limited to what are specified under clause 1.0 and 2.0 above. The Contractor shall obtain the approval of its site specific HSE Plan from PDIL / Owner prior to commencement of any site works. Corporate as well as Site management of the Contractor shall ensure compliance of their HSE Plan at work sites in its entirety & in true spirit.

3.1.3 **Indemnification**

Contractor shall indemnify & hold harmless, Owner/PDIL & their representatives, free from any and all liabilities arising out of non-fulfillment of HSE requirements or its consequences.

3.1.4 **Deployment & qualifications of Safety personnel**

The Contractor shall designate/deploy various categories of HSE personnel at site as indicated below in sufficient number. In no case, deployment of safety Supervisor / Safety Steward shall substitute deployment of Safety Officer / Safety Engr what is indicated in relevant statute of BOCW Act i.e deployment of safety officer/Safety Engineer is compulsory at project site. The Safety supervisors, Safety stewards etc. would facilitate the HSE tasks at grass root level for construction sites and shall assist Safety Officer / Engineers.

a) Safety Steward

For every 250 workmen, one safety steward shall be deployed.

As a minimum, he shall preferably possess School leaving Certificate (of Class XII with Physics & Chemistry etc.) and trained in fire-fighting as well as in safety/occupational health related subjects, with minimum two year of practical experience in construction work environment and preferably have adequate knowledge of the language spoken by majority of the workers at the construction site.

b) Safety Supervisor

For every 500workmen, one safety Supervisor shall be deployed.

As a minimum, he shall possess a recognized Degree in Science (with Physics & Chemistry) or a diploma in Engg. or Tech. with minimum Two years of practical experience in construction work environment and should possess requisite skills to deal with construction safety & fire related day-to-day issues.

c) Safety Officer / Safety Engineer

One for every 1000 workers or part thereof shall be deployed.

Safety officer/Engineer Should Possess following Qualification & Experience :

(i) Recognized degree in any branch of Engg. or Tech. or Architecture with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than two years, **or** possessing recognized diploma in any branch of Engg. or Tech with practical experience of building or other construction work in supervisory capacity for a period of not less than five years.

(ii) Recognized degree or diploma in Industrial safety with one paper in Construction Safety

(iii) Preferably have adequate knowledge of the language spoken by majority of the workers at the construction site.

Alternately

(i) Person possessing Graduation Degree in Science with Physics & Chemistry and degree or diploma in Industrial Safety (from any Indian institutes recognized by

AICTE or State Council of Tech. Education of any Indian State) with practical experience of working in a building, plant or other construction works (as Safety Officer, in line with Indian Factories Act, 1958) for a period of not less than five years, may be considered as Safety Officer, in case Owner/Client of the project agrees for /approves the same.

d) HSE In-Charge

In case there is more than one Safety Officer at any project construction site, one of them, who is senior most by experience (in HSE discipline), may be designated as HSE In-Charge. Duties & responsibilities of such person shall be commensurate with that of relevant statute and primarily to coordinate with top management of Client and contractors.

In case the statutory requirements i.e. State or Central Acts and / or Rules as applicable like the Building and Other Construction Workers' Regulation of Employment and Conditions of Service- Act,1996 or State Rules (wherever notified), the Factories Act, 1948 or Rules (wherever notified), etc. are more stringent than above clarifications, the same shall be followed.

Contractors shall ensure physical availability of safety personnel at the place of specific work location, where Hot Work Permit is required / granted. No work shall be started at any of the project sites until above safety personnel & concerned Site Engineer of Contractor are physically deployed at site. The Contractor shall submit a HSE organogram clearly indicating the lines of responsibility and reporting system and elaborate the responsibilities of safety personnel in their HSE Plan.

The Contractor shall verify & authenticate credentials of such safety personnel and furnish Bio-Data/ Resume/ Curriculum Vitae of the safety personnel as above for PDIL/Owner's approval, at least 1 month before the mobilization. The Contractor, whenever required, shall arrange submission of original testimonials/certificates of their Safety personnel, to PDIL/Owner (for verification/scrutiny, etc.)

Imposition / Realization of penalty shall not absolve the Contractor from his/her responsibility of deploying competent safety officer at site.
Adequate planning and deployment of safety personnel shall be ensured by the Contractor so that field activities do not get affected because of non-deployment of competent & qualified safety people in appropriate numbers.

3.1.5 **Implementation, Inspection/Monitoring**

- The Contractor shall be fully responsible for planning, reporting, implementing and monitoring all HSE requirements and compliance of all laws & statutory requirements.
- The Contractor shall also ensure that the HSE requirements are clearly understood & implemented conscientiously by their site personnel at all levels at site.
- The Contractor shall ensure physical presence of their field engineers / supervisors, during the continuation of their contract works / site activities including all material transportation activities. Physical absence of experienced field engineers / supervisors of Contractor at critical work spot during the course of work, may invite severe penalization as per the discretion of EIC, including halting / stoppage of work.
- Contractor shall furnish their annual Inspection Plan, with regard to project issues /subjects, frequency and performers to PDIL/Owner.
- The Contractor shall regularly review inspection report internally and implement all practical steps / actions for improving the status continuously.

- The Contractor shall ensure important safety checks right from beginning of works at every work site locations and to this effect format No: HSE-10 "Daily Safety Check List" shall be prepared by field engineer & duly checked by safety personnel for conformance.
  The Contractor shall carry out inspection to identify various unsafe conditions of work sites/machinery/equipments as well as unsafe acts on the part of workmen/supervisor/engineer while carrying out different project related works.
  Adequate records for all inspections shall be maintained by the Contractor and the same shall be furnished to PDIL/Owner, whenever sought.
- The Contractor shall not carry-out work by engaging single worker anywhere without any supervisor anytime during day or night.
  To demonstrate involvement/commitment of site management of Contractor, at least one Safety Walk through in a month shall be carried out by Contractor's head of site (along with his area manager/field engineers) and a report shall be furnished to PDIL/Owner as per format No: HSE-1" Safety walk through report" followed by compliance for unsatisfactory remarks.
- As a general practice lifting tools/tackles, machinery, accessories etc. shall be inspected, tested and examined by competent people (approved by concerned State authorities) before being used at site and also at periodical interval (e.g. during replacement,extension, modification, elongation/reduction of machine/parts, etc.) as per relevant statutes. Hydra, cranes, lifting machinery, mobile equipments / machinery / vehicles, etc. shall be inspected regularly by only competent / experienced personnel at site and requisite records for such inspections shall be maintained by every contractor. Contractor shall also maintain records of maintenance of all other site machinery (e.g. generators, rectifiers, compressors, cutters, etc.) & portable tools/equipments being used at project related works (e.g. drills, abrasive wheels, punches, chisels, spanners, etc.). The Contractor shall not make use of arbitrarily fabricated 'derricks' at project site for lifting / lowering of construction materials.
- Site facilities /temporary. installations, e.g. batching plant, cement godown, DG-room, temporary electrical panels/distribution boards, shot-blasting booth, fabrication yards, etc. and site welfare facilities, like labour colonies, canteen/pantry, rest-shelters, motor cycle/bicycle-shed, site washing facilities, First-aid centers, urinals/toilets, etc. should be periodically inspected by Contractor (preferably utilizing HR/Admn. personnel to inspect site welfare facilities) and records to be maintained.

3.1.6 **Behaviour Based Safety**

- The contractor shall develop a system to implement Behaviour-Based Safety (BBS) through which work groups can identify, measure and change the behaviours of employees and workers
- The BBS process shall include the following:
  - Identify the behaviours critical to obtaining required safety performance.
  - Communicate the behaviours and how they are performed correctly to all
  - Observe the work force and record safe/at risk behaviours. Intervene with workers to give positive reinforcement when safe behaviours are observed. Provide coaching/correction when at risk behaviours are observed
  - Collect and record observation data
  - Summarize and analyze observation data
  - Communicate observation data and analysis results to all employees
  - Provide recognition or celebrate when safe behaviour improvements occur
  - Change behaviours to be observed or change activators or change consequences as appropriate.
  - Communicate any changes to workforce
- Contractor through its own HSE committee shall implement the above process.
  The necessary procedures and reporting formats shall be developed by the contractor for approval by PDIL/Owner.

- The HSE committee of contractor shall observe individual's behavior for safe practices adapted for utilization/execution of work for following as a minimum:-
  - PPE
  - Tools & equipment
  - Hazard Identification & control
  - House keeping
  - Confined space entry
  - Hot works
  - Excavation
  - Loading & unloading
  - Work At height
  - Stacking & storage
  - Ergonomics
  - Procedures

3.1.7 **Awareness and Motivation**

- The Contractor shall promote and develop awareness on Health, Safety and Environment protection among all personnel working for the Contractor.
- Regular awareness programs and fabrication shop / work site meetings at least on monthly basis shall be arranged on HSE activities to cover hazards/risks involved in various operations during construction.
- Contractor to motivate & encourage the workmen & supervisory staff by issuing / awarding them with tokens/ gifts/ mementos/ monetary incentives / certificates, etc.
- Contractor shall assess & recognize the behavioral change of its site engineers / supervisors periodically and constantly motivate / encourage them to implement HSE practices at project works

3.1.8 **Fire prevention & First-Aid**

- The Contractor shall arrange suitable First-aid measures such as First Aid Box (Refer Appendix-B for details), trained personnel/nurse (male) to administer First Aid, stand-by Ambulance vehicle and
- The Contractor shall arrange installation of fire protection measures such as adequate number of steel buckets with sand & water and adequate number of appropriate portable fire extinguishers (Refer Appendix-C for details) to the satisfaction of PDIL/Owner.
- The Contractor shall deploy trained supervisory personnel / field engineers to cater to any emergency situation.
- In case the number of workers exceeds 500, the Contractor shall position an Ambulance / vehicle and nurse on round the clock basis very close to the worksite.
- The Contractor shall arrange FIRE DRILL at each site at least once in three months, involving site workmen and site supervisory personnel & engineers. The Contractor shall maintain adequate record of such fire drills at project site

3.1.9 **Documentation**

The Contractor shall evolve a comprehensive, planned and documented system covering the following as a minimum for implementation and monitoring of the HSE requirements and the same shall be submitted for approval by owner/PDIL.

- HSE Organogram
- Site specific HSE Plan
- Safety Procedures, forms and Checklist. Indicative list of HSE procedures is attached as Appendix :H
- Inspections and Test Plan
- Risk Assessment & Job Safety Analysis for critical works.

- The monitoring for implementation shall be done by regular inspections and compliance of 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 responsibility of the Contractor. Any review/approval by PDIL/Owner shall not absolve contractor of his responsibility/liability in relation to fulfilling all HSE requirements.

3.1.10 **Audit**

The Contractor shall submit an Audit Plan to PDIL/Owner indicating the type of audits and covering following as minimum:

- Internal HSE audits regularly at least on quarterly basis by engaging internal qualified auditors (viz safety officers/Construction personnel having 5 years experience in construction safety and Lead Auditor Course :OSHA 18001certification).
- External HSE audits regularly at least on every six months by engaging qualified external auditors (viz safety officers/Construction personnel having 10 years experience in construction safety and Lead Auditor Course :OSHA 18001certification).

All HSE shortfalls/ non-conformances on HSE matters brought out during review/audit, shall be resolved forthwith (generally within a week) by Contractor & compliance report shall be submitted to PDIL/Owner.

In addition to above audits by contractor, the contractor's work shall be subjected to HSE audit by PDIL/Owner at any point of time during the pendency of contract. The CONTRACTOR shall take all actions required to comply with the findings of the Audit Report and issue regular Compliance Reports for the same to OWNER/ PDIL till all the findings of the Audit Report are fully complied.

Failure to carry-out HSE Audits & its compliance (internal & external) by Contractor, shall invite penalization.

3.1.11 **Meetings**

- The Contractor shall ensure participation of his top most executive at site (viz. Resident Construction Manager / Resident Engineer / Project Manager / Site-in-Charge) in Safety Committee / HSE Committee meetings arranged by PDIL/Owner usually on monthly basis or as and when called for. In case Contractor's top most executive at site is not in a position to attend such meeting, he shall inform PDIL/Owner in writing before the commencement of such meeting indicating reasons of his absence and nominate his representative – failure to do so may invite very stringent penalization against the specific Contractor, as deemed fit in Contract. The obligation of compliance of any observations during the meeting shall be always time bound. The Contractor shall always assist PDIL/Owner to achieve the targets set by them on HSE management during the project implementation.

- In addition, the Contractor shall also arrange internal HSE meetings chaired by his top most executive at site on weekly basis and maintain records. Such internal HSE meetings shall essentially be attended by field engineers / supervisors (& not by safety personnel only) of the Contractor and its associates. Records of such internal HSE meetings shall be maintained by the Contractor for review by PDIL/Owner or for any HSE Audits.

- Agenda of internal HSE meeting should broadly cover: -

a) Confirmation of record notes / minutes of previous meeting
b) Discussion on outstanding subjects of previous points / subjects, if any
c) Incidents / Accidents (of all types) at project site, if any
d) Current topics related to site activities / subjects of discussion
e) House keeping
f) Behavioral Safety
g) Information / views / deliberations of members / site sub Contractors
h) Report from Owner / Client
i) Status of Safety awareness, Induction programs & Training programs

The time frame for such HSE meeting shall be religiously maintained by one and all.

3.1.12 **Intoxicating drinks & drugs and Smoking**

- The Contractor shall ensure that his staff members & workers (permanent as well casual) shall not be in a state of intoxication during working hours and shall abide by any law relating to consumption & possession of intoxicating drinks or drugs in force.
- The Contractor shall not allow any workman to commence any work at any locations of project activity who is/are influenced / effected with the intake of alcohol, drugs or any other intoxicating items being consumed prior to start of work or working day.
- Awareness about local laws on this issue shall form part of the Induction Training and compulsory work-site discipline.

- The Contractor shall ensure that all personnel working for him comply with "No-Smoking" requirements of the Owner as notified from time to time. Cigarettes, lighters, auto ignition tools or appliances as well as intoxicating drugs, dry tobacco powder, etc. shall not be allowed inside the project / plant complex.

- Smoking shall be permitted only inside smoking booths exclusively designated & authorized by the Owner/PDIL.

3.1.13 **Penalty**

The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliances and also for repeated failure in implementation of any of the HSE provisions, PDIL/Owner may impose stoppage of work without any cost & time implication to the Owner and/or impose a suitable penalty.

The amount of penalty to be levied against defaulted Contractor shall be up to a cumulative limit of

2.0% (Two percent) of the contract value for Item Rate or Composite contracts with an overall cPDILing of 1, 00, 00, 000 (Rupees One crore)

0.5% (Zero decimal five percent) of the contract value for LSTK, OBE, EPC, EPCC or Package contracts with an overall cPDILing of 10, 00.00.000 (Rupees ten crores)

This penalty shall be in addition to all other penalties specified elsewhere in the contract. The decision of imposing stop-work-instruction and imposition of penalty shall rest with PDIL/Owner. The same shall be binding on the Contractor. Imposition of penalty does not make the Contractor eligible to continue the work in unsafe manner.

The amount of penalty applicable for the Contractor on different types of HSE violations is specified below:

Sl. No.	Violation of HSE norms	Penalty Amount
1.	For not using personal protective equipment (Helmet, Shoes, Goggles, Gloves, Full body harness, Face shield, Boiler suit, etc.)	Rs 500/- per day/ Item / Person.
2.	Working without Work Permit/Clearance	Rs 20000/- per occasion
3	Execution of work without deployment of requisite field engineer / supervisor at work spot	Rs. 5000/- per violation per day
4.	Unsafe electrical practices (not installing ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire/cables on the roads, electrical jobs by incompetent person, etc.)	Rs 10000/- per item per day.
5.	Working at height without full body harness, using non-standard/ rejected scaffolding and not arranging fall protection arrangement as required, like hand-rails, life-lines, Safety Nets etc.	Rs. 10000/- per case per day.
6.	Unsafe handling of compressed gas cylinders (No trolley, jubilee clips double gauge regulator, and not keeping cylinders vertical during storage/handling, not using safety cap of cylinder).	Rs 500/- per item per day.
7.	Use of domestic LPG for cutting purpose / not using flash back arresters on both the hoses/tubes on both ends.	Rs. 3000/- per occasion.
8.	No fencing/barricading of excavated areas / trenches.	Rs. 3000/- per occasion.
9.	Not providing shoring/strutting/proper slope and not keeping the excavated earth at least 1.5M away from excavated area.	Rs.5, 000/- per occasion.
10.	Non display of scaffold tags, caution boards, list of hospitals, emergency services available at work locations.	Rs.1000/- per occasion per day
11.	Traffic rules violations like over speeding of vehicles, rash driving, talking on mobile phones during vehicle driving, wrong parking, not using seat belts, vehicles not fitted with reverse horn / warning alarms / flicker lamps during foggy weather.	Rs. 2000/- per occasion per day
12.	Absence of Contractor's RCM/SIC or his nominated representative (prior approval must be taken for each meeting for nomination) from site HSE meetings whenever called by PDIL/Owner & failure to nominate his immediate deputy (in the site-organogram) for such HSE meetings.	Rs10000/- per meeting.
13.	Failure to maintain HSE records by Contractor Safety personnel, in line with approved HSE Plan/Procedures/Contract specifications.	Rs 10000/- per month.
14.	Failure to conduct daily site safety inspection (by Contractor's safety engineers/safety officers), internal HSE meeting, internal HSE Awareness/Motivation Program, Site HSE Training and HSE audit at predefined frequencies (as approved in HSE Plan).	Rs.10000/- per occasion.

Sl. No.	Violation of HSE norms	Penalty Amount
15.	Failure to submit the monthly HSE report by 5th of subsequent month to Project's Engineer-in-Charge / Owner	Rs. 10000/- per occasion and Rs. 1000/- per day of further delay.
16.	Poor House Keeping	Rs. 5000/- per occasion per subject
17.	Failure to report & follow up accident (including Near Miss) reporting system within specific time-frame.	Rs. 20000/- per occasion
18.	Degradation of environment (not confining toxic spills, spilling oil/lubricants onto ground)	Rs10000/- per occasion
19.	Not medically examining the workers before allowing them to work at height / to work in confined space / to work in shot-blasting / to work for painting / to work in bitumen or asphalt works, not providing ear muffs while allowing them to work in noise polluted areas, made them to work in air polluted areas without respiratory protective devices, etc.	Rs 5000/- per occasion per worker
20.	Violation of any other safety condition as per job HSE plan / work permit and HSE conditions of contract (e.g. using crowbar on cable trenches, improper welding booth, not keeping fire extinguisher ready at hot work site, unsafe rigging practices, non-availability of First-Aid box at site, not using hood with respiratory devices by blaster for shot//grit blasting, etc.)	Rs. 5000/- per occasion
21.	Failure to carry-out Safety audit in time (internal & external), close-out of identified shortfalls of Observations of Safety Aspects(OSA),etc	Rs. 20,000/- per occasion
22.	Carrying out sand blasting instead of grit/shot blasting	Rs. 50,000/- per day
23.	Failure to deploy adequately qualified and competent Safety Officer	Rs. 10000/- per day per Officer
24.	Utilization of hydra/ back-hoe loader for material shifting or any other unauthorized /unsafe lifting works	Rs 25,000/- per occasion
25.	Any incident / accident at project site has been caused because of willful negligence or gross violation of safety measures / provisions on the part of the Contractor or any of its sub-agencies	Rs 10,00,000/-per occasion
26.	Any violation not covered above	To be decided by PDIL/Owner.

X

The Contractor shall make his field engineers/supervisors fully aware of the fact that they keep track with the site workmen for their behavior and compliance of various HSE requirements. Safety lapses / defects of project construction site shall be attributable to the concerned job supervisor / engineer of the Contractor, (who remains directly responsible for safely executing field works). For repeated HSE violations, concerned job supervisor / engineer shall be reprimanded or appropriate action, as deemed fit, shall be initiated (with an information to PDIL & Owner) by the concerned Contractor.

Contractor shall initiate verbal warning shall be given to the worker/employee during his first HSE violation. A written warning shall be issued on second violation and specific training shall be arranged / provided by the Contractor to enhance HSE awareness/skill including feedback on the mistakes/ flaws. Any further violation of HSE stipulations by the erring individuals shall call for his forthright debar from the specific construction site. A record of warnings for each worker/employee shall be maintained by the Contractor, like by punching their cards / Gate passes or by displaying their names at the Project entry gate. Warnings, penalizations, appreciations etc. shall be discussed in HSE Committee meetings by site Head of the Contractor.

3.1.14 **Accident/ Incident investigation**

All accidents / incidents shall be informed to PDIL/Owner at least telephonically by Contractor immediately and in writing within 24 hours on Format No. HSE-2 as applicable , by Contractor. Thereafter, a Supplementary Accident / Incident investigation Report on Format No. HSE-3 shall be submitted to PDIL/Ownerwithin 72 hours. Near Miss incident(s),Dangerous accidents/incident shall also be reported on Format No. HSE-4 within 24 hours. The accident/ incident shall be investigated by a team of Contractor's senior Site personnel (involving Site-in-Charge or at least by his deputy) for establishing root-cause and recommending corrective & preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to PDIL/Owner. Owner/PDIL shall have the liberty to independently investigate such occurrences and the Contractor shall extend all necessary help and cooperation in this regard. PDIL/Owner shall have the right to share the content of this report with the outside world.

3.2 House Keeping

The Contractor shall ensure that a high degree of house keeping is maintained and shall ensure inter alia; the followings:

a) All surplus earth and debris are removed/disposed off from the working areas to designated location(s).
b) Unused/surplus cables, steel items and steel scrap lying scattered at different places within the working areas are removed to identify location(s).
c) All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified 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/ or these materials shall be transported with top surface wet.
j) The contractor shall ensure that the atmosphere in plant area and on roads is free from particulate matter like dust, sand, etc. by keeping the top surface wet for ease in breathing.
k) At least two exits for any unit area shall be assured at all times – same arrangement is preferable for digging pits / trench excavation / elevated work platforms / confined spaces etc.
l) Welding cables and the power cable must be segregated and properly stored and used .The same shall be laid away from the area of movement and shall be free from obstruction.
m) Schedule for upkeep/cleaning of site to be firmed up and implemented on regular basis

The Contractor shall carry-out regular checks (minimum one per fortnight) as per format No: HSE-11 for maintaining high standard of housekeeping and maintain records for the same.

3.3 HSE Measures

3.3.1 Construction Hazards

The Contractor shall ensure identification of all Occupational Health, Safety & Environmental hazards in the type of work he is going to undertake and enlist mitigation measures. Contractor shall carry out Job Safety Analysis (JSA)/Risk Analysis specifically for high risk jobs/crtical jobs like

a) Working at height (+2.0 Mts height) for cold (incl. colour washing, painting, insulation etc.) & hot works.
b) Work in confined space,
c) Deep excavations & trench cutting (depth > 2.0 mts.)
d) Operation & Maintenance of Batching Plant.
e) Shuttering / concreting (in single or multiple pour) for columns, parapets & roofs.
f) Erection & maintenance of Tower Crane.
g) Erection of structural steel members / roof-trusses / pipes at height more than 2.0 Mts. with or without crane.
h) Erection of pipes (full length or fabricated) at height more than 2.0 Mts. height with Crane of 100T capacity.
i) All lifts using 100T Crane plus mechanical pulling.
j) All lifts using two cranes in unison (Tandem Lifting).
k) Any lift exceeding 80% capacity of the lifting equipments (hydra, crane etc.).
l) Laying of pipes (isolated or fabricated) in deep narrow trenches – manually or mechanically.
m) Maintenance of crane / extension or reduction of crane-boom on roads or in yards.
n) Erection of any item at >2.0 Mts. height using 100T crane or of higher capacity
o) Hydrostatic test of pipes, vessels & columns and water-flushing.
p) Radiography jobs (in-plant & open field)
q) Work in Live Electrical installations / circuits
r) Handling of explosives & Blasting operations
s) Demolishing / dismantling activities
t) Welding / gas cutting jobs at height (+2.0 Mts.)
u) Lifting / placing roof-girders at height (+2.0 Mts.)
v) Lifting & laying of metallic / non-metallic sheet over roof/structures.
w) Lifting of pipes, gratings, equipments/vessels at heights (+2.0 Mts) with & without using cranes
x) Calibration of equipment, instruments and functional tests at yards / work-sites.
y) Operability test of Pump, Motors (after coupling) & Compressors.
z) Cold or Hot works inside Confined Space.
aa) Transportation & shifting of ODC consignments into project areas.
bb) Working in “charged/Live” elect. Panels
cc) Stress Relieving works (Electrically or by Gas-burners).
dd) Pneumatic Tests
ee) Card board blasting
ff) Chemical cleaning

and take feedback from PDIL/Owner. The necessary HSE measures devised shall be put in to place, prior to start of an activity & also shall be maintained during the course of works, by the Contractor. Copies of such JSAs shall be kept available at work sites by the Contractor to enable all concerned carrying out checks / verification.

A list of typical construction hazards along with their effects & preventive measures is given in **Appendix-E.**

3.3.2 **Accessibility**

x The Contractor shall provide safe means of access(in sufficient numbers) & efficient exit 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 PDIL/Owner.

x The Contractor shall implement use of all measures including use of "life line", "fall-arresters", "retractable fall arresters" , "safety nets" etc. during the course of using all safe accesses & exits, so that in no case any individual remains at risk of slip & fall during their travel.

x The access to operating plant / project complex shall be strictly regulated. Any person or vehicle entering such complex shall undergo identification check, as per the procedures in force / requirement of PDIL/Owner.

x Accessibility to 'confined space' shall be governed by specific system / regulation, as established at project site.

3.3.3 **Personal Protective Equipments (PPEs)**

x The Contractor shall ensure that all their staff, workers and visitors including their sub-contractor(s) have been issued (records to be kept) & wear appropriate PPEs like nape strap type safety helmets preferably with head & sweat band with ¾" cotton chin strap (made of industrial HDPE), safety shoes with steel toe cap and antiskid sole, full body harness (CÖ marked and conforming to EN361), protective goggles, gloves, ear muffs, respiratory protective devices, etc. All these gadgets shall conform to applicable IS Specifications/CE or other applicable international standards. The Contractor shall implement a regular regime of inspecting physical conditions of the PPEs being issued / used by the workmen of their own & also its sub-agencies and the damaged / unserviceable PPEs shall be replaced forthwith.

x Owner/PDIL may issue a comprehensive color scheme for helmets to be used by various agencies. The Contractor shall follow the scheme issued by the owner/PDIL and shall choose any colour other than white (for Owner) or blue (for PDIL) All HSE personnel shall preferably wear dark green band on their helmet so that workmen can approach them for guidance during emergencies. HSE personnel shall preferably wear such dresses with fluorescent stripes, which are noticeable during night, when light falls on them.

x For shot blasting, the usage of protective face shield and helmets, gauntlet and protective clothing is mandatory. Such protective clothing should conform relevant IS Specification.

x For off-shore jobs/contracts, contractor shall provide PPEs (new) of all types to PDIL & Owner's personnel, at his (contractor's) cost. All personnel shall wear life jacket at all time.

x An indicative list of HSE standards/codes is given under **Appendix-A**.

x Contractor shall ensure procurement & usage of following safety equipments/ accessories (conforming to applicable IS mark / CE standard) by their staff, workmen & visitors including their subcontractors all through the span of project construction / pre-commissioning/ Commissioning:-'

a. PPEs (Helmet, Spectacle, Ear-muff, Face shield, Hand gloves, Safety Shoes, Gum boot)
b. Barricading tape / warning signs
c. Rechargeable Safety torch (flame-proof)
d. Safety nets (with tie-chords)
e. Fall arresters
f. Portable ladders (varying lengths)
g. Life-lines (steel wire-rope, dia not less than 8.0 mm)
h. Full body harness (double lanyard)
i. Lanyard
j. Karabiner
k. Retractable fall arresters (various length)
l. Portable fire extinguishers (DCP type) – 5 kg capacity
m. Portable Multi Gas detector
n. Sound level meter
o. Digital Lux meter
p. Fire hoses & flow nozzles
q. Fire blankets / Fire retardant cloth (with eyelets)

3.3.4 **Working at height**

x The Contractor shall issue permit for working (PFW) at height after verifying and certifying the checkpoints as specified in the attached permit (Format No. HSE-6). He shall also undertake to ensure compliance to the conditions of the permit during the currency of the permit including adherence of personal protective equipments. Contractor's Safety Officer shall verify compliance status of the items of permit document after implementation of action is completed by Contractor's execution / field engineers at work site. Job Safety Analysis (JSA) for specific works at height duly commented by PDIL/Owner, shall be kept attached with particular Permit for Work (PFW) at site for ready reference & follow-up.

x Such PFW shall be initially issued for one single shift or expected duration of normal work and extended further for balance duration, if required. PDIL/Owner can devise block-permit system at any specific area, in consultation with project specific HSE Committee to specify the time-period of validity of such PFW or its renewal. This permit shall be applicable in areas where specific clearance from Owner's operation Deptt. /Safety Deptt. is not required. PDIL / Owner's field Engineers/Safety Officers/Area Coordinators may verify and counter sign this permit (as an evidence of verification) during the execution of the job.

x All personnel shall be medically examined & certified by registered doctor, confirming their 'medical fitness for working at height. The fitness examination shall be done once in six months.

x In case work is undertaken without taking sufficient precautions as given in the permit, PDIL /Owner Engineers may exercise their authority to cancel such permit and stop the work till satisfactory compliance/rectification is arranged made. Contractors are expected to maintain a register for issuance of permit and extensions thereof including preserving the used permits for verification during audits etc.

x The Contractor shall arrange (at his cost) and ensure use of Fall Arrester Systems by his workers. Fall arresters are to be used while climbing/descending tall structures or vessels / columns etc. These arresters should lock automatically against the anchorage line, restricting free fall of the user. The device is to be provided with a double security opening system to ensure safe attachment or release of the user at any point of rope. In order to

avoid shock, the system should be capable of keeping the person in vertical position in case of a fall.

x The Contractor shall ensure that Full body harnesses conforming EN361 and having authorized CE marking is used by all personnel while working at height. The lanyards and life lines should have enough tensile strength to take the load of the worker in case of a fall. One end of the lanyard shall be firmly tied with the harnesses and the other end with life line. The harness should be capable of keeping the workman vertical in case of a fall, enabling him to rescue himself.

x The Contractor shall provide Roof Top Walk Ladders for carrying out activities on sloping roofs in order to reduce the chances of slippages and falls.

x The Contractor shall ensure that a proper Safety Net System is used wherever the hazard of fall from height is present. The safety net, preferably a knotted one with mesh ropes conforming to IS 5175/ ISO 1140 shall have a border rope & tie cord of minimum 12mm dia. The Safety Net shall be located not more than 6.0 meters below the working surface extending on either side up to sufficient margin to arrest fall of persons working at different heights.

x In case of accidental fall of person on such Safety Net, the bottom most portion of Safety Net should not touch any structure, object or ground.

x The Contractor shall ensure positive isolation while working at different levels like in the pipe rack areas. The working platforms with toe boards & hand rails shall be sufficiently strong & shall have sufficient space to hold the workmen and tools & tackles including the equipments required for executing the job. Such working platforms shall have mid-rails, to enable people work safely in sitting posture.

3.3.5 **Scaffoldings & Barricading**

x Suitable scaffoldings shall be provided to workmen for all works that cannot be safely done from the ground or from solid construction except such short period work that can be safely done using ladders or certified (by 3rd party competent person) man-basket. When a ladder is used, an extra workman shall always be engaged for holding the ladder.

x The Contractor shall ensure that the scaffolds used during construction activities shall be strong enough to take the designed load. Main Contractor shall always furnish duly approved construction-design details of scaffold & SWL (from competent designers) free of charge, before they are being installed / constructed at site. Owner/PDIL reserves the right to ask the Contractor to submit certification and or design calculations from his Head office / Design/ Engineering expert regarding load carrying capacity of the scaffoldings.

x All scaffolds shall be inspected by a competent Scaffolding Inspector of the Contractor. He shall paste a GREEN tag (duly signed by competent Scaffolding Inspector) on each scaffold found safe and a RED tag (duly signed by competent Scaffolding Inspector) on each scaffold found unsafe. Scaffolds with GREEN tag only shall be permitted to be used and Scaffolds with RED ones shall immediately be made inaccessible. Work being found continuing on scaffolds with RED tag shall be considered unauthorized work by Contractor and may invite penalization from PDIL/Owner. For every 120-125 m^2 /m^3 area / volume or its parts thereof minimum one TAG shall be provided.

x The Contractor shall ensure positive barricading (indicative as well as protective) of the excavated, radiography, heavy lift, high pressure hydrostatic & pneumatic testing and other such areas. Sufficient warning signs shall be displayed along the barricading areas.

x

Scaffolding shall be constructed using foot seals or base plates only.

3.3.6 **Electrical installations**

x

All electrical installations/ connections shall be carried out as per the provisions of latest revision of following codes/standards, in addition to the requirements of Statutory Authorities and IE/applicable international rules & regulations:

- OISD STD 173 : Fire prevention & protection system for electrical installations
- SP 30 (BIS) : National Electric Code

x

All electrical installations shall be approved by the concerned statutory authorities.

x

All temporary electrical installations / facilities shall be regularly checked by the licensed/competent electricians of the Contractor and appropriate records shall be maintained in format no: HSE-12" Inspection of temporary electrical booth/installation at project construction site". Such inspection records are to be made available to PDIL/Owner, whenever asked for.

3.3.6.1 The Contractor shall meet the following requirements:

a. Shall make Single Line Diagram (SLD) for providing connection to each equipments & machinery and the same (duly approved by PDIL/Owner) shall be pasted on the front face of DBs (distribution boards) or JBs (Junction boxes) at every site. (A typical Switch Board Sketch is attached as Appendix -G)

b. Ensure that electrical systems and equipment including tools & tackles used during construction phase are properly selected, installed, used and maintained as per provisions of the latest revision of the Indian Electrical/ applicable international regulations.

c. Shall deploy qualified & licensed electricians for proper & safe installation and for regular inspection of construction power distribution system/points including their earthing. A copy of the license shall be submitted to PDIL / Owner for records. Availability of at least one competent (ITI qualified) / licensed electrician (by State Elec. authorities) shall be ensured at site round the clock to attend to the normal/emergency jobs.

d. All switchboards / welding machines shall be kept in well-ventilated & covered shed/ with rain shed protection. The shed shall be elevated from the existing ground level to avoid water logging inside the shed . Installation of electrical switch board must be done taking care of the prevention of shock and safety of machine.

e. No flammable materials shall be used for constructing the shed. Also flammable materials shall not be stored in and around electrical equipment / switchboard. Adequate clearances and operational space shall be provided around the equipment.

f. Fire extinguishers and insulating mats shall be provided in all power distribution centers.

g. Temporary electrical equipment shall not be employed in hazardous area without obtaining safety permit.

h. Proper housekeeping shall be done around the electrical installations.

i. All temporary installations shall be tested before energizing, to ensure proper earthing, bonding, suitability of protection system, adequacy of feeders/cables etc.

j. All welders shall use hand gloves irrespective of holder voltage.

k. Multilingual (Hindi, English and local language) caution boards, shock treatment charts and instruction plate containing location of isolation point for incoming supply, name & telephone No. of contact person in emergency shall be provided in substations and near all distribution boards / local panels.

l. Operation of earth leakage device shall be checked regularly by temporarily connecting series test lamp (2 bulbs of equal rating connected in series) between phase and earth. ELCB tester /test meter shall be used for testing ELCBs

m. Regular inspection of all installations at least once in a month. (Ref. **Format HSE-12**).

3.3.6.2 The following features shall also be ensured for all electrical installations during construction phase by the contractor:

x Each installation shall have a main switch with a protective device, installed in an enclosure adjacent to the metering point. The operating height of the main switch shall not exceed 1.5 M. The main switch shall be connected to the point of supply by means of armoured cable.

x The outgoing feeders shall be double or triple pole switches with fuses / MCBs. Loads in a three phase circuit shall be balanced as far as possible and load on neutral should not exceed 20% of load in the phase.

x The installation shall be adequately protected against overload, short circuit and earth leakage by the use of suitable protective devices. Fuses wherever used shall be HRC type. Use of rewirable fuses shall be strictly prohibited. The earth leakage device shall have an operating current not exceeding 30 mA.

x All connections to the hand tools / welding receptacles shall be taken through proper switches, sockets and plugs.

x All single phase sockets shall be minimum 3 pin type only. All unused sockets shall be provided with socket caps.

x Only 3 core (P+N+E) overall sheathed flexible cables with minimum conductor size of 1.5 mm^2 copper shall be used for all single phase hand tools.

x Only metallic distribution boxes with double earthing shall be used at site. No wooden boxes shall be used.

x All power cables shall be terminated with compression type cable glands. Tinned copper lugs shall be used for multi-strand wires / cables.

x Cables shall be free from any insulation damage.

x Minimum depth of cable trench shall be 750 mm for MV & control cables and 900 mm for HV cables. These cables shall be laid over a sand layer and covered with sand, brick & soil for ensuring mechanical protection. Cables shall not be laid in waterlogged area as far as practicable. Cable route markers shall be provided at every 25 M of buried trench route. When laid above ground, cables shall be properly cleated or supported on rigid poles of at least 2.1 M high. Minimum head clearance of 6 meters shall be provided at road crossings.

- Under ground road crossings for cables shall be avoided to the extent feasible. In any case no under ground power cable shall be allowed to cross the roads without pipe sleeve.
- All cable joints shall be done with proper jointing kit. No taped/ temporary joints shall be used.
- An independent earthing facility should preferably be established within the temporary installation premises. All appliances and equipment shall be adequately earthed. In case of armoured cables, the armour shall be bonded to the earthing system.
- All cables and wire rope used for earth connections shall be terminated through tinned copper lugs.
- In case of local earthing, earth electrodes shall be buried near the supply point and earth continuity wire shall be connected to local earth plate for further distribution to various appliances. All insulated wires for earth connection shall have insulation of green colour.
- Separate core shall be provided for neutral. Earth / Structures shall not be used as a neutral in any case.
- ON/OFF position of all switches shall be clearly designated / painted for easy isolation in emergency.

3.3.7 **Welding/ Gas cutting**

- Contractor shall ensure that flash back arrestors conforming to BS: 6158 or equivalent are installed on all gas cylinders as well as at the torch end of the gas hose, while in use.
- All cylinders shall be mounted on trolleys and provided with a closing key. Empty & filled-up gas cylinders shall be stored separately with TAG, protecting them from direct sun or rain. Minimum 2 nos. of Portable DCP type fire extinguishers (10 kg) shall be maintained at the gas cylinder stores. Stacking & storing of compressed gas cylinders shall be arranged away from DG set, hot works, Elect. Panels / Elec. boards, etc
- The burner and the hose placed downstream of pressure reducer shall be equipped with Flash Back Arrester/Non Return Valve device.
- The hoses for acetylene and oxygen cylinders must be of different colours. Their connections to cylinders and burners shall be made with a safety collar.
- At end of work, the cylinders in use shall be closed and hoses depressurized.
- Cutting of metals using gases, other than oxygen & acetylene, shall require written concurrence from Owner.
- All welding machines shall have effective earthing at least at distinctly isolated two points.
- In order to help maintain good housekeeping, and to reduce fire hazard, live electrode bits shall be contained safely and shall not be thrown directly on the ground.
- The hoses of Acetylene and Oxygen shall be kept free from entanglement & away from common pathways / walkways and preferably be hanged overhead in such a manner which can avoid contact with cranes, hydra or other mobile construction machinery.
- Hot spatters shall be contained / restricted appropriately (by making use of effective fire-retardant cloth/fabric) and their flying-off as well as chance of contact with near-by flammable materials shall be stopped.
- The Contractor shall arrange adequate systems & practices for accumulation / collection of metal & other scraps and remnant electrodes and their safe disposal at regular interval so as to maintain the fabrication and other areas satisfactorily clean & tidy.
- All gas cylinders must have a cylinder cap on at all times when not in use.

3.3.8 **Ergonomics and tools & tackles**

- The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health.
- All lifting tools, tackles, equipment, accessories including cranes shall be tested periodically by statutory/competent authority for their condition and load carrying capacity. Valid test & fitness certificates from the applicable authority shall be submitted to Owner/PDIL for their review/acceptance before the lifting tools, tackles, equipment, accessories and cranes are used.
- The contractor shall not be allowed to use defective equipment or tools not adhering to safety norms.
- Contractor shall arrange non-sparking tools for project construction works in operating plant areas / hydrocarbon prone areas.
- Wherever required the Contractor shall make use of Elevated Work Platforms (EWP) or Aerial Work Platforms (mobile or stationary) to avoid ergonomical risks and workmen shall be debarred to board such elevated platform during the course of their shifting / transportation.
- Contractor shall ensure installation of Safe Load Indicator (SLI) on all cranes (while in use) to minimize overloading risk. SLI shall have capability to continuously monitor and display the load on the hook, and automatically compare it with the rated crane capacity at the operating condition of the crane. The system shall also provide visual and audible warnings at set capacity levels to alert the operator in case of violations.
- The contractor shall be responsible for safe operations of different equipments mobilized and used by him at the workplace like transport vehicles, engines, cranes, mobile ladders, scaffoldings, work tools, etc.
- The Contractor shall arrange periodical training for the operators of hydra, crane, excavator, mobile machinery, etc. at site by utilizing services from renowned manufacturers

3.3.9 **Occupational Health**

- The contractor shall identify all operations that can adversely affect the health of its workers and issue & implement mitigation measures.
- For surface cleaning operations, sand blasting shall not be permitted even if not explicitly stated elsewhere in the contract.
- To eliminate radiation hazard, Tungsten electrodes used for Gas Tungsten Arc Welding shall not contain Thorium.
- Appropriate respiratory protective devices(hood with respiratory devices) shall be used to protect workmen from inhalation of air borne contaminants like silica, asbestos, gases, fumes, etc.
- Workmen shall be made aware of correct methods for lifting, carrying, pushing & pulling of heavy loads. Wherever possible, manual handling shall be replaced by mechanical lifting equipments.
- For jobs like drilling/demolishing/dismantling where noise pollution exceeds the specified limit of 85 decibels, ear muffs shall be provided to the workers.
- To avoid work related upper limb disorders (WRULD) and backaches, Display Screen Equipments' workplace stations shall be carefully designed & used with proper sitting postures. Power driven hand-held tools shall be maintained in good working condition to

minimize their vibrating effects and personnel using these tools shall be taught how to operate them safely & how to maintain good blood circulation in hands.

x The Contractor shall arrange health check up (by registered medical practitioner) for all the workers at the time of induction. Health check may have to be repeated if the nature of duty assigned to him is changed necessitating health check or doubt arises about his wellness. PDIL/Owner reserves the right to ask the contractor to submit medical test reports. Regular health check-ups are mandatory for the workers assigned with Welding, Radiography, Blasting, Painting, Heavy Lift and Height (>2m) jobs. All the health check-ups shall be conducted by registered Medical practitioner and records are to be maintained by the Contractor.

x The Contractor shall ensure vaccination of all the workers including their families, during the course of entire project span.

3.3.10 **Hazardous substances**

x Hazardous, inflammable and/or toxic materials such as solvent coating, thinners, anti-termite solutions, water proofing materials shall be stored in appropriate containers preferably with lids having spillage catchment trays and shall be stored in a good ventilated area. These containers shall be labeled with the name of the materials highlighting the hazards associated with its use and necessary precautions to be taken. Respective MSDS (Material Safety Data Sheet) shall be made available at site & may be referred whenever problem arises.

x Where contact or exposure of hazardous materials are likely to exceed the specified limit or otherwise have harmful effects, appropriate personal protective equipments such as gloves, goggles/face-shields, aprons, chemical resistant clothing, respirator, etc. shall be used.

x The work place shall be checked prior to start of activities to identify the location, type and condition of any asbestos materials which could be disturbed during the work. In case asbestos material is detected, usage of appropriate PPEs by all personnel shall be ensured and the matter shall be reported immediately to PDIL/ Owner.

3.3.11 **Slips, trips & falls**

The contractor shall establish a regular cleaning and basic housekeeping programme that covers all aspects of the workplace to help minimize the risk of slips, trips & falls. The contractor shall take positive measures like keeping the work area tidy, storing waste in suitable containers & harmful items separately, keeping passages, stairways, entrances & exits especially emergency ones clear, cleaning up spillages immediately and replacing damaged carpet/ floor tiles, mats & rugs at once to avoid slips, trips & falls.

3.3.12 **Radiation exposure**

x All personnel exposed to physical agents such as ionizing & non-ionizing radiation, including ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.

x For Open Field Radiography works , requirements of Bhabha Atomic Research Centre (BARC)/ Atomic Energy Regulatory Board (AERB) shall be followed.

x The Contractor shall implement an effective system of control (as described in the AERB regulations) at site for handling radiography-sources & for avoiding its misuse & theft.

- The contractor shall generate the Format No: HSE-8 “Permit for radiation work” before start of work.
- In case the radiography work has to be carried out at day time, suitable methodology to be used so that other works, people are not affected.

3.3.13 **Explosives/Blasting operations**

- Blasting operations shall be carried out as per latest Explosive Rules (Indian / International) with prior permission. The Contractor shall obtain license from Chief Controller of Explosives (CCoE) for collection, transportation, storage of explosives as well as for carrying out blasting operations.
- The Contractor shall prepare exclusive method statement (in cognizance with statutory requirements) for diffusing unfired explosives, if any, at project site before carrying out actual task. Nowhere blasting shall be carried out by the Contractor or its agency without the involvement of competent supervisor and licensed blaster / shot blaster.

3.3.14 **Demolition/ Dismantling**

- The contractor shall adhere to safe demolishing/ dismantling practices at all stages of work to guard against unsafe working practices.
- The contractor shall disconnect service lines (power, gas supply, water, etc.)/ make alternate arrangements prior to start of work and restore them, if required as directed by PDIL/ Owner at no extra cost.
- Before carrying out any demolition/ dismantling work, the contractor shall take prior approval of PDIL/Owner and generate theFormat No.HSE-9. For revamp jobs in operating plants where location of underground utilities is not known with certainty, the contractor shall depute an experienced engineer for supervision and shall make adequate arrangements for Fire fighting & First-Aid during the execution of these activities.
- The Contractor shall arrange approved Job Safety Analysis (JSA) / Method Statement for the specific demolition / dismantling task and corresponding action plan commensurate with hazards / risks associated therein. In no case any activity related to demolition / dismantling shall be carried out by the Contractor without engaging own supervision / field engineer.

3.3.15 **Road Safety**

- The Contractor shall ensure adequately planned road transport safety management system.
- The vehicles shall be fitted with reverse warning alarms & flashing lights / fog-lights and usage of seat belts shall be ensured.
- The Contractor shall also ensure a separate pedestrian route for safety of the workers and comply with all traffic rules & regulations, including maintaining speed limit of 20 kmph or indicated by owner for all types of vehicles / mobile machinery. The maximum allowable speed shall be adhered to.
- In case of an alert or emergency, the Contractor must arrange clearance of all the routes, roads, access. The Contractor shall deploy sufficient number of traffic controllers at project site routes / roads/ accesses, to alert reversing movement of vehicles & machinery as well as pedestrians.
- Dumpers, Tippers, etc. shall not be allowed to carry workers within the plant area and also to & from the labour colony to & from project sites.
- Hydras shall only be allowed for handling the materials at fabrication/ storage yards and in no case shall be allowed to transport the materials over project / plant roads.

- The Contractor shall not deploy any such mobile machinery / equipments, which do not have competent operator and / or experienced banks-man / signal-man. Such machinery / equipments shall have effective limit-switches, reverse-alarm, front & rear-end lights etc. and shall be maintained in good working order.
- The Contractor shall not carry-out maintenance of vehicles / mobile machinery occupying space on project / plant roads and shall always arrange close supervision for such works.
- For pipeline jobs, the contractor shall submit a comprehensive plan covering transportation, loading / unloading of pipes, movement of side booms, movement of vehicles on the ROW, etc.
- Contractor's shall arrange /install visible road signs, diversion boards, caution boards, etc on project roads for safe movement of men and machinery.

3.3.16 Welfare measures

Contractor shall, at the minimum, ensure the following facilities at work sites:

- A crèche at site where 10 or more female workers are having children below the age of 6 years.
- Adequately ventilated / illuminated rooms at labour camps & its hygienic up-keeping. Reasonable canteen facilities at site and in labour camps at appropriate location depending upon site conditions. Contractor shall make use of "industrial" variety of LPG cylinder & satisfactory illumination at the canteens. Necessary arrangement for efficient disposal of wastes from canteens & urinals /toilets shall also be made and regular review shall be made to maintain the ambience satisfactorily hygienic & shall also comply with all applicable statutory requirements.
- Adequately lighted & ventilated Rest rooms at site (separate for male workers and female workers).
- Urinals, Toilets, drinking water, washing facilities, adequate lighting at site and labour camps, commensurate with applicable Laws / Legislation.

3.3.17 Environment Protection

Contractor shall ensure proper storage and utilization methodology of materials that are detrimental to the environment. Where required, Contractor shall ensure that only the environment friendly materials are selected and emphasize on recycling of waste materials, such as metals, plastics, glass, paper, oil & solvents. The waste that cannot be minimized, reused or recovered shall be stored and disposed of safely. In no way, toxic spills shall be allowed to percolate into the ground. The contractor shall not use the empty areas for dumping the wastes.

The contractor shall strive to conserve energy and water wherever feasible.

The contractor shall ensure dust free environment at workplace by sprinkling water on the ground at frequent intervals. The air quality parameters for dust, poisonous gases, toxic releases, harmful radiations, etc. shall be checked by the contractor on daily basis and whenever need arises.

The contractor shall not be allowed to discharge chemicals, oil, silt, sewage, sullage and other waste materials directly into the controlled waters like surface drains, streams, rivers, ponds. A discharge plan suggesting the methods of treating the waste before discharging shall be submitted to PDIL/Owner for approval.

For pipeline jobs, top soil shall be stacked separately while making ROW through fields. This fertile soil shall be placed back on top after backfilling.

For offshore construction barges, arrangements shall be made for safe disposal of human, food & other wastes and applicable laws in this regard shall be followed.

3.3.18 **Rules & Regulations**

All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials, substances and wastes. Contractor shall not dump, release or otherwise discharge or disposes off any such materials without the express authorization of PDIL/Owner. An indicative list of Statutory Acts & Rules relating to HSE is given under Appendix-D.

3.3.19 **Weather Protection**

Contractor shall take appropriate measures to protect workers from severe storms, rain, solar radiations, poisonous gases, dust, etc. by ensuring proper usage of PPEs like Sun glasses, Sun screen lotions, respirators, dust masks, etc. and rearranging/ planning the construction activities to suit the weather conditions. Effective arrangement (without creating inconvenience to project facilities & permanent installations) for protecting workmen from hailstorm, drizzle in the form of temporary shelter shall be made at site.

3.3.20 **Communication**

All persons deployed at the work site shall have access to effective means of communication so that any untoward incident can be reported immediately and assistance sought by them.

All health & safety information shall be communicated in a simple & clear language easily understood by the local workforce.

For information to all, typical subjects that should be communicated are: -

Inside the company (Top to down)

a. Quality Policy
b. HSE Policy contents
c. Environment Policy
d. HSE Objectives
e. Safety Cardinal Rules
f. HSE Target – reached or missed
g. Praises & Warnings to personnel for HSE Management
h. Safety Walk Through Reports and safety defects / shortfalls (by management)
i. HSE Audit results
j. Revised Statutory Health & Safety provisions, if any
k. H & S publicity
l. Suggestions

Inside the Company (Bottom to up)

a. Complaints
b. Compliances on safety defects / shortfalls
c. Suggestions
d. Proposals for changes & improvements
e. HSE Reports (including near-miss reports)

3.3.21 Confined Space Entry

The contractor shall generate a work permit (Format No. HSE -7) before entering a confined space. People, who are permitted to enter into confined space, must be medically examined & certified by registered doctor, confirming their 'medical fitness for working in confined space'. All necessary precautions mentioned therein shall be adhered to. An attendant shall be positioned outside a confined space for extending help during an emergency. All appropriate PPEs and air quality parameters shall be checked before entering a confined space. It shall be ensured that the piping of the equipment which has to be opened is pressure- free by checking that blinds are in place, vents are open and volume is drained. Inside confined space works, only electrical facilities / installations of 24V shall be permitted. Contactor shall ensure usage of safe & suitable arrangement of oxygen supply for individual workmen (during the course of work in confined space), if oxygen concentration is found to be less than 19.5% (v/v) there.

3.3.22 Heavy Lifts

x The contractor shall submit detailed rigging studies plan for PDIL/ Owner approval prior to lifting equipment which cannot be erected with a crane of approx. 100 MT capacity due to
x constraints of its dimensions, location of foundation height, approach & weight. Contractor shall generate the format no:HSE-15 "Permit for heavy lift/critical erection"

x Prior to actual lifting activities, contractor shall check the validity of the crane inspection certificate issued by statutory/ competent authority. This requirement shall also apply to all rigging equipments utilized for the job.

x The contractor shall, at all times, be responsible for all rigging activities.

x The Contractor shall ensure medical fitness of all workmen who are engaged / involved in erection of equipments, vessels etc. and such fitness checks shall be carried-out every six months interval with the help of a registered medical practitioner & record shall be maintained

x Adequate safety measures such as positive barricading, usage of appropriate PPEs, permit to work, etc. shall be taken during all heavy or critical lifts.

x For lifting any material (irrespective of shape, size or volume), at any height, it is always advisable to prepare a Plan of Erection (PoE) taking into consideration hazards & risks associated therein – this can enable people to put their own experiences of various natures & side-by-side establish a practical method for risk-free erection / lifts. The contractor shall prepare PoE & shall document the same, when risks are identified as "medium" or "high" and the same shall be approved by its competent / qualified engineer.

3.3.23 Key Performance Indicators

The contractor shall measure an activity in both leading & trailing indicators for statistical and performance measurement. The activities pertaining to key performance indicators are covered in Monthly HSE Report (Format No. HSE-5). The contractor shall try to achieve a statistically fair record and strive for its continual improvement.

Leading Indicators viz:-:

- Number of Safety Inductions carried-out at site (for workmen & staff members)
- Number of HSE inspections carried out
- Number of "Safety Walk Through" carried-out by site-head.

- Number of HSE shortfalls / lapses identified per contractor & closed-out in time.
- Number of Safety Meetings conducted (in-house / with contractors)
- Number of HSE Audits made (internal & external) vis-à-vis non conformances raised
- Number of HSE Awareness / Motivational program conducted by contractors
- Number of HSE Trainings conducted at site for supervisors & workmen
- Study of Near miss case reported
- Encouragements / Awards / Recognitions to workmen, job supervisors & field engineers.
- Suggestions for improvement

Trailing Indicators viz:-:

- Calculation of HSE statistics viz frequency rate, severity rate, LTA free manhours,etc
- Analysis of incidents / accidents (nature, severity, types etc.)
- Study of Incident / Accident with respect to :-
  - ƒ
  - ƒ Variety
  - ƒ Period of the year / project span
  - ƒ Timings of the incident / accident
  - ƒ Age profile of victims
  - ƒ Body parts involved
  - Penalty levied for causing incident / accident

3.3.24 **Unsuitable Land Conditions**

Contractor shall take appropriate measures and necessary work permits/clearances if work is to be done in or around marshy areas, river crossings, mountains, monuments, etc. The Contractor shall make right assessment and take all necessary action for developing work areas to make them safe & suitable for crane operations or other vehicular movement before carrying out any project related activity / operation. Contractor shall take all necessary actions to make the surroundings of its site establishments (site office, stores, lay-down area etc.) work-worthy safe and secure.

3.3.25 **Under Water Inspection**

Contractor shall ensure that boats and other means used for transportation, surveying & investigation works shall be certified seaworthy by a recognized classification society. It shall be equipped with all life saving devices like life jackets, adequate fire protection arrangements and shall posses communication facilities like cellular phones, wireless, walkie-talkie. All divers used for seabed surveys, underwater inspections shall have required authorized license, suitable life saving kit. Number of hours of work by divers shall be limited as per regulations. PDIL/ Owner shall have the right to inspect the boat and scrutinize documents in this regard.

3.3.26 **Excavation**

The Contractor shall obtain permission from competent authorities prior to excavation wherever required.

The Contractor shall locate the position of buried utilities (water line, cable route, etc.) by referring to project / plant drawing / in consultation with PDIL/Owner. The Contractor shall start digging manually to locate the exact position of buried utilities & thereafter use mechanical means.

The Contractor shall keep soil heaps at least 1.5 M away from edge or a distance equal to depth of pit (whichever is more)

The Contractor shall maintain sufficient "angle of repose" during excavation – shall also provide slope or suitable bench as decided by PDIL / Owner.

The Contractor shall arrange "battering" or "benching" wherever required for preventing collapse of edge of excavations.

The Contractor shall identify & arrange de-watering pump or well-point system to prevent earth collapse due to heavy rain / influx of underground water.

The Contractor shall arrange protective fencing / barricading with warning signal around excavated pits, trenches, etc. along with minimum 2 (two) entries, exits / escape ladders.

The Contractor must avoid "underpinning" / under-cutting to prevent collapse of chunk of earth during excavation

The Contractor shall use "stoppers" to prevent over-run of vehicle wheels at the edge of excavated pits / trenches.

The Contractor shall arrange strengthening of "shoring" & "strutting" proactively to avoid collapse of earth / edges due to vehicular movement in close proximity of excavated areas / pits / trenches, etc.

3.4 Tool Box Talks (TBT)

Contractor shall conduct daily TBT with workers prior to start of work and shall maintain proper record of the meeting. A suggested format is given below. The TBT is to be conducted by the immediate supervisor of the workers
The Contractor shall conduct TBT before start of every morning or evening shift or night shift activities, for alerting the workers on specific hazards and their appropriate dos & don'ts. The Contractor shall provide sufficient rests to the site workmen and their foremen to avert fatigue & thereby endangering their lives during the course of site works.

TOOL BOX TALK RECORDING SHEET

Date & Time

Work Location

Subject (Nature of work)

Presenter

Hazards involved

Precautions to be taken

Worker's Name	Signature	Section

Remarks, in any

The topics during TBT shall include

- Hazards related to work assigned on that day and precautions to be taken.
- Any forthcoming HSE hazards/events/instruction/orders, etc.

The above record can be kept in local language, which workers can read. These records shall be made available to PDIL/ Owner whenever demanded.

3.5 Training & Induction Programme

x Initial induction of workers into Construction oriented activities and appraising them about the methodology of works and how to carry-out safely and the same should not be inter mixed with Tool Box Talks or HSE Training. In this regard careful action should be made & maintained for imparting HSE induction to every individual, irrespective of his task/designation/level of employment, whereas, HSE Training should be imparted to specific person/group of people who are to carry-out that specific task more than once – for example, Riggers must be trained for working at heights, welders must be trained for work in confined space, fitters/carpenters, mesons must be trained for work at heights, etc.

x Contractor shall conduct Safety induction programme on HSE for all his workers and maintain records. The Gate Pass shall be issued only to those workers who successfully qualify the Safety induction programme.

x The Contractor shall brief the visitors about the HSE precautions which are required to be taken before their proceeding to site and make necessary arrangements to issue appropriate PPEs like Aprons, hard hats, ear-plugs, goggles & safety shoes etc., to his visitors. The Contractor shall always maintain relevant acknowledgement from visitor on providing him brief information on HSE actions.

x Contractor shall ensure that all his personnel possess appropriate training to carry out the assigned job safely. The training should be imparted in a language understood by them and should specifically be trained about

- Potential hazards to which they may be exposed at their workplace
- Measures available for prevention and elimination of these hazards

The topics during training shall cover, at the minimum: -

- Why safety should be considered during work - explanation
- Education about hazards and precautions required
- Employees' duties & responsibilities
- Emergency and evacuation plan
- HSE requirements during project activities
- Fire fighting and First-Aid
- Use of PPEs
- Occupational health issues – dos & don'ts
- Local laws on intoxicating drinks, drugs, smoking in force
- Common environmental subjects – lighting, ventilation, vibration, smoke/fumes etc.

x Records of the training shall be kept and submitted to PDIL/ Owner.

x The Contractor shall make regular program for conducting Safety Training on various topics related to various activities & their safe-guarding utilizing experienced persons / outside agency / faculty. A program for Safety Training (indicative list as per Appendix –F) shall be furnished by the Contractor in its HSE Plan .

x For offshore and jetty jobs, contractor shall ensure that all personnel deployed have undergone a structured sea survival training including use of lifeboats, basket landing, use of radio communication etc. from an agency acceptable to Owner/PDIL.

3.6 ADDITIONAL SAFETY REQUIREMENTS FOR WORKING INSIDE A RUNNING PLANT

As a minimum, the contractor shall ensure adherence to following safety requirements while working in or in the close vicinity of an operating plant:

a) Contractor shall obtain permits for Hot work, Cold work, Excavation and Confined Space from Owner in the prescribed format.

b) The contractor shall monitor record and compile list of his workers entering the operational plant/unit each day and ensure & record their return after completing the job.

c) Contractor's workers and staff members shall use designated entrances and proceed by designated routes to work areas only assigned to them. The workers shall not be allowed to enter units' area, tanks area, pump rooms, etc. without work authorization permit.

d) Work activities shall be planned in such a way so as to minimize the disruption of other activities being carried out in an operational plant/unit and activities of other contractors.

e) The contractor shall submit a list of all chemicals/toxic substances that are intended to be used at site and shall take prior approval of the Owner.

f) Specific training on working in a hydrocarbon plant shall be imparted to the work force and mock drills shall be carried out for Rescue operations/First-Aid measures.

g) Proper barricading/cordoning of the operational units/plants shall be done before starting the construction activities. No unauthorized person shall be allowed to trespass. The height and overall design of the barricading structure shall be finalized in consultation with the Owner and shall be got approved from the Owner.

h) Care shall be taken to prevent hitting underground facilities such as electrical cables, hydrocarbon piping during execution of work.

i) Barricading with water curtain shall be arranged in specific/critical areas where hydrocarbon vapors are likely to be present such as near horton spheres or tanks. Positioning of fire tenders (from owner) shall also be ensured during execution of critical activities.

j) Emergency evacuation plan shall be worked out and all workmen shall be apprised about evacuation routes. Mock drill operations may also be conducted.

k) Flammable gas test shall be conducted prior to any hot work using appropriate measuring instruments. Sewers, drains, vents or any other gas escaping points shall be covered with flame retardant tarpaulin.

l) Respiratory devices shall be kept handy while working in confined zones where there is a danger of inhalation of poisonous gases. Constant monitoring of presence of Gas/ Hydrocarbon shall be done.

m) Clearance shall be obtained from all parties before starting hot tapping, patchwork on live lines and work on corroded tank roof.

n) Positive isolation of line/equipment by blinding for welding/cutting/grinding shall be done. Closing of valve will not be considered sufficient for isolation.

o) Welding spatters shall be contained properly and in no case shall be allowed to fall on the ground containing oil. Similar care shall be taken during cutting operations.

p) The vehicles, cranes, engines, etc. shall be fitted with spark arresters on the exhaust pipe and got it approved from Safety Department of the Owner.

q) Plant air should not be used to clean any part of the body or clothing or use to blow off dirt on the floor.

r) Gas detectors should be installed in gas leakage prone areas as per requirement of Owner's plant operation personnel.

s) Experienced full time safety personnel shall be exclusively deployed to monitor safety aspects in running plants.

3.7 Self Assessment And Enhancement

The contractor shall develop a method of check & balance through self assessment & enhancement techniques and shall explore the opportunities for continual improvement in the HSE system.

3.8 HSE Promotion

The contractor shall encourage his workforce to promote HSE efforts at workplace by way of organizing workshops/seminars/training programmes, celebrating HSE awareness weeks & National Safety Day, conducting quizzes & essay competitions, distributing pamphlets, posters & material on HSE, providing incentives for maintaining good HSE practices and granting incentives / bonus for completing the job without any lost time accident.

3.9 Lock Out and Tag Out (LOTO) for isolation of energy source

x Contractor shall follow the LOTO/Isolation procedure of owner for all energy source
x isolations installed/under purview by /of owner ie. “Brown field”
For all the other energy source (not under purview of client/owner) i.e “Green field” Contractor shall develop a system to ensure the isolation of equipments, pipelines, Vessel, electrical panels from the energy source covering following as minimum:-

- Identification of all energy source viz electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, radiation and other forms of stored or kinetic energy.
- Establishing the energy isolation devices viz: manually operated electrical circuit breakers, disconnection switches, blind flanges, etc
- Installation of Lock Out devices for preventing the inadvertent release of stored energy and Tag Out devices (“Danger”, “Do Not operate” or Do not Remove” tags) to indicate that testing, maintenance or servicing is underway and the device cannot be operated until the tag out device is removed.
- Lock Out and Tag out log book
- Permit for isolation and de-isolation of energy source as per format NO: HSE-16
- Availability of competent persons like experienced operators at substations, pump
x house, units, etc, ; supervisors,etc.

Contractor shall ensure that all the sources are locked out and tagged properly before giving
x clearance to start the job.
After the completion of job, contractor shall ensure all tools and tackles are removed and nobody is present in the working area and signing on LOTO log book.

x

Only on confirmation of above the contractor will remove their lock and tag from the isolation points and give instructions for energizing the same. Only the person carrying out the task shall himself carry the key for the lock in /Lock out.

4.0 DETAILS OF HSE MANAGEMENT SYSTEM BY CONTRACTOR

4.1 On Award Of Contract

The Contractor shall submit a comprehensive Health, Safety and Environment Plan or programme for approval by PDIL/Owner prior to start of work. The Contractor shall participate in the pre-start meeting with PDIL/Owner to finalize HSE Plans which shall including the following:

- HSE policy & Objectives
- Job procedure to be followed by the Contractor for construction activities including handling of equipments, scaffolding, electric installations, etc. describing the risks involved, actions to be taken and methodology for monitoring each activity. Indicative list of procedures is enclosed as Annexure-H
- PDIL/Owner review/audit requirement.
- Organization structure along with responsibility and authority, on HSE activities.
- Administrative & disciplinary steps involving implementation of HSE requirements
- Emergency evacuation plan/ procedures for site and labour camps
- Job Safety Analysis for high risk jobs
- Procedures for reporting & investigation of accidents and near misses.
- HSE Inspection
- HSE Training programmes at project site
- HSE Awareness programmes, at project site
- Reference to Rules, Regulations and statutory requirements.
- HSE documentation viz reporting, analysis & record keeping.

4.2 During Job Execution

Contractor shall implement approved Health, Safety and Environment management programme including but not limited to as brought out under para 3.0. Contractor shall also ensure:

x to arrange workmen compensation insurance, registration under ESI Act, third party liability insurance, registration under BOCW Act, etc, as applicable.

x to arrange all HSE permits before start of activities (as applicable), like permits for hot work, working at heights (Refer Format No. HSE-6), confined space (Refer Format No. HSE-7), Radiation Work Permit (Refer Format No. HSE-8), Demolishing/ Dismantling Work Permit (Refer Format No. HSE-9),Permit for erection/modification & dismantling of scaffolding(Refer Format No:HSE-14), Permit for heavy lift/critical erection (Refer Format No:HSE-15) ,Permit for energy Isolation & De-isolation" (HSE-16) ,storage of chemical / explosive materials & its use and implement all precautions mentioned therein. In this regard, requirements of *Oil industry Safety Directorate Standard No*. Std -105 "Work Permit Systems" shall be complied with while working in existing Oil or Gas processing plants. List of the persons involved shall be maintained as annexure to the work permit issued for a particular activity.

x to submit, timely, the completed checklist on HSE activities in Format No.HSE-1, Monthly HSE report in Format No.HSE-5 (use of web based package (www.PDIL.co.in/conthse) is compulsory wherever the facility is available else a hard copy is to be submitted), accident/ incident reports, investigation reports etc. as per PDIL/Owner requirements. Compliance of instructions on HSE shall be done by Contractor and informed urgently to PDIL/Owner.

- that his top most executive at site attends all the Safety Committee/HSE meetings arranged by PDIL/Owner and carries out safety walk through regularly. Only in case of his absence from site that a second senior most person shall be nominated by him, in advance, and communicated to PDIL/Owner for performing the above tasks.

- display at site office and at prominent locations HSE Policy, caution boards, list of hospitals, emergency services available, safety signs like Men at work, Speed Limits, Hazardous Area, various do's & don'ts, etc.

- provide posters, banners for safe working to promote safety consciousness.

- identify, assess, analyze & mitigate the construction hazards & incorporate relevant control measures before actually executing site works. (HIRAC = Hazard Identification, Risk Analysis and Control).

- arrange testing, examination, inspection of own as well as borrowed construction equipments / machinery (stationary & mobile) before being used at site and also at periodical interval, through own resources and also by 3rd party competent agencies (as deemed fit in statutes). Records of such test, examination etc. shall be maintained & shall be submitted to PDIL/Owner as & when asked for.

- carryout audits/inspection (internal & external) at his works as well as sub contractor works as per approved HSE plan/procedure/programme & submit the compliance reports of identified shortfalls for PDIL/Owner review.

- arranging HSE training for site workmen (of his own & sub contractors) through internal or external faculty at periodical intervals.

- assistance & cooperate during HSE audits by PDIL/Owner or any other 3rd party and submit compliance report.
  generate & submit of HSE records/report as per this specification.

- apprise PDIL/Owner on HSE activities at site regularly.

- carry-out all dismantling activities safely, with prior approval of PDIL/Owner representative.

- The Contractor shall ensure that "Hot works" and painting works do not continue at the same place / location at project site for which chance or probability of "fire" incident exists.

4.3 During Short Listing Of The Sub-Contractors

The contractor shall review the HSE management system of the sub-contractors in line with the requirements given in this specification. The contractor shall be held responsible for the shortcomings observed in the HSE management system of the sub-contractor(s) during execution of the job.

5.0 RECORDS

At the minimum, the contractor shall maintain/ submit HSE records in the following reporting formats/:

Safety Walk Through Report	HSE-1
Accident/ Incident Report	HSE-2
Supplementary Accident/ Incident Investigation report	HSE-3
Near Miss Incident Report	HSE-4
Monthly HSE Report	HSE-5
Permit for working at height	HSE-5
Permit for working in confined space	HSE-7
Permit for radiation work	HSE-8
Permit for demolishing/ dismantling	HSE-9
Daily Safety checklist	HSE-10
House keeping Assessment & compliance	HSE-11
Inspection of temporary electrical booth/installation	HSE-12
Inspection for scaffolding	HSE-13
Permit for erection/modification &dismantling of scaffolding	HSE-14
Permit for heavy lift/critical erection.	HSE-15
Permit for Energy isolation and de-isolation.	HSE-16
Permit for Excavation	HSE-17
Inspection reports of Equipment/tools/tackles	*
Report of Toolbox talks	As indicated in specification
PPE issue report/register	*
Site inspection reports	*
Training records	*

(*) The formats shall be developed in consultation with PDIL/Owner

A. IS CODES ON HSE

SP: 53	Safety code for the use, Care and protection of hand operated tools.
IS: 838	Code of practice for safety & health requirements in electric and gas welding and cutting operations
IS: 1179	Eye & Face precautions during welding, equipment etc.
IS: 1860	Safety requirements for use, care and protection of abrasive grinding wheels.
IS: 1989 (Pt -II)	Leather safety boots and shoes
IS: 2925	Industrial Safety Helmets
IS: 3016	Code of practice for fire safety precautions in welding & cutting operation.
IS: 3043	Code of practice for earthing
IS: 3764	Code of safety for excavation work
IS: 3786	Methods for computation of frequency and severity rates for industrial injuries and classification of industrial accidents
IS: 3696	Safety Code of scaffolds and ladders
IS: 4083	Recommendations on stacking and storage of construction materials and components at site
IS: 4770	Rubber gloves for electrical purposes
IS: 5121	Safety code for piling and other deep foundations
IS: 5216 (Pt-I)	Recommendations on Safety procedures and practices in electrical works
IS: 5557	Industrial and Safety rubber lined boots
IS: 5983	Eye protectors
IS: 6519	Selection, care and repair of Safety footwear
IS: 6994 (Pt-I)	Industrial Safety Gloves (Leather & Cotton Gloves)
IS: 7293	Safety Code for working with construction Machinery
IS: 8519	Guide for selection of industrial safety equipment for body protection
IS: 9167	Ear protectors
IS: 11006	Flash back arrestor (Flame arrestor)
IS: 11016	General and safety requirements for machine tools and their operation
IS: 11057	Specification for Industrial safety nets
IS: 11226	Leather safety footwear having direct moulded rubber sole
IS: 11972	Code of practice for safety precaution to be taken when entering a sewerage system
IS: 13367	Code of practice-safe use of cranes
IS: 13416	Recommendations for preventive measures against hazards at working place

B. INTERNATIONAL STANDARDS ON HSE

Safety Glasses	:	ANSI Z 87.1, ANSI ZZ 87.1, AS 1337, BS 2092, BS 1542, BS 679, DIN 4646/ 58311
Safety Shoes	:	ANSI Z 41.1, AS 2210, EN 345
Hand Gloves	:	BS 1651
Ear Muffs	:	BS 6344, ANSI S 31.9
Hard Hat	:	ANSI Z 89.1/89.2, AS 1808 , BS 5240, DIN 4840
Goggles	:	ANSI Z 87.1
Face Shield	:	ANSI Z 89.1
Breathing Apparatus	:	BS 4667, NIOSH
Welding & Cutting	:	ANSI Z 49.1
Safe handling of compressed: P-1		(Compressed Gas Association Gases in cylinders 1235 Jefferson Davis Highway, Arlington VA 22202 - USA)
Full body harness	:	EN-361
Lanyard	:	EN-354
Karabiner	:	EN-362 and EN-12275

APPENDIX-B

DETAILS OF FIRST AID BOX

SL. NO.	DESCRIPTION		QUANTITY
1.	Small size Roller Bandages, 1 Inch Wide	(Finger Dressing small)	6 Pcs.
2.	Medium size Roller Bandages, 2 Inches Wide	(Hand & Foot Dressing)	6 Pcs.
3.	Large size Roller Bandages, 4 Inches Wide	(Body Dressing Large)	6 Pcs.
4.	Large size Burn Dressing	(Burn Dressing Large)	4 Pkts.
5.	Cotton Wool	(20 gms packing)	4 Pkts.
6.	Antiseptic Solution Dettol (100 ml.) or Savlon		1 Bottle
7.	Mercurochrome Solution (100 ml.) 2% in water		1 Bottle
8.	Ammonia Solution (20 ml.)		1 Bottle
9.	A Pair of Scissors		1 Piece
10.	Adhesive Plaster (1.25 cm X 5 m)		1 Spool
11.	Eye pads in Separate Sealed Pkt.		4 pcs.
12.	Tourniqut		1 No.
13.	Safety Pins		1 Dozen
14.	Tinc. Iodine/ Betadin (100 ml.)		1 Bottle
15.	Polythene Wash cup for washing eyes		1 No.
16.	Potassium Permanganate (20 gms.)		1 Pkt.
17.	Tinc. Benzoine (100 ml.)		1 Bottle
18.	Triangular Bandages		2 Nos.
19.	Band Aid Dressing		5 Pcs.
20.	Iodex/Moov (25 gms.)		1 Bottle
21.	Tongue Depressor		1 No.
22.	Boric Acid Powder (20 gms.)		2 Pkt.
23.	Sodium Bicarbonate (20 gms.)		1 Pkt.
24.	Dressing Powder (Nebasulf) (10 gms.)		1 Bottle
25.	Medicinal Glass		1 No.
26.	Duster		1 No.
27.	Booklet (English & Local Language)		1 No. each
28.	Soap		1 No.
29.	Toothache Solution		1 No.
30.	Vicks (22 gms.)		1 Bottle
31.	Forceps		1 No.
32.	Note Book		1 No.
33.	Splints		4 Nos.
34.	Lock		1 Piece
35.	Life Saving/Emergency/Over-the counter Drugs		As decided at site

Box size: 14" x 12" x 4"

Note : The medicines prescribed above are only indicative. Equivalent medicines can also be used. A prescription, in this regard, shall be required from a qualified Physician.

APPENDIX-C

TYPE OF FIRES VIS-À-VIS FIRE EXTINGUISHERS

Fire Extinguisher / Fire ↓	→ Water	Foam	CO_2	Dry Powder	Multi purpose (ABC)
Originated from paper, clothes, wood	D	D	can control minor surface fires	can control minor surface fires	D
Inflammable liquids like alcohol, diesel, petrol, edible oils, bitumen	²	D	D	D	D
Originated from gases like LPG, CNG, H_2	²	²	D	D	D
Electrical fires	²	²	D	D	D

LEGEND : D : CAN BE USED

² : NOT TO BE USED

Note: Fire extinguishing equipment must be checked at least once a year and after every use by an authorized person. The equipment must have an inspection label on which the next inspection date is given. Type of extinguisher shall clearly be marked on it.

APPENDIX-D

List of Statutory Acts & Rules Relating to HSE

- The Indian Explosives Act and Rules
- The Motor Vehicle Act and Central Motor Vehicle Rules
- The Factories Act and concerned Factory Rules
- The Petroleum Act and Petroleum Rules
- The Workmen Compensation Act
- The Gas Cylinder Rules and the Static & Mobile Pressure Vessels Rules
- The Indian Electricity Act and Rules
- The Indian Boiler Act and Regulations
- The Water (Prevention & Control & Pollution) Act
- The Water (Prevention & Control of Pollution) Cess Act
- The Mines & Minerals (Regulation & Development) Act
- The Air (Prevention & Control of Pollution) Act
- The Atomic Energy Act
- The Radiation Protection Rules
- The Indian Fisheries Act
- The Indian Forest Act
- The Wild Life (Protection) Act
- The Environment (Protection) Act and Rules
- The Hazardous Wastes (Management & Handling) Rules
- The Manufacturing, Storage & import of Hazardous Chemicals Rules
- The Public Liability Act
- The Building and Other Construction Workers (Regulation of Employment and Condition of service) Act
- Other statutory acts Like EPF, ESIS, Minimum Wage Act.

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(A) EXCAVATION Pit Excavation upto 3.0m	Falling into pit	Personal injury	Provide guard rails/ barricade with warning signal Provide at least two entries/ exits. Provide escape ladders.
	Earth Collapse	Suffocation/ Breathlessness Buried	Provide suitable size of shoring and strutting, if required. Keep soil heaps away from the edge equivalent to 1.5m or depth of pit whichever is more. Don't allow vehicles to operate too close to excavated areas. Maintain at least 2m distance from edge of cut. Maintain sufficient angle of repose. Provide slope not less than 1:1 and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock. Battering/benching the sides.
	Contact with buried electric cables Gas/ Oil Pipelines	Electrocution Explosion	Obtain permission from competent authorities, prior to excavation, if required. Locate the position of buried utilities by referring to plant drawings. Start digging manually to locate the exact position of buried utilities and thereafter use mechanical means.
Pit Excavation beyond 3.0m	Same as above plus Flooding due to excessive rain/ underground water	Can cause drowning situation	Prevent ingress of water Provide ring buoys Identify and provide suitable size dewatering pump or well point system
	Digging in the vicinity of existing Building/ Structure	Building/Structure may collapse Loss of health & wealth	Obtain prior approval of excavation method from local authorities. Use under-pining method Construct retaining wall side by side.
	Movement of vehicles/ equipments close to the edge of cut.	May cause cave-in or slides. Persons may get buried.	Barricade the excavated area with proper lighting arrangements Maintain at least 2m distance from edge of cut and use stop blocks to prevent over-run Strengthen shoring and strutting

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
Narrow deep excavations for pipelines, etc.	Same as above plus Frequent cave-in or slides	May cause severe injuries or prove fatal	Battering/benching of sides Provide escape ladders
	Flooding due to Hydro- static testing	May arise drowning situation	Same as above plus Bail out accumulated water Maintain adequate ventilation.
Rock by excavation blasting	Improper handling of explosives	May prove fatal	Ensure proper storage, handling & carrying of explosives by trained personnel. Comply with the applicable explosive acts & rules.
	Uncontrolled explosion	May cause severe injuries or prove fatal	Allow only authorized persons to perform blasting operations. Smoking and open flames are to be strictly prohibited
	Scattering of stone pieces in atmosphere	Can hurt people	Use PPE like goggles, face mask, helmets etc.
Rock excavation by blasting (Contd)	Entrapping of persons/ animals.	May cause severe injuries or prove fatal	Barricade the area with red flags and blow siren before blasting.
	Misfire	May explode suddenly	Do not return to site for at least 20 minutes or unless announced safe by designated person.
Piling Work	Failure of pile-driving equipment	Can hurt people	Inspect Piling rigs and pulley blocks before the beginning of each shift.
	Noise pollution	Can cause deafness and psychological imbalance.	Use personal protective equipments like ear plugs, muffs, etc.
	Extruding rods/casing	Can hurt people	Barricade the area and install sign boards Provide first-aid
	Working in the vicinity of 'Live-Electricity'	Can cause electrocution/ Asphyxiation	Keep sufficient distance from Live-Electricity as per IS code. Shut off the supply, if possible Provide artificial/rescue breathing to the injured
(B) CONCRETING	Air pollution by cement	May affect Respiratory System	Wear respirators or cover mouth and nose with wet cloth.
	Handling of ingredients	Hands may get injured	Use gloves & other PPE.
	Protruding reinforcement rods.	Feet may get injured	Use Provide platform above reinforcement for movement of workers.

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Earthing of electrical mixers, vibrators, etc. not done.	Can cause electrocution/ asphyxiation	Ensure earthing of equipments and proper functioning of electrical circuit before commencement of work.
	Falling of materials from height	Persons may get injured	Use hard hats Remove surplus material immediately from work place. Ensure lighting arrangements during night hours
	Continuous pouring by same gang	Cause tiredness of workers and may lead to accident.	Insist on shift pattern Provide adequate rest to workers between subsequent pours.
	Revolving of concrete mixer/ vibrators	Parts of body or clothes may get entrapped.	Allow only mixers with hopper Provide safety cages around moving motors Ensure proper mechanical locking of vibrator
Super-structure	Same as above plus Deflection in props or shuttering material	Shuttering/props may collapse and prove fatal	Avoid excessive stacking on shuttering material Check the design and strength of shuttering material before commencement of work Rectify immediately the deflection noted during concreting.
	Passage to work place	Improperly tied and designed props/planks may collapse	Ensure the stability and strength of passage before commencement of work. Do not overload and stand under the passage.
(C) REINFOR-CEMENT	Curtailment and binding of rods	Persons may get injured	Use PPE like gloves, shoes, helmets, etc. Avoid usage of shift tools
	Carrying of rods for short distances/at heights	Workers may get injured their hands and shoulders.	Provide suitable pads on shoulders and use safety gloves. Tie up rods in easily liftable bundles Ensure proper staging.
	Checking of clear distance/ cover with hands	Rods may cut or injure the fingers	Use measuring devices like tape, measuring rods, etc.
	Hitting projected rods and standing on cantilever rods.	Persons may get injured and fell down	Use safety shoes and avoid standing unnecessarily on cantilever rods Avoid wearing of loose clothes

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Falling of material from height	May prove fatal	Use helmets Provide safety nets
	Transportation of rods by trucks/ trailers	Protruded rods may hit the persons	Use red flags/lights at the ends Do not protrude the rods in front of or by the side of driver's cabin. Do not extend the rods 1/3rd of deck length or 1.5m whichever is less
(D)WELDING AND GAS CUTTING	Welding radiates invisible ultraviolet and infra-red rays	Radiation can damage eyes and skin.	Use specified shielding devices and other PPE of correct specifications. Avoid thoriated tungsten electrodes for GTAW
	Improper placement of oxygen and acetylene cylinders	Explosion may occur	Move out any leaking cylinder Keep cylinders in vertical position Use trolley for transportation of cylinders and chain them Use flashback arrestors
	Leakage/ cuts in hoses	May cause fire	Purge regulators immediately and then turn off Never use grease or oil on oxygen line connections and copper fittings on acetylene lines Inspect regularly gas carrying hoses Always use red hose for acetylene & other fuel gases and black for oxygen
	Opening-up of cylinder	Cylinder may burst	Always stand back from the regulator while opening the cylinder Turn valve slowly to avoid bursting Cover the lug terminals to prevent short circuiting
	Welding of tanks, container or pipes storing flammable liquids	Explosion may occur	Empty & purge them before welding Never attach the ground cable to tanks, container or pipe storing flammable liquids Never use LPG for gas cutting

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES …(Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(E) RADIOGRAPHY	Ionizing radiation	Radiations may react with the skin and can cause cancer, skin irritation, dermatitis, etc.	Ensure Safety regulations as per BARC/AERB before commencement of job. Cordon off the area and install Radiation warning symbols Restrict the entry of unauthorized persons Wear appropriate PPE and film badges issued by BARC/AERB
	Transpor-tation and Storage of Radiog-raphy source	Same as above	Never touch or handle radiography source with hands Store radiography source inside a pit in an exclusive isolated storage room with lock and key arrangement. The pit should be approved by BARC/AERB. Radiography source should never be carried either in passenger bus or in a passenger compartment of trains. BARC/AERB has to be informed before source movement. Permission from Director General of Civil Aviation is required for booking radio isotopes with airlines.
	Loss of Radio isotope	Same as above	Try to locate with the help of Survey Meter. Inform BARC/AERB (*)
(F) ELECTRICAL INSTALLATION AND USAGE	Short circuiting	Can cause Electrocution or Fire	Use rubberized hand gloves and other PPE Don't lay wires under carpets, mats or door ways. Allow only licensed electricians to perform on electrical facilities Use one socket for one appliance Ensure usage of only fully insulated wires or cables Don't place bare wire ends in a socket Ensure earthing of machineries and equipments Do not use damaged cords and avoid temporary connections Use spark-proof/flame proof type field distribution boxes.

(*) Atomic Energy Regulatory Board (AERB),
Bhabha Atomic Research Centre (BARC)
Anushaktinagar, Mumbai – 400 094

APPENDIX-E: (Sheet 6 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Do not allow open/bare connections Provide all connections through ELCB Protect electrical cables/equipment's from water and naked flames Check all connections before energizing
	Overloading of Electrical System	Bursting of system can occur which leads to fire	Display voltage and current ratings prominently with 'Danger' signs. Ensure approved cable size, voltage grade and type Switch off the electrical utilities when not in use Do not allow unauthorized connections. Ensure proper grid wise distribution of Power
	Improper laying of overhead and underground transmission lines/cables	Can cause electrocution and prove fatal	Do not lay unarmoured cable directly on ground, wall, roof of trees Maintain at least 3m distance from HT cables All temporary cables should be laid at least 750 mm below ground on 100 mm fine sand overlying by brick soling Provide proper sleeves at crossings/ inter-sections Provide cable route markers indicating the type and depth of cables at intervals not exceeding 30m and at the diversions/termination
(G) FIRE PREVENTION AND PROTECTION	Small fires can become big ones and may spread to the surrounding areas	Cause burn injuries and may prove fatal	In case a fire breaks out, press fire alarm system and shout "Fire, Fire" Keep buckets full of sand & water/ fire extinguishing equipment near hazardous locations Confine smoking to 'Smoking Zones' only. Train people for using specific type of fire fighting equipments under different classes of fire Keep fire doors/shutters, passages and exit doors unobstructed Maintain good housekeeping and first-aid boxes (for details refer Appendix-B) Don't obstruct assess to Fire extinguishers. Do not use elevators for evacuation during fire. Maintain lightening arrestors for elevated structures Stop all electrical motors with internal combustion

APPENDIX-E : (Sheet 7 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Move the vehicles from dangerous locations Remove the load hanging from the crane booms Remain out of the danger areas.
	Improper selection of Fire extinguisher	It may not extinguish the fire	Ensure usage of correct fire extinguisher meant for the specified fire (for details refer Appendix-C). Do not attempt to extinguish Oil and electric fires with water. Use foam cylinders/CO_2/sand or earth.
	Improper storage of highly inflammable substances	Same as above	Maintain safe distance of flammable substances from source of ignition Restrict the distribution of flammable materials to only min. necessary amount Construct specifically designed fuel storage facilities Keep chemicals in cool and dry place away from heat. Ensure adequate ventilation Before welding operation, remove or shield the flammable material properly Store flammable materials in stable racks, correctly labeled preferably with catchment trays. Wipe off the spills immediately
	Short circuiting of electrical system	Same as above Can cause Electrocution	Don't lay wires under carpets, mats or door ways Use one socket for one appliance. Use only fully insulated wires or cables Do not allow open/bare connections Provide all connections through ELCB Ensure earthing of machineries and equipments
(H) VEHICULAR MOVEMENT	Crossing the Speed Limits (Rash driving)	Personal injury	Obey speed limits and traffic rules strictly Always expect the unexpected and be a defensive driver Use seat belts/helmets Blow horn at intersections and during overtaking operations. Maintain the vehicle in good condition Do not overtake on curves, bridges and slopes
	Adverse weather condition	Same as Above	Read the road ahead and ride to the left Keep the wind screen and lights clean Do not turn at speed. Recognize the hazard, understand the defense and act correctly in time.

APPENDIX-E : (Sheet 8 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Consuming alcohol before and during the driving operation	Same as above	Alcohol and driving do not mix well. Either choose alcohol or driving. If you have a choice between hitting a fixed object or an on-coming vehicle, hit the fixed object Quit the steering at once and become a passenger. Otherwise take sufficient rest and then drive. Do not force the driver to drive fast and round the clock. Do not day dream while driving
	Falling objects/ Mechanical failure	May prove fatal	Ensure effective braking system, adequate visibility for the drives, reverse warning alarm.. Proper maintenance of the vehicle as per manufacturer instructions
(I) PROOF TESTING (HYDROSTATIC /PNEUMATIC TESTING)	Bursting of piping Collapse of tanks Tanks flying off	May cause injury and prove fatal	Prepare test procedure & obtain PDIL/owner's approval Provide separate gauge for pressurizing pump and piping/equipment Check the calibration status of all pressure gauges, dead weight testers and temperature recorders Take dial readings at suitable defined intervals and ensure most of them fall between 40-60% of the gauge scale range Provide safety relief valve (set at pressure slightly higher than test pressure) while testing with air/ nitrogen Ensure necessary precautions, stepwise increase in pressure, tightening of bolts/nuts, grouting, etc. before and during testing Keep the vents open before opening any valve while draining out of water used for hydro-testing of tanks. Pneumatic testing involves the hazard of released energy stored in compressed gas. Specific care must therefore be taken to minimize the chance of brittle failure during a pneumatic leak test. Test temperature is important in this regard and must be considered when the designer chooses the material of construction.

APPENDIX-E : (Sheet 9 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			A pressure relief device shall be provided, having a set pressure not higher than the test pressure plus the lesser of 345 KPa (50 psi) or 10% of the test pressure. The gas used as test fluid, if not air, shall be nonflammable and nontoxic.
(J) WORKING AT HEIGHTS	Person can fall down	May sustain severe injuries or prove fatal	Provide guard rails/barricade at the work place Use PPE like full body harness, life line, helmets, safety shoes, etc. Obtain a permit before starting the work at height above 3 meters Fall arrest and safety nets, etc. must be installed Provide adequate working space (min. 0.6 m) Tie/weld working platform with fixed support Use roof top walk ladder while working on a slopping roofs Avoid movement on beams
		May hit the scrap/material stacked at the ground or in between	Keep the work place neat and clean Remove the scrap immediately
	Material can fall down	May hit the workers working at lower levels and prove fatal	Same as above plus Do not throw or drop materials or equipment from height. I.e. do not *bomb* materials All tools to be carried in a tool-kit Bag or on working uniform Remove scrap from the planks Ensure wearing of helmet by the workers working at lower levels
(K) CONFINED SPACES	Suffocation/ drowning	Unconsciousness, death	Use respiratory devices, if reqd. Avoid over crowding inside a confined space Provide Exhaust fans for ventilation Do not wear loose clothes, neck ties, etc Fulfill conditions of the permit

APPENDIX-E: (Sheet 10 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Check for presence of hydrocarbons, O_2 level Obtain work permit before entering a confined space Ensure that the connected piping of the equipment which is to be opened is pressure free, fluid has been drained, vents are open and piping is positively isolated by a blind flange
	Presence of foul smell and toxic substances	Inhalation can pose threat to life	Same as above plus Check for hydrocarbon and Aromatic compounds before entering a confined space Depute one person outside the confined space for continuous monitoring and for extending help in case of an emergency
	Ignition/ flame can cause fire	Person may sustain burn injuries or explosion may occur	Keep fire extinguishers at a hand distance Remove surplus material and scrap immediately Do not smoke inside a confined space Do not allow gas cylinders inside a confined space Use low voltage (24V) lamps for lighting Use tools with air motors or electric tools with max. voltage of 24V Remove all equipments at the end of the day
(L) HANDLING AND LIFTING EQUIPMENTS	Failure of load lifting and moving equipments	Can cause accident and prove fatal	Avoid standing under the lifted load and within the operating radius of cranes Check periodically oil, brakes, gears, horns and tyre pressure of all moving machinery Check quality, size and condition of all chain pulley blocks, slings, U-clamps, D-shackles, wire ropes, etc. Allow crane to move only on hard, firm and leveled ground. Allow lifting slings as short as possible and check gunny packings at the friction points Do not allow crane to tilt its boom while moving Install Safe Load Indicator Ensure certification by applicable authority

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Overloading of lifting equipments	Same as above	Safe lifting capacity of derricks and winches written on them shall be got verified The max. safe working load shall be marked on all lifting equipments Check the weight of columns and other heavy items painted on them and accordingly decide about the crane capacity, boom and angle of erection Allow only trained operators and riggers during crane operation.
	Overhead electrical wires	Can cause electrocution and fire	Do not allow boom or other parts of crane to come within 3m reach of overhead HT cables Hook and load being lifted shall preferably remain in full visibility of crane operators.
(M) SCAFFOLDING, FORMWORK AND LADDERS	Person can fall down	Person May sustain severe injuries and prove fatal	Provide guard rails for working at height Face ladder while climbing and use both hands. Ladders shall extend about 1m above landing for easy access and tying up purpose Do not place ladders against movable objects and maintain base at 1/4 unit of the working length of the ladder. Suspended scaffolds shall not be less than 500 mm wide and tied properly with ropes No loose planks shall be allowed Use PPE, like helmets, safety shoes,etc
	Failure of scaffolding material	Same as above	Inspect visually all scaffolding materials for stability and anchoring with permanent structures. Design scaffolding for max. load carrying capacity. Scaffolding planks shall not be less than 50X250 mm full thickness lumber or equivalent. These shall be cleated or secured and must extend over the end supports by at least 150mm and not more than 300mm Don't overload the scaffolds Do not splice short ladders to make a longer one. Vertical ladders shall not exceed 6m.
	Material can fall down	Persons working at lower level gets injured	Remove excess material and scrap immediately Carry the tools in a tool-kit bag only Provide safety nets

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (…Contd.)

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(N) STRUCTURAL WORKS	Personal negligence and danger of fall	Can cause injury or casualty	Do not take rest inside rooms built for welding machines or electrical distribution system. Avoid walking on beams at height Wear helmet with chin strap and full body harness while working at height. Use hand gloves and goggles during grinding operations Cover or mark the sharp and projected edges Do not stand within the operating radius of cranes
	Lifting/ slipping of material	Same as above	Do not stand under the lifted load Stack properly all the materials. Avoid slippage during handling Control longer pieces lifted up by cranes from both ends Remove loose materials from height Ensure tightening of all nuts & bolts
(O) PIPELINE WORKS	Erection/ lowering failure	Can cause injury	Do not stand under the lifted load Do not allow any person to come within the radii of the side boom handling pipes Check the load carrying capacity of the lifting tools & tackles Use safe Load Indicators Use appropriate PPEs
	Other	Same as above	Wear gum boots in marshy areas Allow only one person to perform signaling operations while lowering of pipes Provide night caps on pipes Provide end covers on pipes for stoppage of pigs while testing/ cleaning operations
(P) GRIT BLASTING	Pollution in neighboring area, hit by grits and high pressure air	Can cause personal injury	Ensure the blasting is done in enclosed shed. Keep safe distance while blasting operations. Wear positive pressure blast hood or helmet with view –window, ear-muff/plug, gloves, overall or leather coat /apron, rubber shoes.

APPENDIX-F

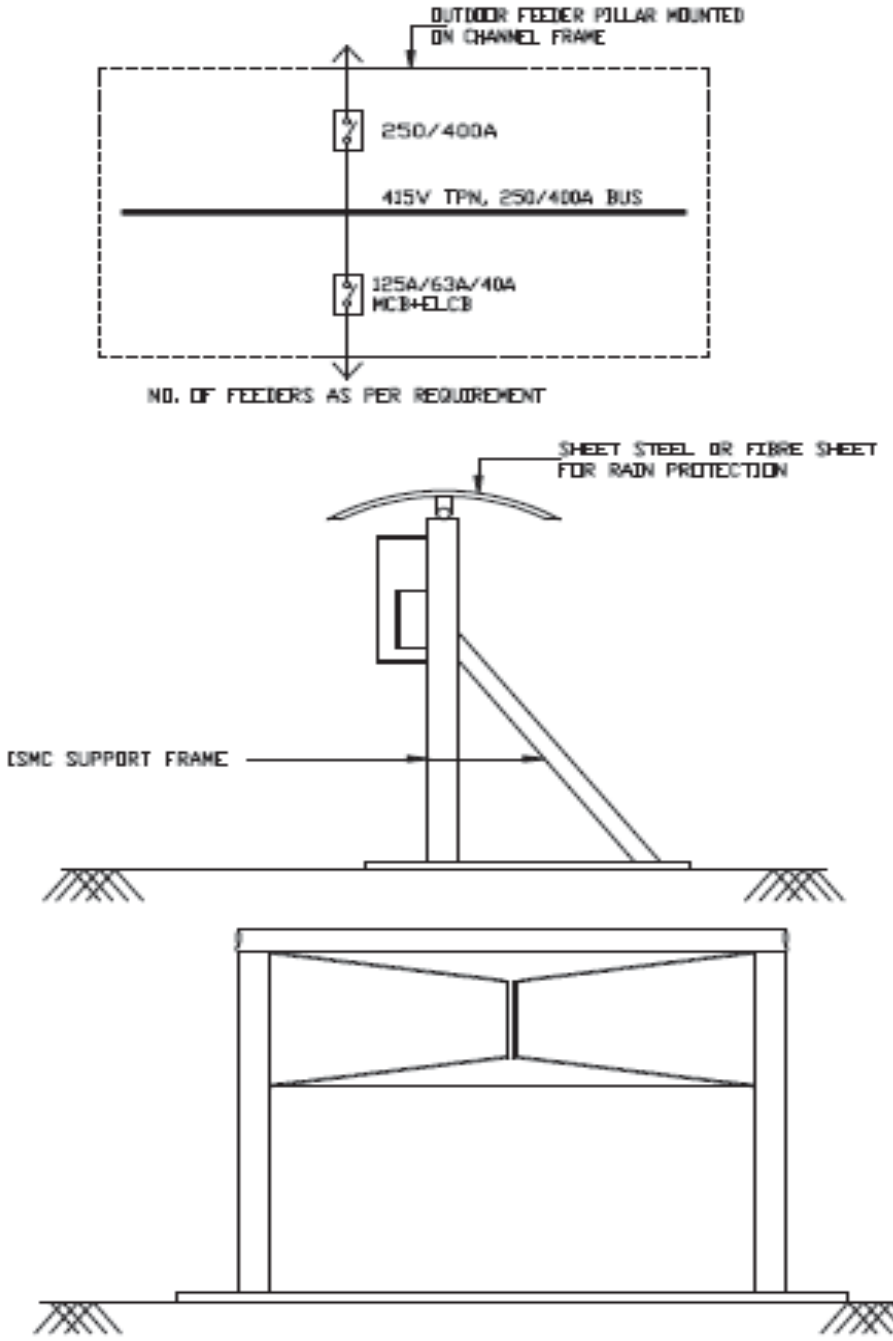
TRAINING SUBJECTS / TOPICS

(For contractors' personnel)

1. The Law & Safety – Statutory Requirement / Applicable statutes / Duties of employer / employee
2. Policy & Administration – Why HSE? / Duties & Responsibilities of Safety Personnel at project site / Effect of incentive on accident prevention
3. HSE & Supervision – Duties of Supervisor / HSE integrated supervision / Who should be held responsible for site accidents?
4. Safety Budget / Cost of Accidents – Direct costs / Indirect costs
5. Hazard Identification / Type of hazards / HIRAC
6. Behavioural Safety & Motivation
7. Housekeeping – Storage / Stacking / Handling of materials / Hydra handling
8. Occupational Health in Construction sector
9. Personal Protective Equipments – Respiratory & Non- respiratory
10. Electricity & Safety – ELCB / Fuse / Powered tools / Project illumination
11. Handling of Compressed Gas – Transportation / Storage / FBAs / Fire prevention
12. Machine Safety – Machine guarding / Maintenance
13. Transportation – Hazards & risks in transp. of materials / ODC consignments
14. Cranes & Other Lifting machinery – Legal requirements vis-à-vis essential safety requirements.
15. Communication – HSE Induction / TBTs / Safety Committee / Safety meeting / Safety propaganda / Publicity.
16. Excavation – Risks & Dangers / Safety measures
17. Working at Heights – Use of ladder / Work on roofs / Scaffolds / Double harness lanyards / Life-line / Fall arrester / Safety Nets / Floor openings
18. Hazards in Welding & important safety precautions
19. Gas Cutting – Hazards & safety measures
20. Fire prevention & fire protection

APPENDIX - G

CONSTRUCTION POWER BOARD(typ)



NOTES:-
1. CONTRACTOR TO INSTALL TEMPORARY CONST. POWER BOARD AS SHOWN IN THE DRG. ITS LOCATION SHALL BE EASILY ACCESABALE.
2. POWER DISTRIBUTION BOARD SHALL BE EARTHED AT TWO POINTS BY MINIMUM 40X5MM GI STRIP FROM THE AVILABLE GRID OR DIRECTLY CONNECTED TO TWO DIRECTLY DRIVEN EARTH ELECTRODES.
3. DISTRIBUTION BOARD SHALL BE FABRICATED BY USING 14MM CRCA SHEET STEELWITH HINGED DOORSAND ALL COMPONENT MOUNTED IN IT.
4. ALL INCOMING AND OUTGOING CABLESSHALL HAVE BOTTOM ENTRY.

APPENDIX-H

LIST OF PROCEDURES (MINIMUM) TO BE FORMING PART OF HSE PLAN:-

A. HSE Management Procedures:

- x
- x HSE Risk Management (including JSA/HIRA)
- x HSE Legal Compliance and Other Requirements
- x HSE Objectives & Performance
- x HSE Training and Competence (including Induction)
- x HSE Motivation & Award Scheme
- x HSE Audits
- x HSE Meetings
- x HSE Sub Contractor Management
- x HSE Emergency Management
- x HSE Incidents Reporting and Management
- x HSE Reports
- x HSE Management System Review
- x HSE Change Management
- x HSE procedure for Behaviour based Safety
- x First Aid & Management

  Roles, Responsibility, accountabilities and Authorities

B. Job procedures/Safe Operating procedures

- x
- x Setting Up Site & Signage's
- x Handling of Electrical Appliances
- x Working at Height
- x Confined Space Entry
- x Permit to Work (including hot works)
- x Housekeeping
- x Lifting Operations
- x Transportation of materials including Manual Handling
- x Compressed Air Tools and Units
- x Earthmoving Operations & excavation
- x Scaffolding
- x Fire Prevention/Protection
- x Hazardous Substance handling & Storage
- x Radiation Hazard

  Personal Protective Equipment

FORMAT NO. : HSE-1 REV 0

SAFETY WALK-THROUGH REPORT

(Name & signature of walk through performer to be inserted at the bottom of each page)

Project : _____ Report no. : _____

Date : _____ Contractor : _____

Inspection by :_____ Owner : _____

Frequency : Monthly Job no. : _____

Note : Write 'NA' wherever the item is not applicable

SL. NO.	ITEM	Satisafctory / Yes	Non satisfactory/ No	Remarks	Action
1.	HOUSEKEEPING				
a)	Waste containers provided and used				
b)	Sanitary facilities adequate and Clean				
c)	Passageways and Walkways Clear				
d)	General neatness of working areas				
e)	Other				
2.	PERSONNEL PROTECTIVE EQUIPMENT				
a)	Goggles; Shields				
b)	Face protection				
	Hearing protection				
	Foot protection				
e)	Hand protection				
f)	Respiratory Masks etc.				
g)	Full body harness conforming to C$\dot{e}$, EN 361				
h)	Hard hat (HDPE)				
i)	Other				
3.	EXCAVATIONS/OPENINGS				
a)	Openings properly covered or barricaded				
b)	Excavations shored				
c)	Excavations barricaded				
d)	Overnight lighting provided				
e)	Other				

Safety walk-through performer (Name & Signature)……..

FORMAT NO. : HSE-1 REV 0

SL. NO.	ITEM	Satisafctory / Yes	Non satisfactory/ No	Remarks	Action
4.	WELDING & GAS CUTTING				
a)	Gas cylinders chained upright				
b)	Cables and hoses not obstructing				
c)	Screens or shields used				
d)	Flammable materials protected				
e)	Live electrode bits contained properly				
f)	Fire extinguisher (s) accessible				
g)	Other				
5.	SCAFFOLDING & BARRICADING				
a)	Fully decked platforms				
b)	Guard and intermediate rails in place				
c)	Toe boards in place				
d)	Adequate shoring				
e)	Adequate access				
f)	Positive barricading for critical activities				
g)	Installation of warning signs				
h)	Other				
6.	LADDERS				
a)	Extension side rails 1 m above				
b)	Top of landing				
c)	Properly secured				
d)	Angle + 70^0 from horizontal				
e)	Other				

Safety walk-through performer (Name & Signature)……..

FORMAT NO. : HSE-1 REV 0

SL. NO.	ITEM	Satisafctory / Yes	Non satisfactory /No	Remarks	Action
7.	HOISTS, CRANES AND DERRICKS				
a)	Condition of cables and sheaves OK				
b)	Condition of slings, chains, hooks and eyes O.K.				
c)	Inspection and maintenance log-books maintained				
d)	Outriggers used				
e)	Reverse horn installed / active / coupled with gear				
f)	Signs/barricades provided				
g)	Signals observed and understood				
h)	Qualified operators				
i)	Other				
8.	MACHINERY, TOOLS AND EQUIPMENT				
a)	Proper instruction				
b)	Safety devices				
c)	Proper cords				
d)	Inspection and maintenance				
e)	Other				
9.	VEHICLE AND TRAFFIC				
a)	Rules and regulations observed				
b)	Inspection and maintenance				
c)	Licensed drivers				
d)	Other				

Safety walk-through performer (Name & Signature)……

FORMAT NO. : HSE-1 REV 0

SL. NO.	ITEM	Satisafctory / Yes	Non satisfactory /No	Remarks	Action
10.	TEMPORARY FACILITIES				
a)	Emergency instructions posted				
b)	Fire extinguishers provided				
c)	Fire-aid equipment available				
d)	Secured against storm damage				
e)	General neatness				
f)	In accordance with electrical requirements				
g)	Other				
11.	FIRE PREVENTION				
a)	Personnel trained & instructed to make use of facility				
b)	Fire extinguishers checked periodically & record maintained				
c)	No smoking in Prohibited areas.				
d)	Fire Hydrants not obstructed ~~Clear~~				
e)	~~Other~~ Regular fire drill conducted				
12.	ELECTRICAL				
a)	Use of 3-core armored cables everywhere				
b)	Usage of 'All insulated' or 'double-insulated' electrical tools				
c)	All electrical connection are routed through ELCB				
d)	Natural Earthing at the source of power (Main DB)				
e)	Continuity and tightness of earth conductor				
f)	Effective covering of junction boxes, panels and other energized wiring places				
g)	Ground fault circuit interrupters provided				
h)	Prevention of tripping hazards maintained				
f)	DCP extinguishers arranged & licensed electrician engaged at site				

Safety walk-through performer (Name & Signature)……

FORMAT NO. : HSE-1 REV 0

SL. NO.	ITEM	Satisafctory / Yes	Non satisfactory /No	Remarks	Action
14.	HANDLING AND STORAGE OF MATERIALS				
a)	Safely stored or stacked				
b)	Passageways clear / free from obstructions				
c)	Fire fighting facility in place				
15.	FLAMMABLE GASES AND LIQUIDS				
a)	Containers clearly identified / protected from fire				
b)	Safe storage & transportation arrangement made				
c)	Fire extinguishers positioned nearby				
d)	Facilities kept away from electric spark, hot spatters & ignition source.				
16.	WORKING AT HEIGHT				
a)	Approved Erection plan and work permit in place				
b)	Safe access, Safe work platform & Safety nets provided				
c)	Life lines, Fall arrester, Full body harness and with double lanyards used;				
d)	Health Check record available for workers going up?				
e)	Protective handrails arranged around floor openings				
17.	CONFINED SPACE				
a)	Work Permit obtained from requisite authority				
b)	Test for toxic gas and sufficient availability of oxygen conducted & status				
c)	Supervisor present at site & at least one person outside the confined space for monitoring deputed				
d)	Availability of safe means of entry, exit and ventilation (register for entry & exit maintained)				
e)	Fire extinguisher and first-aid facility ensured				
f)	Lighting provision made by using 24V Lamp				
g)	Proper usage of PPEs ensured				
18.	RADIOGRAPHY				
a)	Proper storage and handling of source as per BARC/ AERB guidelines (authorized radiographer available)				
b)	Work permit obtained				

Safety walk-through performer (Name & Signature)……

FORMAT NO. : HSE-1 REV 0

SL. NO.	ITEM	Satisafctory / Yes	Non satisfactory /No	Remarks	Action
c)	Cordoning of the area done				
d)	Use of appropriate PPE's ensured				
e)	HSE training to workers/supervisors imparted during the fortnight (indicate topic)				
f)	Minimum occupancy of workplace ensured				
19.	HEALTH CHECKS				
a)	All Workers medically examined and found be fit for working at heights (slinging, rigging, painting etc.) in confined space in excavation / trenching in shot blasting				
b)	Availability of First Aid box with contents				
c)	Proper sanitation at site, office and labour camps				
d)	Arrangement of medical facilities.				
e)	Measures for dealing with illness at site & labour camps.				
f)	Availability of Potable drinking water for workmen & staff.				
g)	Provision of crèches for children.				
h)	Stand by vehicle / ambulance available for evacuation of injured				
20.	ENVIRONMENT				
a)	Chemical and Other Effluents properly disposed				
b)	Cleaning liquid of pipes disposed off properly				
c)	Seawater used for hydro-testing disposed off as per agreed procedure				
d)	Lubricant Waste/Engine oils properly disposed				
e)	Waste from Canteen, offices, sanitation etc disposed properly				
f)	Disposal of surplus earth, stripping materials, Oily rags and combustible materials done properly				
g)	Green belt protection				

Safety walk-through performer (Name & Signature)……

STANDARD SPECIFICATION FOR
HEALTH, SAFETY &
ENVIRONMENT MANAGEMENT
AT CONSTRUCTION SITES

FORMAT NO. : HSE-2 REV 0

ACCIDENT / INCIDENT REPORT

(To be submitted by Contractor after every Incident / Accident within 24 hours to PDIL/ Owner)

Report No.: _____ **Date**: _____

Project site: _____ **Name of work:** _____

Contractor's name: _____ Contractor's Job Engineer (name) _____

Non-disabling injury (Non-LTA)	Hospitalized but resumed duty before end of 48 hrs	
Disabling injury (other LTA)	Hospitalized & failed to resume duty within next 48 hrs	
Fatal (LTA):	Death / Expiry	
First Aid case (non LTA)	Resume duty after first aid	

Name of the injured: _____ Father's name of victim: _____

Sub Contractor's Name: …….

Gate Pass No.:…….. Age: _____Yrs. Victim's medical fitness exam. (Pre-empl.) date: - _____

Date & time of Accident / Incident: _____

Names of Witnesses: (1_____ (2)_____ (3) _____

Profession of victim:

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c.operator	
Engineer		Manager		Other/specify	

Qualification

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

Job Experience

NIL		Less than 2 yrs		2-5 yrs	
5-10 yrs		11-15 yrs		15 years and above	

Location where the incident happened: _____

_____

FORMAT NO. : HSE-2 REV 0

Activity / Works that was continuing during incident / accident: -

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

What exactly the victim was doing just before the incident / accident? .....

…….

…….

Nature of injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			

Parts of body involved in incident / accident

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

Accident type:

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

FORMAT NO. : HSE-2 REV 0

Medical Aid provided: - (indicate specific aids / treatment etc.)-

……

……..

Actions taken to prevent recurrence of similar incident / accident: ……

……

……

……

……

……

……...

Intimation to local authorities (Dist Collector / Local Police Station / ESI authority): Yes / No / NA.

If yes, to whom ……..

Safety Officer
(Signature and Name)

Site Head / Resident Construction Manager
(Signature and Name)
Stamp of Contractor

To : Owner
: RCM/Site-in-charge PDIL (3 copies)
→ Divisional Head (Constn) through RCM
→ Project Manager, PDIL, through RCM

STANDARD SPECIFICATION FOR
HEALTH, SAFETY &
ENVIRONMENT MANAGEMENT
AT CONSTRUCTION SITES

FORMAT NO. : HSE-3 REV 0

SUPPLEMENTARY INCIDENT / ACCIDENT INVESTIGATION REPORT
TICK THE APPROPRIATE ONE AS APPLICABLE (furnish within 72 hours)

Supplementary to Incident / Accident Report No: _____ (Copy enclosed)

Report No.: _____ **Date**: _____

Project site: _____ **Name of work:** _____

Contractor's name: _____ Contractor's Job Engineer (name) _____

Non-disabling injury (Non-LTA)	Hospitalized but resumed duty before end of 48 hrs	
Disabling injury (other LTA)	Hospitalized & failed to resume duty within next 48 hrs	
Fatal (LTA):	Death / Expiry	
First Aid case (non LTA)	Resume duty after first aid	

Name of the injured: _____ Father's name of victim: _____

Sub Contractor's Name: …….

Gate Pass No.:…….. Age: _____Yrs. Victim's medical fitness exam. (Pre-empl.) date: - _____

Date & time of Accident / Incident: _____

Names of Witnesses: (1_____ (2)_____ (3) _____

Profession of victim:

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c.operator	
Engineer		Manager		Other/specify	

Qualification

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

Job Experience

NIL		Less than 2 yrs		2-5 yrs	
5-10 yrs		11-15 yrs		15 years and above	

Location where the incident happened: _____

_____

FORMAT NO. : HSE-3 REV 0

Activity / Works that was continuing during incident / accident: -

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

What exactly the victim was doing just before the incident / accident? .....

…….

…….

Particular of tools & tackles being used and condition of the same after incident/accident:

…….....

……

Description of Incident/Accident (How the incident was caused):

…….

……

Nature of injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			

Parts of body involved in incident / accident

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

FORMAT NO. : HSE-3 REV 0

Accident type:

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

Name & Designation of person who provided First-Aid to the victim: ----------

Name & Telephone number of Hospital where the victim was treated_____

Mode of transport used for transporting victim – Ambulance / Private car / Tempo / Truck / Others

How much time taken to shift the injured person to Hospital_____

In case of FATAL incident, indicate clearly the BOCW Registration No. of the victim /Company……

Comments of Medical Practitioner, who treated / attended the victim/injured (attached / described here)_____

What actions are taken for investigation of the incident, please indicate clearly – (Video film / Photography / Measurements taken etc……..)

Immediate cause (Please tick the right applicable) –

Hazardous methods or procedures inadequately guarded		Poor housekeeping		Inadequate or improper PPE	
Environmental hazards (excess noise/ space constraint/ inadequate ventilation		improper illumination/Moving on oval surface		Working on dangerous equipment	

FORMAT NO. : HSE-3 REV 0

Failure to secure		Horse-play		Failure to use PPE	
Inattention to surroundings		Improper use of hands & body-parts		By-passing safety devices	
Unsafe mixing or placement of tools & tackles		Bypassing standard procedures		Failure in communication	
Operating without authority		Improper use of equipment or tools & tackles		drug or alcoholic influence	
excessive haste		Others(specify)			

Basic cause

Over confidence		Impulsiveness		over-exertion	
Faulty judgement or poor understanding		Failing to keep attention constantly		Nervousness & Fear	
Fatigue		Defective vision		Ill health or sickness	
Slow reaction		Others(specify)			

Root cause

Inadequate Engg		Improper Design		Inadequate Planning & organization	
Inadequate knowledge		Inadequate skill		Inadequate training	
Inadequate supervision		Improper work procedure		Inadequate compliance with standard	
Substandard performance		Inadequate maintenance		Improper inspection	
Others(specify)					

Loss of man days and impact on site works, (if any) –

Remarks from Contractor's Safety Officer / Engineer –

Was the victim performing relevant tasks for which he was engaged /employed? Yes / No
Was the Supervisor present on work-site during the incident? Yes / No
Have the causes of incident rightly identified? Yes / No
Cause of Accident was_____

FORMAT NO. : HSE-3 REV 0

Remedial measures recommended by **Safety Officer of Contractor** for avoiding similar incident in future

: ……

…….

…….

…….

…….

……

……...

Intimation to local authorities (Dist Collector / Local Police Station / ESI authority): Yes / No / NA.

If yes, to whom ……..

Safety Officer
(Signature and Name)

Site Head / Resident Construction Manager
(Signature and Name)
Stamp of Contractor

To : Owner
: RCM// Site-in-charge of PDIL (3 copies)
→ Divisional Head (Constn) through RCM
→ Project Manager PDIL, through RCM

FORMAT NO. : HSE-4 REV 0

NEAR MISS INCIDENT/ DANGEROUS OCCURRENCE SUGGESTED PROFORMA

(to be submitted within 24 hours)

x

Near Miss : Human injury escaped & no damage to property, equipment
x or interruption to work.

Dangerous Occurrence: Damage to property, equipment or interruption of work, but not resulting in personal injury/illness, e.g. Fire incident, collapse of structure, crane failure, etc

Report No.: _____

Name of Site: _____ Date: _____

Name of work: _____ Contractor: _____

Incident reported by :

Date & Time of Incident :

Location :

Brief description of incident

Probable cause of incident

Suggested corrective action

Steps taken to avoid recurrence Yes ☐ No ☐

To : Owner
: RCM/Site-in-charge PDIL (3 copies)
→ Divisional Head (Constn) through RCM
→ Project Manager PDIL, through RCM

STANDARD SPECIFICATION FOR
HEALTH, SAFETY &
ENVIRONMENT MANAGEMENT
AT CONSTRUCTION SITES

FORMAT NO. : HSE-5 REV 0

MONTHLY HEALTH, SAFETY & ENVIRONMENT (HSE) REPORT

(To be submitted by each Contractor)

Actual work start Date: _____ For the Month of: _____
Project: _____ Report No: _____
Name of the Contractor: _____ Status as on : _____
Name of Work : _____ Job No : _____

(Contractor in consultation with PDIL shall generate the reports through web based package(www.PDIL.co.in/conthse) only.

ITEM		UPTO PREVIOUS MONTH	THIS MONTH	CUMULATIVE
1) Average number of Staff & Workmen (average daily headcount, not man days)				
2) Man-hours worked				
3) Number of Induction programmes conducted				
4) Number of HSE meetings organized at site				
5) Number of HSE awareness programmes conducted at site				
6) Number of Tool Box Talks conducted				
7) Number of Lost Time Accidents (LTA)	Fatal			
	Other LTA			
8) Number of Loss Time Injuries (LTI)	Fatalities			
	Other LTI			
9) Number of Non-Loss Time Accidents				
10) Number of First Aid Cases				
11) Number of Near Miss Incidents				
12) No. of unsafe acts/ practices detected				
13) No. of disciplinary actions taken against staff/ workmen				
14) Man-days lost due to accidents				
15) LTA Free man-hours i.e. LTA free man-hours counted from the Last LTA (enter date: …….)				
16) Frequency Rate (No. of LTA per 2 lacs man-hours worked)				
17) Severity Rate (No. of man days lost per 2 lacs man-hours worked)				
18) Loss Time Injury Frequency (No. of LTI per 2 lacs man-hours worked)				
19) No. of activities for which Job Safety Analysis (JSA) completed				
20) No. of incentives/ awards given				
21) No. of occasions on which penalty imposed by PDIL/ Owner				
22) No. of Audits conducted				
23) No. of pending NCs in above Audits				
24) Compensation cases raised with Insurance				
25) Compensation cases resolved and paid to workmen				

26) Whether workmen compensation policy taken			Yes		No
27) Whether workmen compensation policy is valid			Yes		No
28) Whether workmen registered under ESI Act, as applicable			Yes		No

Remarks, if any

Date:

Prepared by Safety Officer (Signature and Name)

Approved by Site Head / Resident Construction Manager (Signature and Name)

To : - OWNER
- RCM PDIL (2 copies)

STANDARD SPECIFICATION FOR
HEALTH, SAFETY &
ENVIRONMENT MANAGEMENT
AT CONSTRUCTION SITES

FORMAT NO. : HSE-6 REV 0

PERMIT FOR WORKING AT HEIGHTS (ABOVE 2.0 METER)

(In duplicate to be issued daily for site and for office)

Permit No…….. Name of Main Contractor……
Name of work executing agency / sub agency / vendor:……...
Date…… Exact Location of work……
Nature of work ……..Duration of work (from) …… (to) ……..…..
Number of workers covered within this permit……
(*List enclosed with name & gate pass numbers.*)

Sl. No.	Items / Subjects	Status of compliance (Yes / No)	
1	Work areas / Equipments inspected		
2	Work area cordoned off		
3	Adequate lighting is provided		
4	Precautions against public traffic taken		
5	Concerned persons in & around have been alerted & cautioned		
6	Hazards / risks involved in routine / non-routine task assessed and control measures have been implemented at specific task		
7	ELCB provided for electrical connection & found working		
8	Ladder safely attached / fixed		
9	Scaffoldings are checked and TAGs are found used correctly		
10	Working platforms are provided and are found sound /safe for use		
11	Safe access & egress arrangements (e.g. ladders, fall arresters, life-lines etc.) are satisfactorily incorporated		
12	a. Openings on platform / floors are effectively cordoned / covered		
	b. Safety Nets are provided wherever required		
13	Use of following safety gadgets by people working at area under this permit, is checked and found satisfactory - Safety helmet Safety harness (full body) with double lanyard Safety Shoes Safety gloves Safety goggles		
14	Housekeeping of work area found satisfactorily tidy / clean & clear		
15	Adequate measures have been taken for works being continued at the ground level, when simultaneous works are permitted overhead at that very location.		
16	Materials are not thrown from heights on to ground		
17	Medical examination of workers are made & found satisfactory		
18	Responsible job engineer / supervisor found physically present at work spot for overall administration of work as well as safety of people.		

Above items have been checked & compliance has been found in place. Hence work is permitted to start / continue at the above-mentioned location. Work shall not start till identified lapses are rectified.

Additional Precautions, if any …….
……..

Work Permit issued by
Contractor Engineer/RCM

Verification By
Contractor Safety Officer

AT THE END OF THE DAY/WORK:
All works at height are completed & workmen have returned safely from work location at (time)…….. (date)……

(Sig. Contractor Engineer)

FORMAT NO. : HSE-7 REV 0

CONFINED SPACE ENTRY PERMIT

Project site _____ Sr.No. _____
Name of the work _____ Date _____
Name of Contractor _____ Nature of work _____
Exact location of work _____

Safety Requirements: POSITIVE ISOLATION OF THE VESSEL IS MANDATORY

(A) Has the equipment been ?

Y	NR		Y	NR		Y	NR	
☐	☐	Isolated from power/steam/air	☐	☐	water flushed &/or steamed	☐	☐	radiation sources removed
☐	☐	isolated from liquid or gases	☐	☐	Man ways open & ventilated	☐	☐	proper lighting provided
☐	☐	depressurized &/or drained	☐	☐	cont. inert gas flow arranged	☐	☐	
☐	☐	blanked/ blinded/ disconnected	☐	☐	adequately cooled	☐	☐	

(B) Expected Residual Hazards

☐	☐	lack of O_2	☐	☐	combustible gas/ liquid	☐	☐	H_2S / toxic gases
☐	☐	corrosive chemicals	☐	☐	pyrophoric iron / scales	☐	☐	electricity / static
☐	☐	heat/ steam / frost	☐	☐	high humidity	☐	☐	ionizing radiation
☐	☐		☐	☐		☐	☐	

(C) Protection Measures

☐	☐	gloves	☐	☐	ear plug / muff	☐	☐	goggles / face shield
☐	☐	protective clothing	☐	☐	dust / gas / air line mask	☐	☐	personal gas alarm
☐	☐	grounded air duct/blower /AC	☐	☐	attendant with SCBA/air mask	☐	☐	rescue equipment/team
☐	☐	Fire fighting arrangements	☐	☐	safety harness & lifeline	☐	☐	communication equipment
☐	☐		☐	☐		☐	☐	

Authorization / Renewal (It is safe to enter the confined space)

	No. of persons allowed	Name of persons allowed	Signature		Time		Signature
			Contractor's Supervisor	Contractor's Safety Officer	From	To	Workman

Permit Closure :

(A) Entry ☐ was closed ☐ stopped ☐ will continue on ...

(B) ☐ Site left in a safe condition ☐ Housekeeping done

(C) Multilock ☐ removed ☐ key transferred
☐ Ensured all men have come out ☐ Man-ways barricaded

Remarks, if any:

FORMAT NO. : HSE-8 REV 0

RADIATION WORK PERMIT

Project : Sr.No. :
Name of the work : Date :
Name of site contractor : Job No.:

Location of work :

Source strength :

Cordoned distance (m) :

Name of Radiography agency : Approved by Owner/PDIL ☐

No. of workers engaged :
(*List enclosed with name & gate pass numbers.*)

The following items have been checked &compliance shall be ensured during currency of the permit:

S. No.	Item description	Done
	Safety regulations as per BARC/AERB ensured while source in use/in transit & during storage	
	Area cordoned off / safe working platform provided	
	Lighting arrangements for working during nights ensured	
	Warning signs/ flash lights installed	
	Cold work permit taken (if applicable)	
	PPEs like film badges, dosimeters used	

Additional precautions, if any _____

(Radiography Agency's BARC/AERB authorized Supervisor)

Permission is granted.

Permit is valid from _____ AM/PM _____ Date to _____ AM/PM _____
Date

(Signature of permit issuing authority of site contractor)

Name :Designation: Date:
Permit renewal:

Permit extended up to		Additional precautions required, if any	Sign of issuing authority with date (of site contractor)
Date	Time		

Work completed/ stopped/ area cleared at _____ Hrs of Date _____
(Sign. of permit issuing authority)
Name & Signature of site contractor:

STANDARD SPECIFICATION FOR HEALTH, SAFETY & ENVIRONMENT MANAGEMENT AT CONSTRUCTION SITES

FORMAT NO. : HSE-9 REV 0

DEMOLISHING/DISMANTLING WORK PERMIT

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :

Name of sub-contractor : No. of workers to be engaged:
(*List enclosed with name & gate pass numbers.*)

Line No./ Equipment No./ Structure to be dismantled :

Location details of dismantling/ demolition with sketch : (clearly indicate the area)

The following items have been checked &compliance shall be ensured during currency of the permit:

S. No.	Item description	Done	Not Applicable
	Services like power, gas supply, water, etc. disconnected	☐	☐
	Dismantling/ Demolishing method reviewed & approved	☐	☐
	Usage of appropriate PPEs ensured	☐	☐
	Precautions taken for neighbouring structures	☐	☐
	First-Aid arrangements made	☐	☐
	Fire fighting arrangements ensured	☐	☐
	Precautions taken for blasting	☐	☐

(Contractor's Supervisor) (Contractor's Safety Officer)

Permission is granted.

(Permit issuing authority)

Name :
Date :

Completion report :

Dismantling/ Demolishing is completed on _____ Date at _____ Hrs.

Materials/ debris transported to identified location ☐ Tagging completed (as applicable) ☐

Services like power, gas supply, water, etc. restored ☐

(Permit issuing authority)

CONTRACTOR's NAME

STANDARD SPECIFICATION FOR
HEALTH, SAFETY &
ENVIRONMENT MANAGEMENT
AT CONSTRUCTION SITES

FORMAT NO. : HSE-10 REV 0

DAILY SAFETY CHECKLIST

(To make use of before start of day's work)

Project :
Name of the work :
Name of contractor :

Sr.No. :
Date :
Job No. :

Description of Job decided to perform : -

Use of PPE / Safety Gadgets

Sl. No	PPEs	Compliance (Yes / No)	Sl. No	PPEs	Compliance (Yes / No)
1	Safety Helmets		6	Face Shield	
2	Safety Shoes		7	Full body harness	
3	Hand Gloves		8	Fall Arrest System	
4	Dust Musk		9	Safety net	
5	Safety Goggles		10	Horizontal life-line made of steel wire, (dia not less than 8.0 mm.)	

(Serial No. 1 & 2 are compulsory for everyone. Specify & ensure use of other safety gadgets as required for the job)

Identify following important unsafe conditions: -

Sl. No	Conditions	Yes / No
1	Access to work site / emergency escape clear	
2	Soil / Loose earth kept away from excavated pit / slope / ladder provided	
3	Electrical wire / welding lead lying entangled on ground / welding m/c. booth accessible	
4	Elevated work platform / open ends are protected	
5	Ground area cordoned off before lifting works or erection at height / ground area checked & cordoned-off before start of height works	
6	Structural members / erected pipes / wooden boards/pieces etc. are safely anchored at heights and are not likely to fall down on people when working beneath	
7	Rope ladders tied-up on tall steel structures, long before are removed to get rid of their use	
8	Any Other	

Indicate actions taken, if status of any of the above items is found "No" ……

……..

Specific Safety guidelines / precautions, if any (communicated thro' TBT) ……

……

……

Above conditions and PPE compliances are checked by undersigned and correct status are indicated after verification

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

STANDARD SPECIFICATION FOR
HEALTH, SAFETY &
ENVIRONMENT MANAGEMENT
AT CONSTRUCTION SITES

FORMAT NO. : HSE-11 REV 0

HOUSEKEEPING ASSESSMENT & COMPLIANCE

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :
Name of contractor : Fortnightly

Sl No.	Subjects of Review	Satisafctory/ Yes	Non satisfactory/No	Remarks	Action
1.	Cleanliness at the Main entry / access of site				
2.	Ground condition / floor areas free from water-logging / oil spillage				
3.	Ground & elevated floors free from rubbish / wastes / accumulated debris / scraps.				
4.	Manholes / openings are covered / fenced				
5.	Trenches are barricaded / walkways are in place				
6.	Drains are cleaned / not choked / not occupied by dumped materials				
7.	Sufficient CAUTION boards / instructions displayed				
8.	Construction machinery are maintained & parked in orderly manner.				
9.	Movement of site people are not obstructed because of dumping / storing of construction materials				
10.	Access / egress to Electrical Distribution Boards / Panels clear from wires / cables / earth-strips etc.				
11.	Electrical panel rooms / sheds / MCC / Control rooms / Substations etc. are clean & tidy and not used for storing dress / clothes, tiffin-box or bicycles.				
12.	Passage behind Elec. panels are free for access				
13.	Fire extinguishers / fire-buckets are accessible without any difficulty.				
14.	Stair-steps, platforms & landings are clear & tidy				
15.	Sheds / rooms & work areas have got sufficient illumination as well as ventilation				
16.	Cables / Wires / welding leads are routed / hanged appropriately & are not creating unsafe condition.				
17.	Stacking / storing of insulation materials or their packing.				
18.	Removal or cleanliness of left-over sand, concrete, brick-bats, insulation-materials, excess earth, wastes etc.				
19.	Storing / stacking of sand, metal chips, re-bars, steel pipes, valves, fittings etc.				
20.	One escape route at ground & minimum two escape routes at elevation available.				

FORMAT NO. : HSE-11 REV 0

Sl No.	Subjects of Review	Satisafctory/ Yes	Non satisfactory/No	Remarks	Action
21.	Captions / Posters / Slogans on various safety instructions are displayed legibly in local language				
22.	Cable trenches are water-free or regular arrangement for taking out accumulated water exists.				
23.	Windows of rooms / offices are regularly cleaned				
24.	Facilities for cycle sheds, drinking water, washing, rest-rooms etc. are maintained in tidy manner.				
25.	Toilet, Urinals, Canteen / kitchen / pantry etc. are maintained & free from obnoxious smell.				
26.	Construction tools / tackles are stored systematically - the items are tagged / tested / certified by competent third party.				
27.	Sufficient numbers of Dust-bins / Waste-bins found at site and are regularly emptied.				

Additional remarks, if any -
……
……
……

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

STANDARD SPECIFICATION FOR
HEALTH, SAFETY &
ENVIRONMENT MANAGEMENT
AT CONSTRUCTION SITES

FORMAT NO. : HSE-12 REV 0

INSPECTION OF TEMPORARY ELECTRICAL BOOTH / INSTALLATION

Project :
Name of the work :
Name of contractor :
Sub Station No:/Booth No

Sr.No. :
Date :
Job No. :
Location:

SL NO	SUBJECTS	OBSERVATION (YES /NO)	ACTION TAKEN
1	Switchboards installed properly are in order and protected from rain & water-logging.		
2	Adequate illumination provided for switchboard operation during night hours & the lamps are protected from direct human contact.		
3	Voltage ratings, DANGER signs, Shock-Treatment-Chart displayed in the installation / booth		
4	Fire extinguisher (DCP or CO_2) & Sand Bucket kept in close vicinity of Switchboards		
5	Valid License & Competent Electrician / Wireman available & name/ license no. displayed at booth / installation.		
6	General housekeeping in & around booth / installation found in order.		
7	Cable-route-markers for U/G cables provided.		
8	Monthly inspection report of Electrical hand tools available in booth / installation.		
9	Insulated Mat provided in front of Elec. Panels.		
10	Rubber hand gloves available/ used by Electricians		
11	Availability of CAUTION boards for shutdown & / or repairing works.		
12	All incoming & outgoing feeders have proper MCCB / HRC fuses / Switches.		
13	Switchboards "earthed" at two distinctly isolated locations.		
14	Switchboards have adequate operating space at the front face & at the rear face too.		
15	All connections provided through 30mA ELCB.		
16	Testing records of all ELCBs available at site		
17	Only industrial type plugs & sockets are used.		
18	Temporary connections are 3-core double insulated & free from cuts & joints and 3 rd core is earthed at both ends		
19	Socket boards are properly mounted on stand & protected from water ingress.		
20	Electrical equipments operating above 250V have two earthing / double earthing.		
21	All incoming / outgoing cables are properly glanded & terminated with "lugs".		
22	Switch-boards are of industrial variety / type.		
23	Sketch for installation / connection (SLD) made & pasted & other safety labels/display boards		
24	Labeling of incoming / outgoing feeders made.		
25	All hand lamps are protected from direct contact.		
26	All electrical cable / joints are in safe condition		

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

STANDARD SPECIFICATION FOR HEALTH, SAFETY & ENVIRONMENT MANAGEMENT AT CONSTRUCTION SITES

FORMAT NO. : HSE-13 REV 0

INSPECTION FOR SCAFFOLDING

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :

Sl. No	Description	Yes	No	N.A	Actions taken
1	Whether work permit is obtained to take up work at height above 1.5 Mts?				
2	Whether atmospheric condition is "stormy" or "raining" and works at heights have been permitted?				
3	Whether steel pipes scaffoldings are used for units /off-site areas?				
4	Whether scaffolding has been erected on rigid/firm/leveled surfaces / ground? Whether "foot-seals" or "base-plates" are used beneath the up-rights (vertical steel pipes)				
5	Whether scaffold construction is as per IS specification with toe-board and hand-rails (top-rail as well as mid-rail)?				
6	Whether distance between two successive up-rights are less than 2.5 Mts (height of scaffold & load carrying capacity governs the distance between two uprights)				
7	Whether all uprights are extended at least 900 mm above the top most working platform (to enable fitting of handrails)?				
8	Whether vertical distance of two successive ledgers is satisfactory? *(varying between 1.3 Mts. To 2.1 Mts)*				
9	Whether the peripheral areas of working at height are cordoned-off? (for avoiding accident to people arising out of dropped / deflected materials)				
10	Whether platform is provided? Is it safely approachable?				
11	Whether end of scaffold platform / board are extended beyond transoms? (125mm to 150 mm)				
12	Whether CE / IS approved quality and worthy conditioned full-body safety harness (with double lanyard & karabiners) are used while working at heights?				
13	Whether life-line of safety harness is anchored to an independent secured support capable of withstanding load of a falling person?				
14	Whether the area around the scaffold is cordoned off to prohibit the entry of unauthorized person / vehicle?				
15	Whether clamps used are of good condition, of adequate strength and free from defects?				
16	Whether ladder is placed at secured and leveled surface?				
17	Whether water-pass and oil-spills are avoided around the scaffold structure?				
18	Whether ladder is extended 1.5mts. above the landing point at height?				
19	Whether more than one access/egress provided to the scaffold?				
20	Whether ladder used are of adequate length and overlapping of short ladders avoided?				
21	Whether metallic ladders are placed much away from near-by electrical transmission line?				
22	Whether rungs of ladder are inspected and found in good order?				
23	Whether fall-arresters provided on both the access/egress routes?				
24	Whether diagonal (cross) bracings are provided at regular interval on the scaffold?				
25	Whether working platform on the scaffold has been made free from "jolt" or "gap"?				
26	Whether tools or materials are removed after completion of the day's job at heights?				
27	Whether a valid Permit for Work (PFW) is obtained before taking up work over asbestos or fragile roof?				
28	Whether sufficient precaution is taken while working on fragile roof?				

STANDARD SPECIFICATION FOR
HEALTH, SAFETY &
ENVIRONMENT MANAGEMENT
AT CONSTRUCTION SITES

FORMAT NO. : HSE-14 REV 0

PERMIT FOR ERECTION / MODIFICATION & DISMANTLING OF SCAFFOLDING

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :
Nature of activities : Duration: From……To…….

SL. No.	SUBJECTS / ITEMS	DONE	NOT DONE	REMARKS
1	Specific task of Erection / Modification / Dismantling of scaffolds, identified & TAGGED accordingly (before as well as after carrying-out jobs).			
2	People engaged in doing the job are identified & are certified by Job Engineer of Main Contractor as experienced / trained.			Names to be noted
3	Concerned persons are alerted by the Job Engineer of Main Contractor in connection with possible hazards & what the workmen MUST do / MUST not do.			
4	Verification by Job Engineer of Main Contractor made for confirming that all persons permitted to carry-out the jobs are making use of Helmet, Safety Shoes, Goggles, Gloves & Double lanyard safety harness and other relevant PPEs.			
5	Area of work is effectively cordoned-off / barricaded / illuminated.			
6	For taking-up / lowering down Scaffolding members / clamps / couplings etc. appropriate ropes / pulleys/ chains etc. have been arranged for use (not to throw any item) & the same have been verified as "fit for purpose".			
7	Items / members of scaffold, being lowered are removed from the area & stacked correctly.			
8	Ropes, chains, pulley blocks etc. being used for lifting or lowering scaffold items, are inspected by the Job Engineer & their certifications as well as physical conditions have been found O.K, before signing this PERMIT.			
9	Safety Net / Life-line / Fall Arresters etc. are arranged in position and Job Engineer has found working conditions favourable for activities to start.			
10	Scaffold erection or dismantling tasksare being supervised by Experienced Engineer / Competent person.			
11	Only competent & experienced people have been selected / engaged in Scaffolding erection, modification or dismantling tasks.			
12	Adequate & effective actions for traffic and movement of people around the cordoned-off area taken to avoid inadvertent incident			
13	Working platforms are protected with handrails & toe-boards.			
14	Access & Exit (for reach & escape) are safe for use by people.			
15	Tools, tackles to be used for above jobs are verified by job Engineers of Main contractor as genuinely good and tied-up at height (to prevent their fall).			
16	Site important Telephone Nos. are made known to everyone			
17	SOP (Safe Operating Procedure) for the specific task is made & followed too.			
18	Emergency vehicle has been arranged at work locations.			

x
x This permit for work shall be available at specific work location all the time.
x After completion of work, permit shall be returned to safety cell of main contractor, without fail.
x This Permit shall be issued maximum upto (Monday to Sunday).
Additional Precautions, if any
x ……
ACCORD OF PERMISSION (to be ticked) - **YES** ( ) / NO ( )

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer]

FORMAT NO. : HSE-14 REV 0

Everyday Site working conditions & performance of workmen shall be assessed / checked by Contractor Site Engr. and Safety Officer shall verify the same .

	Name / Sign.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Site Engr.								
Safety Off.								

FORMAT NO. : HSE-15 REV 0

PERMIT FOR HEAVY LIFT/CRITCAL ERECTION

Project :
Name of the work :
Name of contractor :
Nature of activities :
Location of work :
Equipment/Structure to be erected:

Sr.No. :
Date :
Job No. :
Duration: From……To……
Name /Type of crane :
Wt. of equipment/ structure to be erected :

SL. NO.	Description of Item	COMPLIANCE STATUS			Remarks
		Yes	No	Not applicable	
1)	Is the crane type suitable for lift or as per erection procedure?				
2)	Is the crane have the correct number of counterweights fitted?				
3)	Availability of Load Certification of crane from authorized agency.				
4)	Is the load chart of crane available in carne cabin/or with Crane operator?				
5)	Is the device to check the Wind speed in crane is working? Is the safety features in crane are working?				
6)	Availability of Load certification of slings and other accessories from authorized agency				
7)	Availability of Licensee/certificate for crane operator from authorized agency.				
8)	Availability of approved JSA for the subject activities.				
9)	Availability of approved erection/rigging procedures.				
10)	Availability of temporary gratings/ platforms for critical lifting(as applicable)				
11)	Tool Box conducted before erection?				
12)	Has the area been cordoned off?				
13)	Are the authorized persons during erection are identified?				
14)	Does each person identified for erection understand their roles and responsibilities?				
15)	Is the ground on which crane will rest or outrigger support are correct?				
16)	Is hard stand requirement (if any) complied?				
17)	Is the communication system (viz walkie talkies,etc are working properly?				
18)	If more than one crane is lifting the load, is an Intermediate rigger will supervise the lift?				
19)	If there is other obstruction within the operating radius of the crane, have correct precautions been taken to prevent collision?				
20)	All the persons are wearing the requisite PPE?				

Inspected & Issued by
Contractor Engineer/RCM

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-16 REV 0

PERMIT FOR ENERGY ISOLATION & DE-ISOLATION

Project : Sr.No. :
Name of the work : Date :
Name of contractor : Job No. :

ENERGY ISOLATION PERMIT

- Clearance required from:…..Hrs ……Date To …. ..Hrs ….Date
- Name of equipment/ energy source etc …….
- Nature of job to be done: …….
  Area…….Location:……..

PERMIT VALIDATION	PERFORMING AUTHORITY
I hereby authorize the ……..personnel(performer) to isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for maintenance/repair. Issuing authority Area –Incharge/RCM Signature: Date: Name:	The work and precautions will be carried out under my overall responsibility.(Testing/execution engineer) Signature: Date: Name:

SAFETY PRECAUTIONS FOR CLEARANCE	NORMALISING AFTER CLEARANCE
1. Notify workers of intent to de- energize ☐ 2. Obtain lock,tag or locking/tagging devices ☐ 3. Shut down ,de energize, dissipate any residual energies. ☐ 4. Apply lock ,tag and locking and/or tagging devices ☐ 5. *Any other job specific precautions ☐ 6. Verify effectiveness of lockout by attempting to restart. ☐ 7. Proper PPE is ensured ☐ I certify that the energy source mentioned above is isolated from all sources and is safe to start the work. Tag No:…… Lock No:……. Issuing authority Area –Incharge/RCM Signature: Date: Name: **(*to be included by contractor in consultation with PDIL/owner)**	1. Notify workers of intent to re- energize ☐ 2. Conduct visual inspection to confirm that the danger zone is clear of workers ☐ 3. Conduct visual inspection to confirm that tools ,equipments danger zone is clear of workers ☐ 4. Reposition the safety devices(interlocks, valves, guards, covers ,sensors, as applicable, etc) ☐ 5. *Any other job specific normalizing details ☐ 6. Remove lock, tag and locking and/or tagging devices. ☐ 7. Re energize. ☐ 8. Confirm system is operating properly& safely I certify that the energy source mentioned above is isolated from all sources and is safe to start the work. Tag No:…… Lock No:……. Issuing authority Area –Incharge/RCM Signature: Date: Name: **(*to be included by contractor in consultation with PDIL/owner)**

ENERGY DE-ISOLATION PERMIT

PERMIT VALIDATION	PERFORMING AUTHORITY
I hereby authorize the ……..personnel(performer) to de- isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for normal operation.. Issuing authority Area –Incharge/RCM Signature: Date: Name:	I herby certify that the equipment/energy source mentioned above has been de-isolated and is ready for normal operation.(Testing/execution engineer) Signature: Date: Name: Countersigned by Issuing authority

FORMAT NO. : HSE-17 REV 0

PERMIT FOR EXCAVATION (depth 2m and above**)**

(Sheet 1of 2)

Project :
Name of the work :
Name of contractor :
Job Description :
Size of excavation :

Sr.No. :
Date :
Job No. :
Location:

SL. NO.	Description of Item	COMPLIANCE STATUS			Remarks
		Yes	No	Not applicable	
1)	Suitable and sufficient risk assessments and method statements has been carried to ensure that the work shall be undertaken in accordance with specification and standard.				
2)	Are plans/details of underground services available and the same has been reviewed?				
3)	Has survey done to locate the services/obstacles, etc.				
4)	Has the live services (electrical, water line, air line, telephone line,etc) has been disabled for carrying out the job.				
5)	Is adequate barriers/fences to protect the excavation are in place?				
6)	Is Adequate warning signs are in place?				
7)	Is Assessment of ground conditions done and remedial action (if any) taken?				
8)	Safe access / egress (e.g. ramp / steps / ladders etc.) provided for site workmen & supervisors.				
9)	Is the excavation work being undertaken in proximity of structure, etc ? If Yes, it's effect is considered?				
10)	Availability of competent person for supervising the excavation work?				
11)	Adequate safe arrangement to prevent collapse of edges (e.g. shoring / strutting / benching / sloping etc.) made at site.				
12)	Hard barricades (at least 1.0M away from edge & for excavation near site access roads) with warning signs/caution boards are provided				
13)	Accumulation / passage-ways of water at periphery of excavation / trench stopped/ restricted.				
14)	Is the equipment being used for excavation has been checked for adequacy and is in good working condition having all the safety features?				
15)	Age & fitness of workmen ensured by medical test before engagement in job ?				
16)	Arrangement of Monitoring of possible oxygen deficiency or obnoxious gases done & action taken?				

PERMIT GRANTED - Yes / No

(*List enclosed with name & gate pass numbers.*)

Name & Signature of Site Engr
Contractor (Initiator)

Name & Signature of Safety Officer
Contractor (Issuing authority)

FORMAT NO. : HSE-17 REV 0

PERMIT FOR EXCAVATION

NOTES: -

1. Slopes or benches for excavation beyond 2.0M depth shall be designed & approved by Contractor's site head.
2. Excavated earth to be kept at least 1.5M away from edges
3. Safety helmets, Safety shoes or gum-boots, gloves, goggles, Face shield, Safety Harness shall be essential PPEs.
4. Permit shall be made in **duplicate** and original shall be available at site of work.
5. Permit shall be issued for maximum **one week** only (Monday to Sunday)
6. After completion of works, permit shall be closed & preserved for record purpose

GRANT OF PERMIT AND EXTENSIONS

Sl. No.	Validity period From ____To ____	Working Time From _____To _____	Initiator (site Engr. of Main Contractor)	Issuing authority (Safety Officer of Main Contractor)	Review by PDIL / Owner (Remarks with date
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Additional safety instructions if any: -

1.

2.

3.

TENDER DOCUMENT

OF

SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

SECTION VI
(SPECIFICATIONS, SCOPE OF WORK & DRAWING)

PROJECT: INTEGRATED COAL BASED FERTILISER COMPLEX AT TALCHER, ANGUL DISTRICT, ODISHA (INDIA)

CONTENTS

1. PROJECT DESCRIPTION

Talcher Fertilizers Ltd. (TFL), 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) is in the process of establishing a world class Coal based fertilizer complex at Talcher, Angul District, Odisha (India).

The plant will be consisting Coal Gasification Plant, Ammonia Plant and Urea Plant, along with Offsite and Utility facilities, various offices for functional & administrative requirements etc. Besides above plants & facilities, TFL shall also have its own township complex.

This tender document is intended to cover the activities and services in respect of all the work relates to 'SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA".

2. GENERAL SPECIFICATIONS

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 misunderstanding or otherwise on the part of the Contractor shall be allowed.

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.

The work to be performed under the Scope of Work consists of providing all labour, 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.

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. BROAD SCOPE OF WORK

Scope of work of the Contractor shall include Procurement, Supply, Fabrication, Erection, Inspection by Third Party Inspection Agency (TPIA), Insurance, Transportation of all Electrical materials to work site, Storage, erection, testing at site and commissioning of complete electrical system required for 'SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA".

The brief details of work (but not limited to) are summarized hereunder-

a) Design, manufacture, testing of electrical equipments such as Transformer, ICOG Panel, PCC/MPDB Distribution board, AC/DC system etc/ Lighting/cables/ cable trays/Ethernet switches/ PA Exchange. earthing and other erection materials etc at manufacturer's works, submission of documents with manufacturer's test reports/ type test reports to Owner/ Consultant prior to inspection call.

b) Quality Assurance at each stage of manufacture including procurement of raw materials/ bought out items and arranging inspections by Owner/ Consultant/Third Party.

c) Packing, loading, forwarding, delivery at site/ store, loading/ unloading, storage as per manufacturer's recommendation; shifting from stores and handling in store as well as at site for erection

d) Arrangement of testing/ checking instruments/ kits/ sets/ apparatus with valid calibration certificates issued by duly accredited laboratories/ institutions, to carry out tests stipulated in specification and documents referred therein/ other applicable standards)

e) Installations of equipment/ cables/ materials

- Conducting pre-energisation tests to ensure that installation is fit to be energized
- Conducting functional/ pre-commissioning checks/ Cold trial runs; no- load & load tests.

f) Installation and Commissioning.

- Conducting Performance Guarantee tests and taking corrective steps (inclusive of replacement of equipment/ materials if required) till results are satisfactory/ acceptable.
- Conducting Pre-Acceptance Tests/ checks and tabulating the results/ observations.

g) The scope of work shall also include digging of earth and refilling for directly buried cables, earth strips, cable protection pipes, earth pits, ground mounted lighting pole foundations; 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 racks, risers, light fitting brackets, sealing of cable entries and making good the same after installation of the equipment and leveling, and other minor similar jobs as per directions of Owner / Engineer-in-Charge.

h) Minor 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.

The detailed scope of work shall be as per Technical specification and SOR document

4. TENDER DRAWINGS

The drawings listed in the NIT forming part of the specification shall supplement the requirements specified herein. These drawings are preliminary drawings for bidding purpose only and subject to changes that may be necessary during the detailed engineering. In case of any conflict's contradiction among various volumes/sections/annexure/chapters / appendices / tender drawings of bid documents, the same shall be referred to the Owner/PMC for clarifications whose decision shall be final and binding. No extra claims shall be allowed on this account.

TECHNICAL SPECIFICATION

FOR

SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS

AT

TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

CONTENTS

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)
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
TS:8040	TS for AC & DC Combine UPS
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 Lightening 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

SECTION – 1.0

GENERAL SPECIFICATION

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 & 230 V AC Combined UPS system
- Ethernet Switch with Associated Cables in Plant Substations
- 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
- PA System (Exchange-This shall be installed in plant building)
- Ethernet Switch (To be installed in different substation Panel)

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 OUSS 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 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.

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 ^{0}C
- Minimum ambient temperature - 1 ^{0}C
- Design reference temperature - 50 ^{0}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.

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 switch they are electrically connected. Distributions 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 OUSS 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.

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.

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	-	-
10	2	-	4	3	6	5	8	6

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.

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.

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

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.

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 & Maintenance Manual	N	--	Y	Y

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

ANNEXURE-II
MAKE OF EQUIPMENTS / COMPONENTS

Sl. No.	ITEM	MAKE
1.	Transformer	Alstom Limited (Areva T & D)
		Indcoil Transformer Pvt ltd
		Emco Limited
		Bharat Bijlee Ltd
		Schneider Electric
		Voltamp Transformers Ltd.
2.	ICOG Panel (11 kV)	Asea Brown Boveri Ltd
		Siemens Ltd
		Schneider Electric
		BHEL (Electrical Machines Divn.)
3.	Current Transformers (11kV)	Indcoil Transformer Pvt ltd
		Asea Brown Boveri Ltd.
		Kalpa Electrical Private Limited
		Mehru Electricals (Formerly Automatic Electric Limited)
		Perfect Sales Corporation
		Silkans
		Kappa
		Pragati
4.	Potential Transformers (11kV)	Indcoil Transformer Pvt ltd
		Asea Brown Boveri Ltd.
		Kalpa Electrical Private Limited
		Mehru Electricals (Formerly Automatic Electric Limited)
5.	415 V Switchboard	Alstom Limited (Areva T&D)
		Application Control
		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.
8.	MV Potential Transformer	Alstom Limited (Areva T&D)
		Indcoil Transformers Pvt. Ltd.

Sl. No.	ITEM	MAKE
		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.	Floor/Wall Mounting Type Distribution Board/Small MCC	
		Larsen & Toubro ltd.(El. Products Divn)
		ABB
		Havells India Ltd.
		Intrelec
		Legrand India Ltd.
		Application control panels Pvt ltd
13.	MCCB	Schneider Electric
		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.
		S&S Power Switchgear Ltd.
		Siemens Ltd.
		Standard Electricals Limited
		ABB

Sl. No.	ITEM	MAKE
		Schneider Electric
15.	Fuse	Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
		Alstom Power
16.	Contactor	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
		Larsen & Toubro Ltd. (El. Products Divn.)
		Siemens Ltd.
		KEC International Ltd. (Formerly RPG Cables Limited)

Sl. No.	ITEM	MAKE
		KEI Industries Ltd.
		NICCO Corporation Ltd.
		Havells
		Universal Cables Ltd.
		APAR Industries Ltd. (Unit: Uniflex cable)
23.	LT Power Cable	Paramount Communication Ltd.
		KEC International Ltd. (Formerly RPG Cables Limited)
		Polycab
		KEI Industries Ltd.
		NICCO Corporation Ltd.
		Delton Cables
		Universal Cables Ltd.
		APAR Industries Ltd. (Unit: Uniflex cable)
24.	Control Cable	Paramount Communication Ltd.
		KEC International Ltd. (Formerly RPG Cables Limited)
		Polycab
		KEI Industries Ltd.
		NICCO Corporation Ltd.
		Delton Cables
		Universal Cables Ltd.
		APAR Industries Ltd. (Unit: Uniflex cable)
25.	Earthing Cable	Finolex Cables Ltd.
		NETCO cable Industries (Pvt.) Ltd.
		KEI Industries Ltd.
		NICCO Corporation Ltd.
		TC Communication Pvt.Ltd.
		Universal Cables Ltd.
26.	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.
27.	Telephone Wire & TV Cables	Cord Cable Industries Ltd.
		Delton Cables Ltd.
		Finolex Cables Ltd.
		NICCO corporation Ltd
		RPG Telecom Ltd.
		TC Communication Pvt. Ltd.
28.	Industrial Cable Gland	Baliga Lighting Equipments Limited

Sl. No.	ITEM	MAKE
		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)
29.	Cable Lugs	Dowell's Electricals
		Forward Engg. Industries
		KSE Electrical Pvt. Ltd.
		Power Engg. Co.
		S J Metal Industries (Jainson)
		Usha Martin Industries Ltd. (Ismal Divn.)
30.	PVC Conduit Pipes	A.K.G.
		Finolex Industries Ltd.
		Kalinga Cables & Conduit Co.
		Plaza Cable Industries Ltd.
		Polypack
		Prakash Industries Ltd.
31.	Ceiling Fan	Bajaj Electrical Ltd.
		Crompton Greaves Ltd.
		Havells India Ltd
		Usha
32.	Exhaust Fan	Bajaj Electrical Ltd.
		Crompton Greaves Ltd.
		Usha
		Havells India Ltd
33.	Modular Switch/Socket	Anchor Electricals Pvt. Ltd.
		Crabtree
		SSK
		Clipsal
34.	Lighting Fittings & Accessories / LED Lamp	Bajaj Electrical Ltd.
		Havells India Ltd.
		Pyrotech
		Wipro Lighting
35.	Electric Call Bell	Anchor Electricals Pvt. Ltd.
		MDS
36.	Earthing & Lighting Protection Material	Anand Electric Trading Co.
		Bharti Exports
		Jamna Metal Company
		Jayant Metal Mfg Co.

Sl. No.	ITEM	MAKE
		Rattan Engg
		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.
37.	GI Pipes	Bharti Exports
		Indian Tube Co. (Tata Div. Of Tubes & Pipes)
		Jindal Pipes Ltd.
		Meghjyot Enterprises
		Rukmini Electricals & Components Pvt. Ltd.
38.	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
42	Ethernet Switch	Rockwell Automation
		Ethervan
		Harshmann
43	Cat6 Cables	
		Polycab
		Paramount Communications
		Finolex
		D link
44	**Fiber Optic Cables**	
		Polycab
		Paramount Communications
		Finolex
		HFCL

Sl. No.	ITEM	MAKE
45	**PA System**	Armtel Russia
		Laraon Engineers & Consultants for Neumann/NLCS
		Industronic
46	**UPS SYTEM**	Fuji Electric
		Vertiv
		Hitachi

NOTE: Items not covered above shall be subject to Owner/ Consultant's approval.

In case of LT panel authorized channel partner may be considered if OEM is unable to quote.

Regret letter from OEM to be submitted. Same shall be subject to Owner/ Consultant's approval after review of documents.

SECTION – 2.0

EQUIPMENT SPECIFICATION

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 conforms 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.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.

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 as per the latest amendment.

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.

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.

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.

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-hydroscopic 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.

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.

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

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.

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 ± 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 100% 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 5^0 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**

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.

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 with inverse time characteristic for over load protection and instantaneous characteristics for short circuit protection and MCCB rated above 125A shall have adjustable settings.MCCB Shall have LSIG 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.

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.

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. mm2 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

12.0 COMMUNICATION SYSTEM (PA & Paging System)

12.1 Public Address system suitable to provide reliable and quick source of communication among operating personnel shall be provided. The system shall be microprocessor based with modular construction for ease of expansion capabilities and capacity. The system shall have speakers, calling points etc. suitable to area of classification for that location

12.2 One no PA Exchange shall be considered by the bidder having redundancy in amplifier, power supply and Rectifier.PA exchange supply, installation , testing and commissioning shall be in the scope of bidder.

12.3 Location of PA exchange shall be provided during detail engg.

12.4 One no. MCS with 16 Keys shall also be considered.

12.5 PA system shall be same as main plant system , accordingly hook-up and integration arrangement shall be considered.

12.6 PA Exchange shall be suitable to supply Min 45 Nos. Field call stations.

12.7 20 % Spare capacity shall be considered in PA exchange

12.8 Close talk mode shall be provided for conversation between two or more stations through close talk channel. Speeches from any hand set shall be heard over all the speakers. The system shall have the following facility:-

i) Alert tone facility

ii) Paging facility

iii) Private conversation facility

iv) Loud speaker mute facility

i) Emergency tone facility.

12.9 The system may be centrally located at a particular plant but the location shall in no way affect the performance of system. If required separate but interconnected system shall be provided. The microphone system shall be capable to suppress the environmental noise which will be present in the plant due to machineries.

12.10 It shall be possible to have automatic testing, monitoring, fault diagnosis etc. through interface PC. The system programming shall be user friendly through interface PC.

12.11 Paging speakers provided in areas having ambient noise levels shall produce a paging sound level at least 10 dB above the anticipated ambient noise level. Where it is not possible to achieve the sound level of above 10 dB above the ambient, rotating beacons shall be installed such a way that that the operator is alerted in the area. Acoustic hoods shall be provided for call stations located in high noise areas.

12.12 The design of the system shall be such as to provide two channel communication i.e. Page & Party in each zone. Page & Party system shall comprise of one channel for paging & one channel for party talk.

12.13 It shall be possible to communicate between two field stations without the interference of the MCS / operator. Also it shall be possible to have direct communication with the MCS.

12.14 The equipment shall be sturdy, impact resistant, dust & damp proof generally conforming to minimum IP 66 degree of protection. For classified hazardous areas flameproof equipment shall be provided duly certified by recognised certifying authority for the area of installation.

12.15 Acoustic hood for PA stations in noisy area shall be considered.

12.16 PA system shall be interfaced with EPABX and Fire Alarm System. Necessary interface cards and relay shall be considered for interface.

12.17 Each PA System shall have 20% spare capacity.

12.18 All cables (including communication cable) shall be armoured type only.

13.0 Ethernet Switch

13.1 Bidder to consider Ethernet switches as indicated in SOR along with the cables and required accessories.

13.2 These Ethernet switches shall be installed at different substations located inside plant.

13.3 These shall be part of various switchboard and I/O Panels.

13.4 Supply installation, connection to I/o panel, testing and commissioning of Ethernet switch at different location shall be in bidder's scope.

13.5 Patch cord and LIU shall be considered for FO connection.

13.6 Ethernet switch shall be KEMA certified and cyber secured.

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 ☐	ENQUIRY ☒	ORDER ☐	FINAL ☐		
GENERAL				**AMBIENT CONDITION**	
Ref. Stds. : IS ☒	IEC ☒			Temp. Max./Min./Design Ref. : 46 / 1 / 50°C	
Encl. Docs. :				Relative Humidity: 100%	Alt. above sea <1000 M
Make :				**ATMOSPHERIC POLLUTION**	Dusts : Coal Dust
Maker's Ref. No. :					Vapour : Highly Corrosive
				LOCATION	Indoor ☒ / Outdoor ☐
					Gr. Floor ☐ / 1st floor ☐
ADDL. SCOPE	Incoming Bus Duct ☐		Tie Bus Duct ☐		
	Erection & Comm. ☒		Supervision of Erection & Comm. ☐		
TESTS:	Routine ☒	Type ☐	Others ☐		

BASIC DATA

	Description		11kV ICOG Panel
REFERENCE DRAWINGS	Single Line Diagram		
	Feeder Details		Sh. No. -- of this specification
	P.T. Bus Arrangement		--
SYSTEM DETAILS	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
BUS BARS	**Rating**	Continuous	1250A
		Short Time for 3 sec.	40KA for 3 sec.
	Type of Insulation		Insulating heat shrinkable Sleeved
CIRCUIT BREAKER	Type		Vacuum Circuit Breaker
	Breaking Capacity	Symmetrical	40 KA for 3 sec.
		% DC Component	20% (Min.)
	Making Capacity (peak)		2.55 times Breaking Capacity
	Earthing Switch		Integral type
CONTROL SUPPLY	Closing & Indication		110V DC **
	Tripping		110V DC **
	Alarm / Signal		110V DC **
	Space Heater		240V AC
MISC. DATA	Cable Entry Top / Bottom		Bottom
	Dummy Panel Reqd. Yes / No		As required
	Width of Dummy Panel		--
	No. of Dummy Panel		--
	PAINTING	Type	Epoxy Based
		Shade	631 of IS: 5
	Spares Parts Reqd. 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.

TECHNICAL PARTICULARS
11 KV ICOG Panels

PROJECT:Coal Based Fertilizer Plant — PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR : PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

GENERAL		
Make / Maker's Type :		
Ref. Standards		
Rated Operational Voltage with ± %		
Rated Insulation Voltage		
Rated Voltage of Aux. Circuits with ± %		
Rated Current		
Short Time Rating		
Degree of Protection of Enclosure		
Service Conditions : Indoor / Outdoor		
DRAWOUT FACILITIES	Circuit Breaker's	
	P.T.'s	
	Protective Relays	
	Meters	
SHEET STEEL TYPE & THICKNESS	Base Channel	
	Others	
Material of Gaskets		
Material of External Hardware		
Operating Height : Max. / Min.		
Space Heater Rating of each Panel		
PAINTING	Method of Pre-treatment	
	Thickness of Paint	
	Type & Shade	
Final Temperature		
PROVISIONS / FACILITIES	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		
BUS - BARS		
Material		
SIZE	HBB	
	VBB	
	Ground	
	Supporting Calculation Attached	
MINIMUM CLEARANCE	Between Phases	
	Between Phase & Earth	
Minimum Creepage Distance		
CURRENT RATING	Continuous	
	Short Time for 3 secs.	
Max. current density for bus-bars		
Temp. Rise for : Cont. Load / Short Ckt. Current		
SUPPORT	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		
Shrouding Material for Joints		

Bus Bar Phase Identification Mark		
No. & Type of Bolts per Joint		
CIRCUIT BREAKERS		
Make / Maker's Type		
Ref. Standards		
Type of Circuit Breaker		
Principle / Collaborator		
Rated Operating Sequence		
Rated Voltage		
Rated Frequency		
No. of Poles		
CURRENT RATING	Continuous in IPH6 Enclosure	
	3 second RMS	
	Momentary (Peak)	
BREAKING CURRENT	Symmetrical KA	
	Asymmetrical KA	
	% D.C. Component	
Making Current (Peak)		
Derating Factor, if any for Site Condition		
LIMITATION OF CURRENT RATING FOR	Motor Duty	
	Capacitor Duty	
	Transformer Switching	
	Cable Charging	
Restriking Voltage (Peak)		
INSULATION LEVEL	1 Min. PF withstand Voltage	
	Impulse withstand Voltage	
No. of Breaks per Pole		
TYPE AND MATERIAL OF	Fixed Contact	
	Moving Contact	
	Arcing Contact	
Type of Closing Mechanism		
Type of Tripping Mechanism		
ARC CONTROL DEVICE	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		
SPRING CHARGING MOTOR	Rating	
	Voltage	
	Insulation	
	Duty	
	Type	
Spring Charging Time		
VOLTAGE / CURRENT REQD. FOR	Closing	
	Tripping	
	A.C. Supply	
AUXILIARY CONTACTS	No. of Spare Contacts NO / NC	
	Contact Rating Ac / Dc	
	Convertible Type	
INSULATING OIL	Ref. Standard	
	Volume of Oil Required	
Mounting Arrangement		
Temp. Rise of Different Parts		
DETAILS FOR SF_6	SF_6 Gas Pressure	
	Wt. Of SF_6 Gas per Breaker	

DETAILS FOR SF_6	Gas Leakage Detector Provided	
	Gas Density Monitor Provided	
DETAILS FOR VCB	Pressure inside the Interrupter	
	Contact Wear Indication Provided	
	Facility for Checking Loss of Vacuum Provided	
RECOMMENDED TIME INTERVAL FOR	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		
CURRENT TRANSFORMERS		
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.		
POTENTIAL TRANSFORMERS		
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		
SURGE DIVERTER		
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		
RELAYS		
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		
INSTRUMENTS AND METERS		

Application	
Make / Maker's Type :	
Ref. Standards	
Operating Principle	
Rated Burden	
Scale Range	
Accuracy	
Size	
Type of Mounting	
CONTROL SWITCHES	
Application	
Make / Maker's Type :	
Ref. Standards	
Contact Rating	
Utilisation Category	
PUSH BUTTON	
Make / Maker's Type :	
Ref. Standards	
Contact Rating	
Utilisation Category	
SIGNAL LAMPS	
Make / Maker's Type :	
Ref. Standards	
Rated Voltage / Wattage	
Type of Lamp Holder	
Type of Globe	
Accessibility from Front	
MOULDED CASE CIRCUIT BREAKERS	
Make / Maker's Type	
Ref. Standard	
Current Rating	
Breaking Capacity	
Setting Range of Thermal Release	
Setting Range of Magnetic Release	
MINIATURE CIRCUIT BREAKER	
Make / Maker's Type :	
Ref. Standards	
Rated Current	
Breaking Capacity	
CABLE GLANDS	
Material	
Type	
TERMINAL BLOCKS	
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.

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 ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

GENERAL

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 : ☒ Heat Run : ☐ Impulse : ☐ Others : ☐

SERVICE CONDITIONS

SYSTEM DETAILS (PRI. / SEC.)	AMBIENT CONDITIONS	
Nom. Voltage with ± % : 11KV±10% / 0.433KV±10%	Temp.- Max./Min./Design Ref. : 46 / 1 / 50°C	
Highest System Voltage : 12 / 0.457 KV	Rel. Humidity : 100 %	Alt. above Sea < 1000M
Number of phases : 3 Ph / 3 W + N	**Atmospheric Pollution**	Dusts : Coal Dust
Rated Frequency with ± : 50 Hz ± 5%		Vapour : Highly Corrosive
Combined V & F Variation : ± 10 %	**Location**	Indoor : ☐ Outdoor : ☒
Fault MVA : 750 MVA / 36 MVA	**AUX. POWER SUPPLY**	
Earthing Mode : Solidly Earthed	**System Data**	A.C. : 415V ± 10%, 3P & N, 50Hz ± 5%
		D.C. : 110 V
	Instrument Contact Rating	A.C. : 240 V, 5 Amps
		D.C. : 110 V, 5 Amps

BASIC DATA

RATING

Rated Capacity : 2000 KVA	
No Load Voltage Ratio : 11 KV / 0.433 KV	
Highest Voltage for Eqpt. : 12 KV / 0.457 KV	
Insulation level Pri./ Sec	Impulse : 75 KV / --
	Power Freq. : 28 KV / 3 KV
Impedance at 75 ° C: As per IS (without negative tolerance)	
Vector Group : Dyn 11	
Cooling System : ONAN	
Motor I Start & T Start : Shall be informed later	

TAP CHANGER

Type of Taps	On Load : ☐	Off Ckt. : ☒
Range of Taps : -5% TO +5%		
No. of Taps : 5 @ 2.5 %		

C.T. REQUIREMENTS

Differential Protection	3 nos. on Trf. : ☐	
	3 nos. Loose : ☐	
Restricted earth fault Protection	1 no. on Trf: ☒	**Cl.-PS**
	3 nos. Loose : ☒	
Standby earth fault Protection	1 no. on Trf. : ☒	**Cl.-5P10**

ADDITIONAL FITTINGS

1. LV Neutral terminal box
2. Thermometer pocket with cover
3. Tank magnetic oil level gauge
4. Bi-directional roller

TERMINAL CONFIGURATION

		W		
	X		Z	
		Y		

Shall be provided later.

TERMINAL CONNECTIONS

PRI.	Arrangement	O/H bushing : ☐
		Bus Duct : ☐
		Cable : ☒
	Cable cond.	Type : 11 KV XLPE-A-FRLS-PVC (Al) UE
		No. & Size : 1R-3CX240 mm^2 (Al)
SEC.	Arrangement	O/H bushing : ☐
		Bus Duct : ☐
		Cable : ☒
	Bus cond.	Type : 1.1 KV XLPE-A-FRLS-PVC (Cu)
		No. & Size: 7R-3.5Cx400 mm_2 (Cu)
Control Cable		Type : 1.1 kV XLPE-A-FRLS PVC (ST2) (Cu)
		No. & Size : 19X2.5 mm^2, 2CX10 mm^2, 5X2.5 mm^2
Earth Conductor		Body : 2–75X10 GI strip
		Neutral : 2-1CX185 mm^2 XLPE-UA-FRLS PVC (Al), 1.1 kV
Cable Gland Type & Material		Primary : Double compression
		Secondary
		Control : Rolled Al

PAINTING

Type : EPOXY BASED

Shade : 631 OF IS : 5

Reqd. : ☒ 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.
-

TECHNICAL PARTICULARS
TRANSFORMERS

PROJECT:Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL ☐	ENQUIRY ☒	ORDER ☐	FINAL ☐
GENERAL			
Item no. :		Ref. Stds. :	
Quantity :		Make :	
Description :		Maker's Type :	
Code no. :			
ELECTRICAL DATA			
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			
INSULATION GRADED / UNIFORM	Primary		
	Secondary		
Induced Over Voltage Withstand Capacity : Pri / Sec.			
OLTC : Rated Voltage / Rated Current			
Total Auxiliary Power Requirement : AC / DC			
CONTROL PANELS	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			
MECHANICAL DATA			
Core : Material & Grade			
Winding Type : Pri. / Sec.			
INSULATING MATERIAL	Between Turns		
	Between Primary & Secondary		
	Between Core & Winding		
RADIATORS	Cooling Tubes / Separate Bank		
	Thickness		
	Vacuum Withstand Capacity		
TANK	Material		
	Thickness : Side / Bottom / Cover		
	Vacuum Withstand Capacity		
	Over Pressure Capacity		
DIMENSIONS	Overall (LXBXH)		
	Roller C/L		
	Largest Package (LXBXH)		
Minimum Height required to lift the Core			
WEIGHT	Core & Winding		
	Total		
	Heaviest Package		
Oil Quantity in Litres			
Noise Level			
BUSHING DATA (PRI. / SEC. / NEUTRAL)			
Type & Make			
Ref. Standard			
Rated Voltage			
Rated Current			

Creepage Distance	
MAKE & TYPE OF BOUGHT OUT ITEMS	
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.

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 ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

GENERAL		**AMBIENT CONDITION**		
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 :		**Atmospheric Pollution**	Dusts : Coal Dust	
Vendor Ref. No. :			Vapour : Highly Corrosive	
		Location	Indoor ☒	Outdoor ☐
			Gr. Floor ☒	1st floor ☐

Addl. Scope :			
	Incoming Bus Duct ☐	Tie Bus Duct ☐	
	Erection & Comm. ☒	Supervision of Erection Comm. ☐	

TESTS: Routine ☒ Type ☐ Others ☐

BASIC DATA

TAG NO.	Item No.		
	Description		415V SWITCHBOARDS : MPDB / PDB – 1 / PDB - 2
	Code No.		--
REFERENCE DRAWINGS	Single Line Diagram		Drg. No. PC183-7411-0985D/G/H
	Feeder Details		Enclosed
	Auto Trip Alarm Scheme		
	Non Trip Alarm Scheme		
	Trip Circuit Supervision Scheme		
	Auto C/O Scheme		
	P.T. Bus Arrangement		
SYSTEM DETAILS	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
BUS BARS	**Rating**	Continuous	3200 A / 800 A / 800 A
		Short Time for 1 sec.	50 KA
	Bare / Insulated		Insulated
	Type of Insulation		Heat Shrinkable PVC sleeved
EXECUTION	**Breaker Feeders**	I/C: ST / DT	ST
		Others: ST / DT	DT
	Other Feeders	Single front / Double front	Single Front
		Fixed / Drawout	Drawout
	Cable Entry : Top / Bottom		Bottom
	Bus Duct Entry : Top / Bottom		--
	Accessibility : Front / Back		Front / Back
CONTROL SUPPLY	**Breaker Feeders**	Closing & Indication	110V DC **
		Tripping	110V DC **
	Contactors		240V AC
	Space Heater		240V AC
MISC. DATA	**Painting**	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.

FEEDER DETAILS
(BREAKER CONTROLLED FEEDERS)

PROJECT:Coal Based Fertilizer Plant — PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR: PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

TAG NO.	Item No.					
	Description		415 V Main Power Distribution Board MPDB at VGH			
	Code No.		--			
GENERAL	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	3-800-400/1 A
	Protection		3-1600-3200/1 A	3-800/1 A	3-1600-3200/1 A	3-800-400/1 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	--
	Earth Fault	Res. IDMTL	Yes	Yes	--	Yes
		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-		Yes / --	Yes / --	Yes / --	Yes / --
	Auto-Manual / Local-		-- / Yes	-- / Yes	-- / Yes	-- / Yes
	ASS / VSS		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		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
	Limit Switch: Service / Test		Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes

AUX. EQPT.	MCB for Motor Space	--	--	--	
	Others as required	Yes		Yes	Yes
CABLING DATA	Power Cable: 1.1KV, XLPE-A-FRLS PVC	7R - 3.5 Cx400 mm2 (Cu)	5 R – 3.5 C x 300 mm^2 (Al)	--	3 R – 3.5 C x 300 mm^2 (Al)
	Space Heater:1.1KV,	--	--	--	--
	Control Cable: 1.1KV, XLPE-A-FRLS PVC	1-5x2.5 mm^2 (Cu), 1-3x2.5 mm^2 (Cu), 1-19x2.5 mm^2 (Cu)	1-5x2.5 mm^2 (Cu), 1-3x2.5 mm^2 (Cu), 1-12x2.5 mm^2 (Cu)	1-12x2.5 mm2 (Cu), 1-10x2.5 mm2 (Cu), 1-7x2.5 mm2 (Cu)	1-12x2.5 mm2 (Cu), 1-7x2.5 mm2 (Cu), 1-5x2.5 mm2 (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.

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^2)	Remarks
		KW	Amp.				
1	Incomer-1	--	3200A	--	Transformer Feeder	7R-3.5Cx400 mm_2 (Cu)	
2	Incomer-2	--	3200A	--	Transformer Feeder	7R-3.5Cx400 mm_2 (Cu)	
3	Incomer-3 for future use		800A		DG Feeder	5 R – 3.5 C x 300 mm^2 (Al)	
4	O/G Feeder for Vikrampur Guest House	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm^2 (Al)	
5	O/G Feeder for Vikrampur Guest House	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm^2 (Al)	
6	O/G Feeder for CISF	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm^2 (Al)	
7	O/G Feeder for CISF	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm^2 (Al)	
8	O/G Feeder for Bungalows	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm^2 (Al)	
9	O/G Feeder for Bungalows	--	800A	--	Power Feeder (ACB)	3 R – 3.5 C x 300 mm^2 (Al)	
10	Spare O/G Feeder (2 Nos.)	--	800A	--	Power Feeder (ACB)	Later	
11	SPDB for Lighting / 16A/6A S/S (2 Nos.)	--	63A	PDS: 8485	Power Feeder	1R-3.5CX25 mm^2 (Al)	
12	O/G for Welding Socket	--	63A	PDS: 8485	Power Feeder	1R-3.5CX50 mm^2 (Al	
13	O/g Feeder 1 to 2 for Trainee Hostel		400A	PDS: 8485	Power Feeder	2 R – 3.5 C x 300 mm^2 (Al)	With MFM
14	O/g Feeder 3 to 4 for MLDB		250A	PDS: 8485	Power Feeder	3.5 C x 120 mm^2 (Al)	With MFM
15	Spare O/g Feeder 5 to 8		125A	PDS: 8485	Power Feeder	Later	With MFM
16	Spare O/G Feeder 9 to 10		400A	PDS: 8485	Power Feeder	Later	With MFM
17	Spare O/G Feeder 11 to 12		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.

FEEDER DETAILS
(BREAKER CONTROLLED FEEDERS)

PROJECT:Coal Based Fertilizer Plant PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR: PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

TAG NO.	Item No.		
	Description		PDB-1 & PDB-2
	Code No.		--
GENERAL	Feeder No.		1 & 2 (PDB-1 & PDB-2)
	Feeder Description		Incomer
	Eqpt. Code No.		--
	Load in KW / Amp		-- / 800A
	Ref. Scheme Drgs.		--
C. B.	Rating		800 A (ACB)
	Operating Mechanism		MWS
CURRENT TRF.	Metering		3-800-400/1 A
	Protection		3-800-400/1 A
	O/C & E/F / Combined Motor Protn.		Yes / --
	Restricted Earth Fault Protn.		--
	Stand By Earth Fault Protn.		--
V. T.	Ratio		415/√3/110/√3
	Connection : Bus / Feeder		Feeder
METERS	Ammeter		Yes (0-800A)
	Voltmeter		--
	KWH/KW		--/--
	PF Meter		--
	Frequency Meter		--
	Trivector Meter		Yes
	Multi Function Meter		Yes
PROTECTIVE RELAY	Combined Motor Protn.		--
	Over current	IDMTL	Yes
		High Set Inst.	Yes
	Earth Fault	Res. IDMTL	Yes
		Inst.	Yes
		Restricted	--
		Stand by	--
	Under Voltage with Timer / Synchrocheck / Overvoltage		Yes/--/Yes
	PT Fuse Failure		Yes
	Stalling / Single Phasing		--
AUX. RELAY	**Tripping Relay**	Yes	Yes
		--	--
	Trip Circuit Supervision		Yes
	Buchholz Alarm / Trip		--
	WTI / OTI Alarm		--
	Low Oil Level Alarm		--
	Alarm / Alarm Cancellation		--
	Others as required		Yes
CONTROL SWITCH	Trip-Neutral-Close / OFF-AUTO-ON		Yes / --
	Auto-Manual / Local-Remote		-- / Yes
	ASS / VSS		Yes / --
	Local-Remote-Auto		
PUSH BUTTON	Emg. Trip (T) / Test (Te)		-- / Yes
	Alarm Accept (AC) / Reset I		Yes / Yes
	Defeat Interlock or Momentary Paralleling		Yes
	Emgy. Trip of CB		
SIGNAL LAMPS	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		

AUX. EQPT.	Others as required	Yes
CABLING DATA	Power Cable: 1.1KV, XLPE-A-FRLS PVC	3 R – 3.5 C x 300 mm^2 (Al)
	Space Heater:1.1KV, XLPE-A-FRLS PVC	
	Control Cable: 1.1KV, XLPE-A-FRLS PVC	1-12x2.5 mm2 (Cu), 1-7x2.5 mm2 (Cu), 1-5x2.5 mm2 (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.

FEEDER DETAILS

PROJECT:Coal Based Fertilizer Plant — PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR: PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

SWITCH BOARD DESCRIPTION: PDB-1 (CISF Barrack)

Feeder No.	Feeder Description and Code No.	Rating		Ref. Scheme Drg.	Fdr. Type	Power Cable Size (mm^2)	Remarks
		KW	Amp.				
1	Incomer-1	--	800A	--	Power Feeder	3R-3.5Cx300 mm_2 (Cu)	
2	Incomer-2	--	800A	--	Power Feeder	3R-3.5Cx300 mm_2 (Cu)	
3	LSDB-1 to LSDB-17 plus 5 Spare feeders	--	63A	PDS: 8485	Power Feeder	1R-3.5CX25 mm^2 (Al)	
4	Spare O/g Feeder 18 to 19		125A	PDS: 8485	Power Feeder	Later	With MFM
5	Spare O/g Feeder 20 to 22		400A	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 ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

SWITCH BOARD DESCRIPTION: PDB-2 (Bungalows)

Feeder No.	Feeder Description and Code No.	Rating		Ref. Scheme Drg.	Fdr. Type	Power Cable Size (mm^2)	Remarks
		KW	Amp.				
1	Incomer-1	--	800A	--	Power Feeder	3R-3.5Cx300 mm_2 (Cu)	
2	Incomer-2	--	800A	--	Power Feeder	3R-3.5Cx300 mm_2 (Cu)	
3	LSDB-1 to LSDB-12 plus 3 Spare feeders	--	125A	PDS: 8485	Power Feeder	1R-3.5CX25 mm^2 (Al)	With MFM
4	LSDB *O/g Feeder 13* plus 1Spare feeder	--	63A	PDS: 8485	Power Feeder	1R-3.5CX25 mm^2 (Al)	
5	O/g Feeder 14 to 15	--	250A	PDS: 8485	Power Feeder	1R-3.5CX150mm^2 (Al)	With MFM

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 ☐	ENQUIRY ☒	ORDER ☐ FINAL ☐
GENERAL		
Manufacturer's Type		
Ref. Standards		
Rated Operational Voltage with ± %		
Rated Insulation Voltage		
Rated Voltage of Aux. Circuits with ± %		
Rated Current		
Short Circuit Rating		
Degree of Protection of Enclosure		
Service Conditions : Indoor / Outdoor		
DRAWOUT FACILITIES	Circuit Breakers	
	P.Ts.	
	Motor Starters	
	Protective Relays	
	Meters	
SINGLE FRONT / DOUBLE FRONT	C.B. Feeders	
	Other Feeders	
Cable Entry :	Top / Bottom	
Accessibility :	Front / Back	
MAXIMUM NOS. OF FEEDERS IN ONE PANEL	Circuit Breakers	
	Motor Starters	
	Switch Fuse	
SHEET STEEL TYPE & THICKNESS	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		
PAINTING	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		
BUS - BARS		
Material		
SIZE	HBB : Phase / Neutral	
	VBB : Phase / Neutral	
	Ground	
	Supporting Calculations Attached	
MINIMUM CLEARANCE	Between Phases	
	Between Phase & Earth	
Minimum Creepage Distance		
Current Rating : Continuous / Short Time		
Temp. Rise for : Cont. Load / Short Time Current		
SUPPORT	Material	
	BIL	
	Arrangement :Separate/Common	
Material of Bus-bar Insulation		
Shrouding Material for Joints		
No. & Type of Bolts		
CIRCUIT BREAKERS		

Make			
Maker's Type			
Ref. Standards			
Type of Circuit Breaker			
Short Circuit Category			
Maximum Operating Voltage			
No. of Poles			
CURRENT RATING	Continuous		
	1 second RMS		
	Momentary (kA Peak)		
BREAKING CURRENT	Symmetrical KA		
	Asymmetrical KA		
	Sym. MVA at Rated Voltage		
Making Current (Peak)			
INSULATION LEVEL	1 Min. PF withstand Voltage		
	Impulse withstand Voltage		
No. of Breaks per Pole			
TYPE AND MATERIAL OF	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		
SPRING CHARGING MOTOR	Rating		
	Voltage		
	Insulation		
	Duty		
Spring Charging Time			
CONTROL VOLTAGE WITH RANGE	Closing		
	Tripping		
	Alarm and Indication		
POWER/ CURRENT REQUIRED FOR	Closing		
	Tripping		
AUXILIARY CONTACTS	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			
Winding Connection			
Ratio			

Rated Burden		
Accuracy Class		
Insulation Class & Material		
SWITCHES		
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.		
FUSES		
Make / Maker's Type		
Ref. Standard		
Type of HRC Fuse		
Rated Voltage / Current		
Category of Duty		
Prospective Breaking Current		
CURRENT TIME CURVE SHOWING PRE-ARCING AND TOTAL I^2T VALUES	Ref. No.	
	Attached	
CONTACTORS		
Make / Maker's Type		
Ref. Standard		
Rated Operational Voltage		
Utilisation Category		
Rated Duty		
Rated Thermal Current		
OPERATING VOLTAGE OF COIL	Pick up Max./Min.	
	Drop off Max./Min.	
Coil Consumption Pick up / Hold on		
RELAYS		
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		
INSTRUMENTS AND METERS		
Make / Maker's Type		
Ref. Standard		
Operating Principle		
Scale Range		
Accuracy		
Size		
Type of Mounting		
CONTROL SWITCHES		
Make / Maker's Type		
Ref. Standard		
Contact Rating		
Utilisation Category		
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.

SPECIFICATION SHEETS
JUNCTION BOX

PROJECT:Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL ☐	ENQUIRY ☒	ORDER ☐	FINAL ☐
GENERAL			
Ref. Stds.		IS / IEC	
Encl. Docs.			
Make			
Maker's type			
Sample Required		Yes ☐	No ☒
AMBIENT CONDITIONS			
Temp. Max. / Min. / Design Ref.		46 / 1 / 50°C	
Rel. Humidity		100%	
Alt. Above Sea Level		<1000M	
ATMOSPHERIC POLLUTION	Dusts	Dusts : Coal Dust	
	Vapours	Vapour : Highly Corrosive	
Area		Safe ☒	Hazardous ☐
Hazardous area classification		Zone:	Encl. Gr.: Temp. Class:
Location		Indoor ☒	Outdoor ☒
TESTS	Routine ☒	Type ☐	Others ☐

BASIC DATA	
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

PAINTING	Type: Epoxy based
	Shade: 631 as per IS: 5
SPARE	Required: Yes
	Duration: 2 Years
No. of Terminals: As required	
Cable gland: 4 nos.	
Stopping Plug: 1 no.	
CABLE SIZE	Incoming -- 3Cx2.5 mm^2 (Cu) 1.1 KV XLPE ARMOURED FRLS PVC
	Outgoing -- 3Cx2.5 mm^2 (Cu) 1.1 KV XLPE ARMOURED FRLS PVC

Note: Double compression rolled aluminium cable glands, lugs and plugs shall be provided

TECHNICAL PARTICULARS
JUNCTION BOX

PROJECT:Coal Based Fertilizer Plant	PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH
ISSUED FOR : PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐	
GENERAL	
Item No.	
Ref. Std.	
Type of Junction Box	
Make	
Maker's type	
CONSTRUCTIONAL FEATURES	
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.	
CABLE GLAND	
Type	
Material of Construction	
Make	
TERMINAL BLOCK	
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.

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 ☐	ENQUIRY ☒	ORDER ☐	FINAL ☐
GENERAL		**AMBIENT CONDITION**	
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 Pollution	Dusts : Coal Dust
Vendor Ref. No. :			Vapour : Highly Corrosive
SYSTEM DETAILS		Area	Safe ☒ Hazardous ☐
Nominal Voltage with ± % : 415V ± 10%,		Hazardous Area Class	Zone : Encl. Gr. :
Rated Frequency with ± % : 50 Hz ± 5%,			Temp. Class :
Combined V & F Variation : ± 10%,		Location	Indoor ☒ Outdoor ☐
No. of Phases & Wires : 3-Phase, 4-wire			
TESTS TO BE WITNESSED: Routine ☒	Type ☐	Others ☐	

BASIC DATA

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

MAKE OF COMPONENTS

SWITCH	: Refer Make of Electrical Items
M.C.B.	: -do-
CABLE GLANDS	: -do-
TERMINAL BLOCKS	: -do-

TECHNICAL PARTICULARS

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.

SPECIFICATION SHEET
HT CABLES

PROJECT:Coal Based Fertilizer Plant			PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL ☐	ENQUIRY ☒	ORDER ☐	FINAL ☐	
GENERAL			**AMBIENT CONDITION**	
Encl. Docs. :			Temp. Max./Min./Design Ref. 46 / 1 / 50°C	
Vendor :			Relative Humidity: 100 %	Alt. above Sea Level < 1000M
Vendor Ref. No. :			**Atmospheric Pollution**	Dusts : Coal Dust
				Vapour : Highly Corrosive
TESTS TO BE WITNESSED: Routine ☒	Type ☐	Acceptance ☒	Others ☐	
Type Tests Certificate of Similar Cable : Required ☒		Not required ☐		

BASIC DATA

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	
CONDUCTOR	ALUMINIUM/ COPPER	ALUMINIUM		
	STRANDED	STRANDED		
Insulation Type		XLPE EXTRUDED	XLPE EXTRUDED	
Inner Sheath Type		EXTRUDED PVC (ST2)	--	
CONDUCTOR SCREEN	Required	--		
	Not Required	--		
Material of Conductor Screen		AS PER IS	--	
ARMOURING	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	

BILL OF QUANTITY

Item No.	No. of Core & Cross-Sectional Area in sq. mm.	Qty. in Mtr.	Preferred Drum Length	Remarks
11 KV XLPE insulated, armoured, FRLS PVC outer sheathed power cable of following sizes:				
1.	3C x 240 sq. mm (Al)	Refer SOR	LATER	
Single Core XLPE insulated, 11KV grade unarmoured FRLS PVC outer sheathed cable for earthing of following sizes:				
2.	--	--	--	

SPECIFICATION SHEET
LT POWER & CONTROL CABLES

PROJECT:Coal Based Fertilizer Plant — PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR : PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

GENERAL	**AMBIENT CONDITION**	
Encl. Docs. :	Temp. Max./Min./Design Ref.: 46 / 1 / 50°C	
Vendor :	Relative Humidity: 100 %	Alt. above Sea Level < 1000M
Vendor Ref. No. :	**Atmospheric Pollution**	Dusts : Coal Dust
		Vapour : Highly Corrosive

TESTS TO BE WITNESSED: Routine ☒ Type ☐ Acceptance ☒ Others ☐

Type Tests Certificate of Similar Cable : Required ☒ Not required ☐

BASIC DATA

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
CONDUCTOR	ALUMINIUM/ COPPER	ALUMINIUM / COPPER	COPPER	ALUMINIUM
	STRANDED	STRANDED	STRANDED	STRANDED
Insulation Type		XLPE EXTRUDED	XLPE EXTRUDED	XLPE EXTRUDED
Inner Sheath Type		EXTRUDED PVC (ST2)	EXTRUDED PVC (ST2)	--
CONDUCTOR SCREEN	Required	--	--	
	Not Required	--		
Material of Conductor Screen		--	--	
ARMOURING	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

BILL OF QUANTITY

Item No.	No. of Core & Cross-Sectional Area in Sq. mm.	Qty. in M.	Preferred Drum Length	Remarks
1.1 KV XLPE insulated, armoured, FRLS PVC outer sheathed, Power Cables of following sizes:-				
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.	3.5CX70 sq. mm (Al)			
6.	3.5CX50 sq. mm (Al)			
7.	3.5CX25 sq. mm (Al)			
8.	4 CX16 sq. mm (Al)			
9.	3CX6 sq. mm (Cu)			
10.	3CX2.5 sq. mm (Cu)			
1.1 KV XLPE insulated, armoured, FRLS PVC outer sheathed, Control Cables of following sizes:-				
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)			

Single Core 1.1 KV XLPE insulated, unarmoured FRLS PVC outer sheathed cable for earthing of following sizes:-				
6.	1CX185 sq. mm (Al)	Refer SOR	LATER	
7.	1CX16 sq. mm (Al)		LATER	

TECHNICAL PARTICULARS
CABLES

P PROJECT:Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH
ISSUED FOR : PROPOSAL ☐	ENQUIRY ☒	ORDER ☐ FINAL ☐
GENERAL		
Make		
Ref. Standard		
Item No.		
Voltage Grade		
Suitable For Earthed / Unearthed System		
No. of Cores & Size of Conductor		
CONSTRUCTIONAL DETAILS		
CONDUCTOR	Material	
	Construction	
	No. & Dia of wires per Core	
CONDUCTOR SCREEN	Material	
	Thickness	
INSULATION	Material	
	Thickness	
	Core Identification Method	
INSULATION SCREEN	Material	
	Thickness	
INNER SHEATH	Type & Material	
	Thickness	
ARMOURING	Type & Material	
	Dia of Wire / Strip Thickness	
OUTER SHEATH	Material	
	Thickness	
ELECTRICAL DATA		
CONTINUOUS CURRENT RATING WHEN LAID IN	Ground At 30^0 C	
	Air At 40^0 C	
Short Circuit Current For 1 sec.		
CONDUCTOR TEMP.	Continuous	
	Short Time	
Resistance At Operating Temp. (Ohm / KM)		
Reactance At 50 C/S (Ohm/KM)		
Capacitance (F/Km)		
Insulation Resistance		
Polarisation Index		
DERATING FACTOR CHART ATTACHED FOR	Temperature	
	Grouping	
	Exposure to Sun	
MECHANICAL DATA		
DIAMETER WITH TOLERANCE	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.

SPECIFICATION SHEET
LIGHTING FIXTURES AND ACCESSORIES

PROJECT:Coal Based Fertilizer Plant — PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR : PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

GENERAL	**AMBIENT CONDITION**	
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
SYSTEM DETAILS	Area	Safe : ☒ Hazardous : ☐
Nominal Voltage : 240V ± 10%	Haz. Area class	Zone Encl. Gr. :
Rated Frequency: 50Hz ± 5%		Temp. Class :
Combined V & F variation : ± 10%	Location: Indoor ☒	Outdoor ☒

TESTS TO BE WITNESSED : Routine ☒ Acceptance ☐ Type ☐ Others ☐

BASIC DATA

Item no.			
Degree of Protection		IP-65	IP-20
Addl. Deg9ree of Protection		--	--
Material of Housing		Cast Aluminium alloy	CRCA sheet steel
CONTROL GEAR	Separate	Yes	
	Integral	--	Yes
Cable Type & Size		3 x 2.5 mm^2 (Cu)	3 x 2.5 mm^2 (Cu)
Looping facility		Yes	Yes
CABLE GLANDS	Required	Yes	Yes
	Type	Rolled Al	Rolled Al
MOUNTING BRACKET	Required	Yes	Yes
	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

BILL OF QUANTITY

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			

TECHNICAL PARTICULARS
LIGHTING FIXTURES AND ACCESSORIES

PROJECT:Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH
ISSUED FOR : PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐		
FIXTURE		
Item No		
Make		
Type		
Ref. Standard		
Suitable For	Type Of Lamp	
	Wattage Of Lamp	
Suitable For Outdoor Use		
Control Gear Integral / Separate		
Degree of Protection	Fixture	
	Control Gear Box	
Additional Degree of Protection	Fixture	
	Control Gear Box	
Material & Finish	Housing	
	Reflector	
	Control Gear Box	
	Diffuser / Louvre	
	Gasket	
	Ext. Hardwares <8mm/>8mm	
Pre - treatment	Housing	
	Reflector	
	Control Gear Box	
Thickness of material	Housing	
	Reflector	
	Control Gear Box	
Minimum Mounting Height		
Spacing / Height Ratio		
Light Output Ratio - Up / Down		
Surface Temp. Rise Range (For FLP Fxt)		
Cable Gland	Type	
	Material	
	Qty. Fittings / Control Gear Box	
Threaded Plug Provided	Fixture	
	Control Gear Box	
Looping Facility Available	Fixture	
	Control Gear Box	
Mounting Bracket Provided		
Weight Of Fixture		
Catalogue attached indicating	General Arrangement	
	Light Distribution	
	Utilisation Factors	
	I FL / I Starting	
ACCESSORIES		
Ballast	Make & Maker's Type	
	Ref. Standard	
	Rating	
	Winding Wire Material	
	Insulation Class	
	Power Loss in Ballast	
Capacitor	Make & Maker's Type	
	Ref. Standard	
	Rating	
Lamp Holder	Make & Maker's Type	
	Ref. Standard	
	Rating	
Starters	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.

SPECIFICATION SHEET

INTERLOCKING SWITCH SOCKET & PLUG

PROJECT:Coal Based Fertilizer Plant PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR : PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

GENERAL		**AMBIENT CONDITION**	
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 Pollution	Dusts : Coal Dust
Vendor Ref. No. :			Vapour : Highly Corrosive
Sample Reqd. :		Area	Safe ☒ Hazardous - ☐
		Hazardous Area Class	Zone : Encl. Gr. :
			Temp. Class :
		Location :	Indoor ☒ Outdoor ☒

TESTS TO BE WITNESSED : Routine ☒ Type Others

BASIC DATA

Item No.			
Quantity		Refer SOR (Supply)	
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^2 (Al)	3 C X 4 mm^2 (Cu)
	Plug	4 C X 6 mm^2 (Cu)	3 C X 2.5 mm^2 (Cu)
Period for which Spares required		--	--

MAKE OF COMPONENTS

SWITCH :	
FUSE:	
SOCKETS :	
PLUG :	
CABLE GLANDS :	
TERMINAL BLOCKS :	

TECHNICAL PARTICULARS

General	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		
Switch	Make & Maker's Type		
	Reference Standards		
	Rated Current		
	Utilisation Category		
Fuse	Make & Maker's Type		
	Reference Standards		
	Rated Current		
Socket	Make & Maker's Type		
	Reference Standards		
	Rated Current		
Plug	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.

SPECIFICATION SHEET

BATTERY CHARGER

PR PROJECT:Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL ☐	ENQUIRY ☒	ORDER ☐	FINAL ☐
GENERAL		**AMBIENT CONDITION**	
Ref. Stds. : IS/IEC		Temp.- Max / Min / Design ref.: 46 / 1 / 50°C	
Encl. Docs : ☐		Relative Humidity 100% Max.	Alt. above Sea Level < 1000M
Make : As per vendor list enclosed		**ATMOSPHERIC POLLUTION**	Dusts : Coal Dust
Maker's Type :			Vapour : Highly Corrosive
		LOCATION	A/C Room ☐ Ventilated Room ☒
			Non Ventilated Room ☐
TESTS: Routine ☒	Type ☐	Others ☐	

BASIC DATA		
TAG NO. & QUANTITY	Item No.	
	Code No.	
	Description	Battery Charger
	Quantity	
A.C. SUPPLY SYSTEM DETAILS	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	
LOAD DETAILS	Continuous Current	40A
	Rated D.C. Voltage	110V
ASSOCIATED BATTERY DETAILS	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 (□□Ω)	
CABLING DETAILS	A.C. Power Supply	
	Battery	
	Load	
	Control	
PAINTING	Type & Shade	
SPARE PARTS		

- 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.

PROJECT:Coal Based Fertilizer Plant — PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR : PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

GENERAL	Item No.		
	Make		
	Maker's Type		
CONSTRUCTIONAL DETAILS	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		
	Painting	Type	
		Shade	
FLOAT / STAND BY FLOAT CHARGER	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		
	Type of Cooling		
BOOST CHARGER	Type of Charger		
	Output Current : Starting / Finishing		
	Output Voltage Range		
	Ripple Content		
	Float Current for Automatic Switching		
	Charge Termination Device		
	Type of Cooling		
FLOAT/ STAND BY FLOAT / BOOST CHARGER	**CHANGE-OVER ARRANGEMENT FROM**	Float to Standby Float	
		Standby Float to Float	
		Float / Standby Float to Boost	
		Boost to Float / Standby Float	
	Short Circuit current		
	Heat Dissipation		

		Float / Standby float	**Boost**
RECTIFIER TRANSFORMER	Make		
	Type		
	Class of Insulation		
	Vacuum Impregnated		
	KVA Rating (Design / Load)		
	Temp. Rise Over Ambient		
THYRISTORS	Make		
	Type		
	VRRM		
	Iav		

		Rectifier – Float / Boost	**Blocking Diodes**	**Dropper Diodes**
DIODES	Make			
	Type			
	VRRM			
	Iav			

PCBS	Make		
	Type		
	Self Diagnostic feature		
FILTER CAPACITOR	Make		
	Type		
	Capacity		
	Rated Voltage		
D.C. CHOKE	Make & Type		
	Insulation Class		

	Rating : Current / Inductance						
BATTERY E/F RELAY	Make						
	Type						
	Setting Range						
DC U/V RELAY	Make						
	Type						
	Setting Range						
THERMAL RELAY		**Float / Standby float**			**Boost**		
	Make						
	Type						
	Setting Range						
AUX. RELAY	Make						
	Type						
SWITCHES		**Float / Standby Float**		**Boost**		**Battery**	
		Input	Output	Input	Output		
	Make						
	Type						
	Rated Voltage/Current						
	Utilisation Category						
CONTACTORS		**Float/Standby Float I/P**		**Boost I/P**		**D.C. Contactor**	
	Make						
	Type						
	Rated Voltage/Current						
	Utilisation Category						
	Operating Voltage of Coil						
FUSES		**Float/Standby Float**			**Boost**		
		Input/Output/SCR/Diodes			Input/Output/SCR/Diodes		
	Make						
	Type						
	Rated Voltage/Current						
	Prospective Breaking Current						
PUSH BUTTONS	Make						
	Type						
	Current / Voltage Rating						
	Utilisation Category						
CONTACTORS & SELECTOR SWITCHES	Make						
	Type						
	Current / Voltage Rating						
	Utilisation Category						
TIMER	Make						
	Type						
	Timer Range						
INSTRUMENTS & METERS	Make						
	Type						
	Operation						
	Accuracy						
	Size						
SIGNAL LAMPS	Make						
	Type						
	Rated Voltage / Wattage						
	Rating of Safety Resistor						
CABLE GLAND	Make						
	Type						
	Material						
TERMINAL BLOCK	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.

SPECIFICATION SHEET
BATTERY

PROJECT:Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL ☐	ENQUIRY ☒	ORDER ☐	FINAL ☐

GENERAL		**AMBIENT CONDITIONS**	
Ref. Stds. : IS/IEC		Temp.- Max / Min / Design ref.: 46 / 1 / 50°C	
Encl. Docs. : ☐		Relative Humidity: 100% Max.	Alt. above Sea Level <1000M
Make : As per enclosed vendor list		**Atmospheric Pollution**	Dusts : Coal Dust
Maker's Type :			Vapour : Highly Corrosive
		Location	A/C Room ☐ Ventilated Room ☒
			Non Ventilated Room ☐

TESTS: Type ☐ Routine ☒ Acceptance ☐ Others ☐

BASIC DATA

TAG NO. & QUANTITY	Item No.	
	Code No.	
	Description	Ni- Cd Battery
	Quantity	
BATTERY DETAILS	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	
CABLE DETAILS	No.	
	Size	
	Type	
ROOM DIMENSION	Length	
	Breadth	
	Height	
SPARE PARTS	Required ☒ 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.

TECHNICAL PARTICULARS
BATTERY

P PROJECT:Coal Based Fertilizer Plant			PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH
ISSUED FOR : PROPOSAL ☐	ENQUIRY ☒	ORDER ☐	FINAL ☐
GENERAL			
Item No.			
Make			
Maker's Type			
No. of Cells Per Battery			
Capacity at 10 Hr Rate			
CONSTRUCTIONAL DETAILS			
POSITIVE PLATES	Type		
	Size		
	Number Per Cell		
NEGATIVE PLATES	Type		
	Size		
SEPARATORS	Type		
	Material		
	Thickness		
CONTAINERS	Thickness		
	Material		
CONNECTORS BETWEEN CELLS	Size		
	Material		
	Method of Connection		
Clearance Between Bottom of Plates & Containers			
Overall Dimensions of each Cell			
Weight of Complete Cell			
ELECTRICAL DATA			
RECOMMENDED RATES OF CHARGE	Starting (A)		
	Finishing (A)		
	Float (A)		
	First Charge (A)		
RECOMMENDED VOLTAGE PER CELL	Float Charging		
	Boost Charging	Start	
		Finish	
Open Circuit Voltage On Full Charge			
GUARANTEED γ AT 10 Hr. RATE	Amp. Hr. %		
	Watt Hr. %		
Internal Resistance Per Cell			
DISCHARGE CAPACITY IN Amp.	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		
MISCELLANEOUS DATA			
Electrolyte Details	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 1st 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.

SPECIFICATION SHEET
DCDB

PROJECT:Coal Based Fertilizer Plant		PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH	
ISSUED FOR : PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐			
GENERAL		**AMBIENT CONDITIONS**	
Ref. Stds. : IS/IEC		Temp.- Max / Min / Design ref.: 46 / 1 / 50°C	
Encl. Docs. : ☐		Relative Humidity: 100% Max.	Alt. above Sea Level <1000M
Make : As per enclosed vendor list		**Atmospheric Pollution**	Dusts : Coal Dust
Maker's Type :			Vapour : Highly Corrosive
		Location	A/C Room ☐ Ventilated Room ☒
			Non Ventilated Room ☐
TESTS: Type ☐ Routine ☒ Acceptance ☐ Others ☐			

BASIC DATA			
TAG NO.	Item No.		DCDB
	Description		DC DISTRIBUTION BOARD
	Code No.		
REFERENCE DRAWINGS	Single Line Diagram		--
SYSTEM DETAILS	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		
BUS BARS	**Rating**	Continuous	
		Short Time for 1 sec.	16 kA
	Material of Construction		Al
	Bare / Insulated		Insulated
	Type of Insulation		Heat Shrinkable Raychem Sleeves
EXECUTION	Single Front / Double Front		Single Front
	Drawout / Non Drawout		Non Drawout
	CABLE ENTRY	Top	--
		Bottom	Yes
MISC. DATA	Dummy Panel Reqd. (Yes / No)		No
	Width of Dummy Panel		--
	No. of Dummy Panel		--
	PAINTING	Type	Epoxy Based
		Shade	RAL 7035
	Spares Parts Reqd. 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.

FEEDER DETAILS
DCDB

PROJECT:Coal Based Fertilizer Plant — PLANT: CISF Barrack, Guard Room &Shops, D-Type Bungalows, VGH

ISSUED FOR: PROPOSAL ☐ ENQUIRY ☒ ORDER ☐ FINAL ☐

SWITCH BOARD DESCRIPTION: DCDB

Feeder No.	Feeder Description and Code No.	Rating		Ref. Scheme Drg.	Fdr. Type	Power Cable Size (mm^2)	Remarks
		KW	Amp.				
1	Incomer-1	--	63A	--	Power Feeder	3.5Cx25 mm2 (Al)	
2	Incomer-2	--	63A	--	Power Feeder	3.5Cx25 mm2 (Al)	
3	O/G feeders 1 to 14	--	16A		- Power Feeder	3CX2.5 mm^2 (Cu)	

SECTION – 3.0

ERECTION, TESTING & COMMISIONING SPECIFICATION

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

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 contactor) 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.

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 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 ± 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 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 insolating 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.

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.

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 form 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 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.

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.

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.

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.

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.

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.

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 contacted 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.

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
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^{O}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

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, value, radiator value 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

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.

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.

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.

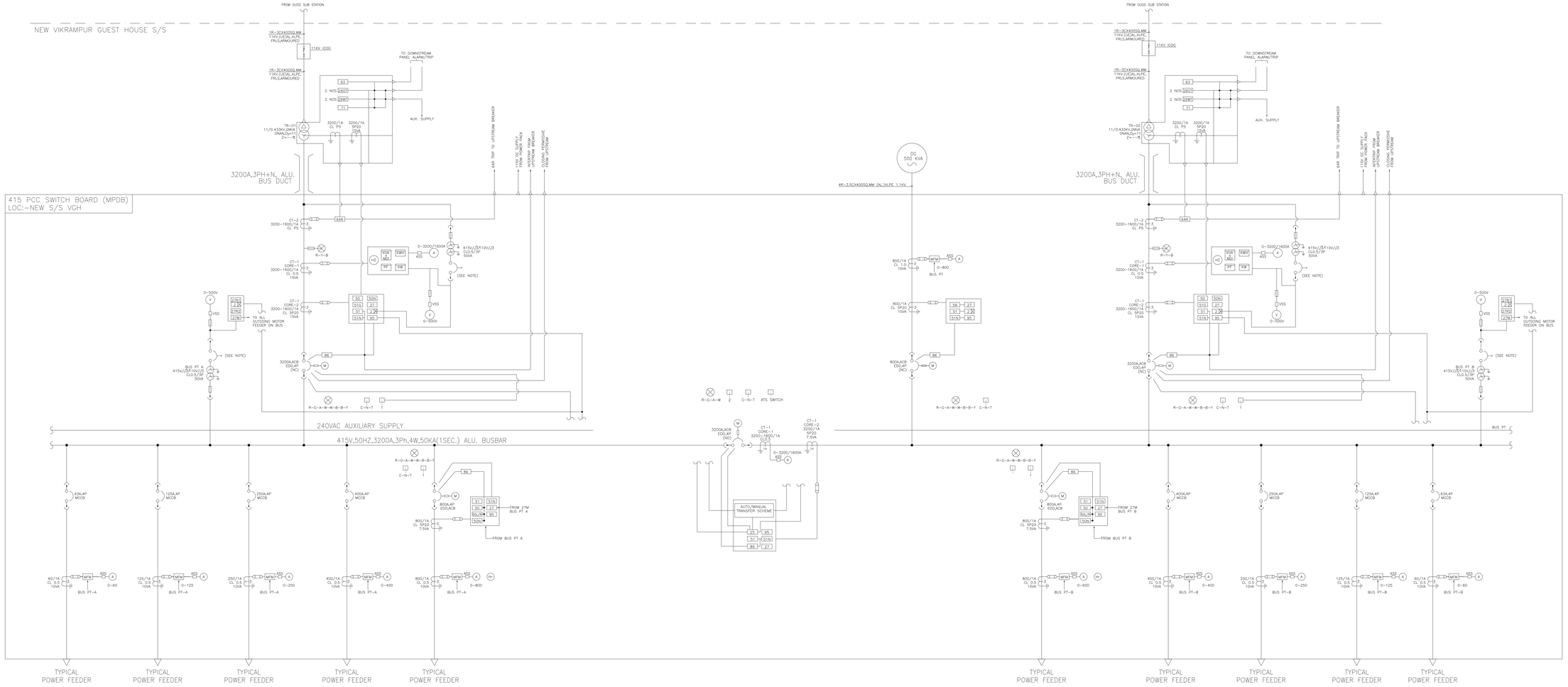
10.16 To undertake and execute work and supply as per scope of work, scope of supply and follow Technical Conditions including specification for electrical erection, specification for electrical testing and commissioning and as per schedule of rates

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.



NOTE:-

01. ALL RELAYS SHALL BE NUMERICAL,MICROPROCESSOR BASED COMPREHENSIVE PROTECTION CONTROL & METERING TYPE WITH IEC/TCP IP PROTOCOL SUITABLE FOR REMOTE COMMUNICATION.
02. 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.
03. ALL INDICATING LAMPS SHALL BE LED TYPE WITH LOW VOLTAGE GLOW PROTECTION(LVGP).
04. 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.
05. RELAY 86 SHALL BE DISCRETE RELAY. HOWEVER, RELAY 95 SHALL BE PART OF NUMERICAL RELAY.
06. PANEL SPACE HEATER WITH THERMOSTAT SHALL BE PROVIDED ON EACH PANEL AND SUPPLY SHALL BE TAKEN FROM 240V AUX. AC SUPPLY BUS.
07. 240V, AC AUX. SUPPLY SHALL BE TAPPED FROM INTERNALLY FROM MAIN BUSBAR
08. RELAYS,METERS,CONTROL TIMERS,SWITCHES ETC. AS MENTIONED AND REQUIRED WHILE DEVELOPING THE CONTROL SCHEMATIC AND FELT NECESSARY FOR SAFE OPERATION SHALL BE PROVIDED.
09. DESCRIPTION OF THE SELECTOR SWITCH INDICATED ON THE DRAWING ARE AS FOLLOWS:-

C-N-T	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)
ATS SWITCH	SELECTOR SWITCH (AUTO/INDEPENDENT/MANUAL) FOR AUTO TRANSFER SCHEME.
1	EMERGENCY TRIP PUSH BUTTON
2	POSITION SELECTOR FOR TRIP BREAKER-A, TRIP BUS COUPLER & TRIP BREAKER B.

10. ALL FEEDER INCLUDING SPARE FEEDER SHALL BE FULLY EQUIPPED WITH RELAY/METERS, LAMPS, CT ETC AS PER RESPECTIVE TYPICAL FEEDERS.
11. CIRCUIT BREAKERS SHALL BE PROVIDED WITH THE PROVISIONS OF MANUALLY CLOSE/TRIP ON LOSS OF CONTROL VOLTAGE.
12. PUSH BUTTON WITH PAD LOCK FEATURE SHALL BE PROVIDED IN ALL TRANSFORMER BAYS FOR TRIPPING UPSTREAM BREAKER.
13. FOR OTHER DETAILS REFER FEEDER DETAILS, ENCLOSED WITH NIT.
14. VACANT SPACE FOR FOLLOWING FEEDER RATING SHALL BE PROVIDED.
    A-400AMP.-2NOS.
    B-250AMP.-2NOS.
15. AUTO/MANUAL TRANSFER SCHEME SHALL BE CONSIDERED BETWEEN I/C & BUS COUPLER IN CASE OF BOTH I/C TRIP OR POWER SUPPLY NOT AVAILABLE DG SET SHALL BE START AUTOMATICALLY. DG SET SHALL BE SWITCH OFF AFTER RESUMING MAIN POWER SUPPLY

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	AIR CIRCUIT BREAKER	27	UNDER VOLTAGE RELAY
	CONTROL TRANSFORMER	46	PHASE UNBALANCE RELAY
	MCB/MCCB	49	THERMAL RELAY
	CURRENT TRANSFORMER	50	INSTANTANEOUS OVER CURRENT
MFM	MULTI FUNCTION METER	50N	+ EARTH FAULT RELAY
A	AMMETER	50LR/M	LOCK ROTOR PROTECTION RELAY
A0S	AMMETER SELECTOR SWITCH	51	IDMT OVER CURRENT
V	VOLTMETER	51N	+ EARTH FAULT RELAY
V0S	VOLTMETER SELECTOR SWITCH	71	MAGNETIC OIL LEVEL GAUGE
HZ	FREQUENCY METER	86	LOCKOUT RELAY
KWH	KILOWATT HOUR METER	95	TRIP CIRCUIT SUPERVISION RELAY
PF	POWER FACTOR METER	64R	RESTRICTED EARTH FAULT RELAY
t	TIME DELAY	66	INCOMPLETE SEQUENCE RELAY
25	SYNCHRO CHECK RELAY		CABLE GLAND

S.NO	O/G FEEDER RATING	QTY.	DESCRIPTION	CABLE SIZE
1.	800A	2NOS.	CISF	2R-3.5CX300mm² (AL) 1.1KV,XLPE
2.	800A	2NOS.	VGH	2R-3.5CX300mm² (AL) 1.1KV,XLPE
3.	800A	2NOS.	BUNGALOW	2R-3.5CX300mm² (AL) 1.1KV,XLPE
4.	800A	2NOS.	SPARE	2R-3.5CX300mm² (AL) 1.1KV,XLPE
5.	400A	2NOS.	TRAINEE HOSTEL	1R-3.5CX300mm²(AL) 1.1KV,XLPE
6.	250A	2NOS.	MLDB	1R-3.5CX120mm²(AL) 1.1KV,XLPE
7.	125A	4NOS.	SPARE	-
8	63A	2NOS.	LSDB	-
9.	63A	1NOS.	WELD. SOCKET	1R-3.5CX50mm²(AL) 1.1KV,XLPE
10.	250A	2NOS.	SPARE	-
11.	400A	2NOS.	SPARE	-

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

CLIENT:-
TALCHER FERTILIZER LIMITED

PROJECT:- RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

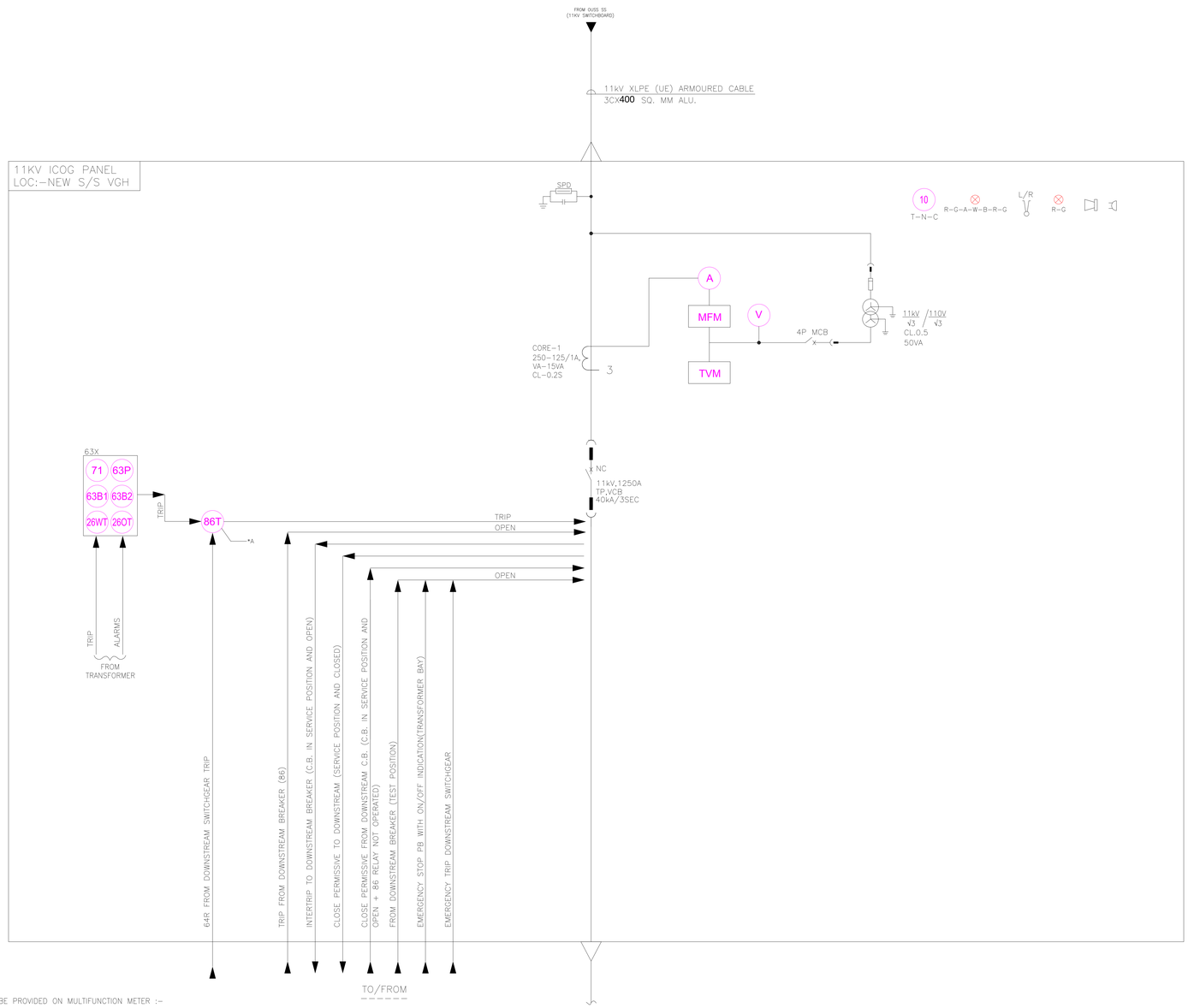
TITLE:- SINGLE LINE DIAGRAM (MPDB) (LOCATION :-VIKRAMPUR GUEST HOUSE)

REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.
DRG. NO.- PC183-7411-0985D
FILE:

प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा
PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA

LEGENDS:–

- MFM — MULTI FUNCTION METER
- 51 — IDMTL OVER CURRENT RELAY
- 51N — IDMT EARTH FAULT RELAY
- 86 — TRIP CIRCUIT SUPERVISION RELAY
- 27 — UNDER VOLTAGE RELAY
- 2 — TIMER
- 25 — SYNCHRO CHECK RELAY
- 87L — LINE DIFFERENTIAL RELAY
- 67 — DIRECTIONAL OVER CURRENT RELAY
- 51G — BACKUP EARTH FAULT RELAY
- 96 — LOCK OUT RELAY
- 10 — TNC SWITCH
- 71 — OIL LEVEL INDICATOR WITH CONTACTS
- 63P — PRESSURE RELIEF DIAPHRAGM
- 49WT — TEMP. RELAY FOR WINDING
- 49OT — TEMP. RELAY FOR OIL
- 96T — LOCK OUT RELAY(HAND RESET)–TRANSFORMER
- 50 — INSTANT. OVER CURRENT
- 50N — INSTANT. OVER CURRENT GROUND FAULT RELAY CONNECTED IN RESIDUAL WAY
- 59 — OVER VOLTAGE RELAY
- 60 — DC SUPPLY FAILURE
- 27M — UNDER VOLTAGE RELAY TO INTIATE MOTOR FOR TRIP
- 60 — VT FAILURE
- V — VOLTMETER ALONG WITH VSS
- A — AMMETER ALONG WITH ASS
- PFM — POWER FACTOR METER
- SURGE PROTECTION DEVICE
- ISOLATOR
- TVM — TRI VECTOR METER
- LIGHTNING ARRESTOR



NOTE:–

1. FOLLOWING MINIMUM METERING SHALL BE PROVIDED ON MULTIFUNCTION METER :–
   –3 PHASE CURRENT
   –LINE VOLTAGES
   –POWER FACTOR & FREQUENCY
   –KW,KVAR,KVA,KWH, & KVARH
2. LAMP TEST PUSH BUTTON SHALL BE PROVIDED.
3. SIGNALS/INDICATIONS TO/FROM 11kV ICOG ARE INDICATIVE, AND SHALL BE CONFIRMED DURING DETAIL ENG.
4. 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

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

Talcher Fertilizers

CLIENT:–
TALCHER FERTILIZER LIMITED

REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.

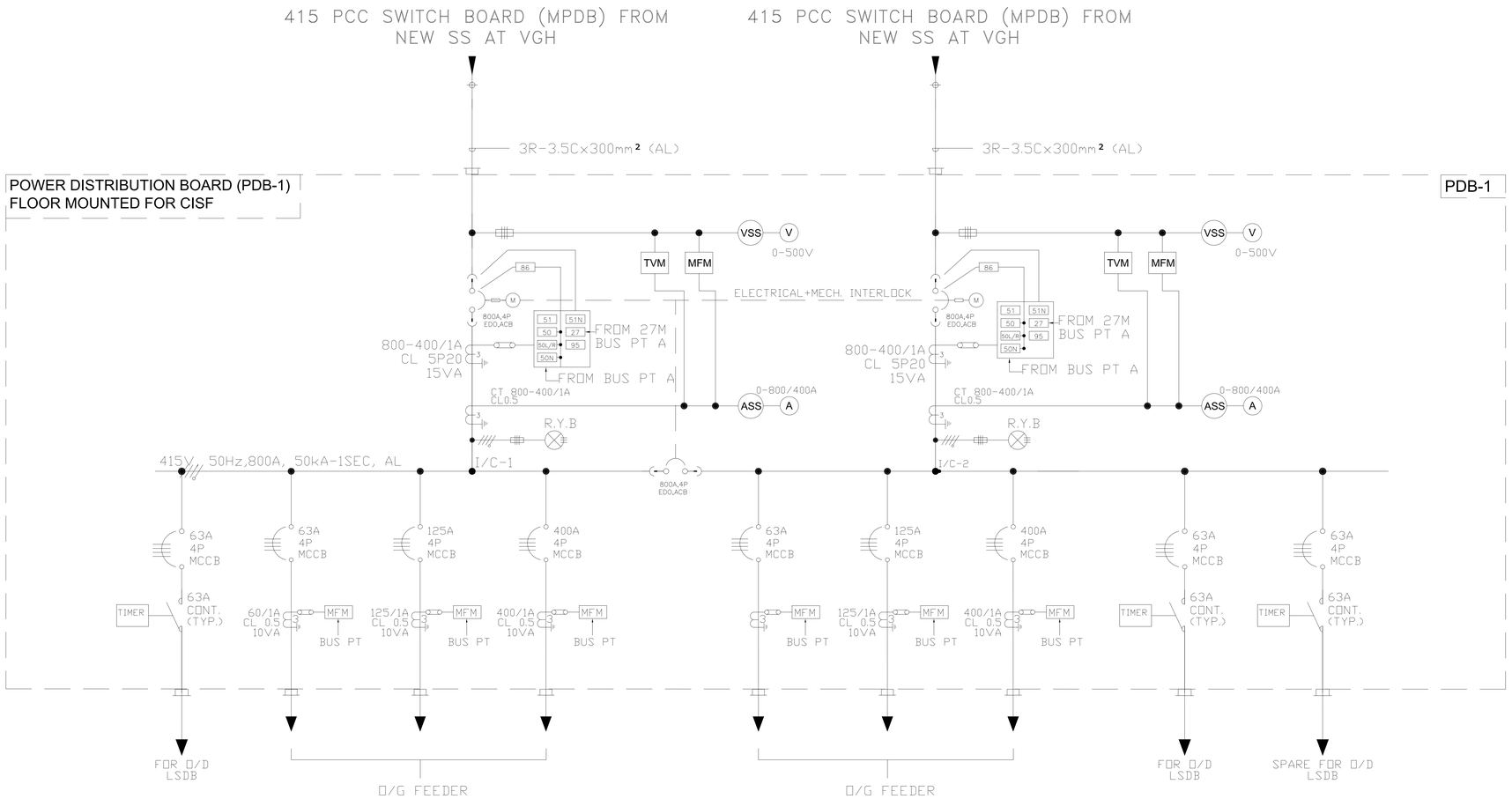
PROJECT:–
RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

DRG. NO.–
PC183–7411–0985E

TITLE:–
SINGLE LINE DIAGRAM (11KV ICOG PANEL)

FILE:

पी डी आई एल PDIL
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.	400A	3NOS.

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

Talcher Fertilizers

CLIENT:– TALCHER FERTILIZER LIMITED

REV. 0 1

SHEET 1 OF 1

SCALE: N.T.S.

PROJECT:– RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

DRG. NO.– PC183-7411-0985G

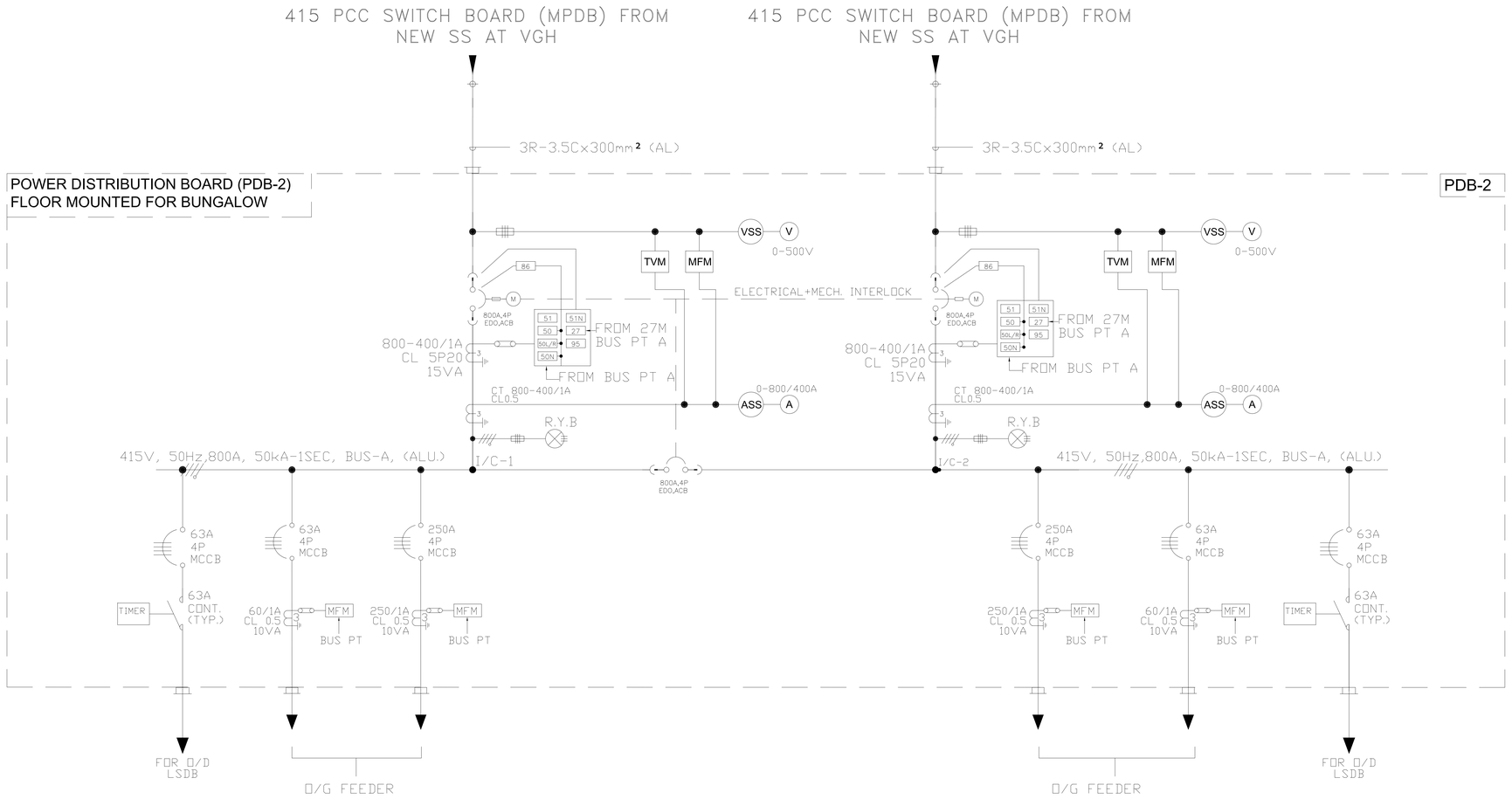
TITLE:– SINGLE LINE DIAGRAM (PDB-1)

FILE:

पी डी आई एल PDIL

प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा

PROJECTS & DEVELOPMENT INDIA LTD.–NOIDA



S.NO	O/G FEEDER RATING	QTY.
1.	250A	6NOS.(FPB FOR BUNGALOW)
2.	250A	4NOS.(SPARE)
3.	63A	2NOS.(LSDB)
4.	63A	4NOS.

NOTE :-ALSO REFER FEEDER DETAILS

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	05.01.23	ISSUED FOR TENDER	SS	RK	SKB

CLIENT:- TALCHER FERTILIZER LIMITED

REV. 0 1

SHEET 1 OF 1

SCALE: N.T.S.

PROJECT:- RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

DRG. NO.- PC183-7411-0985I

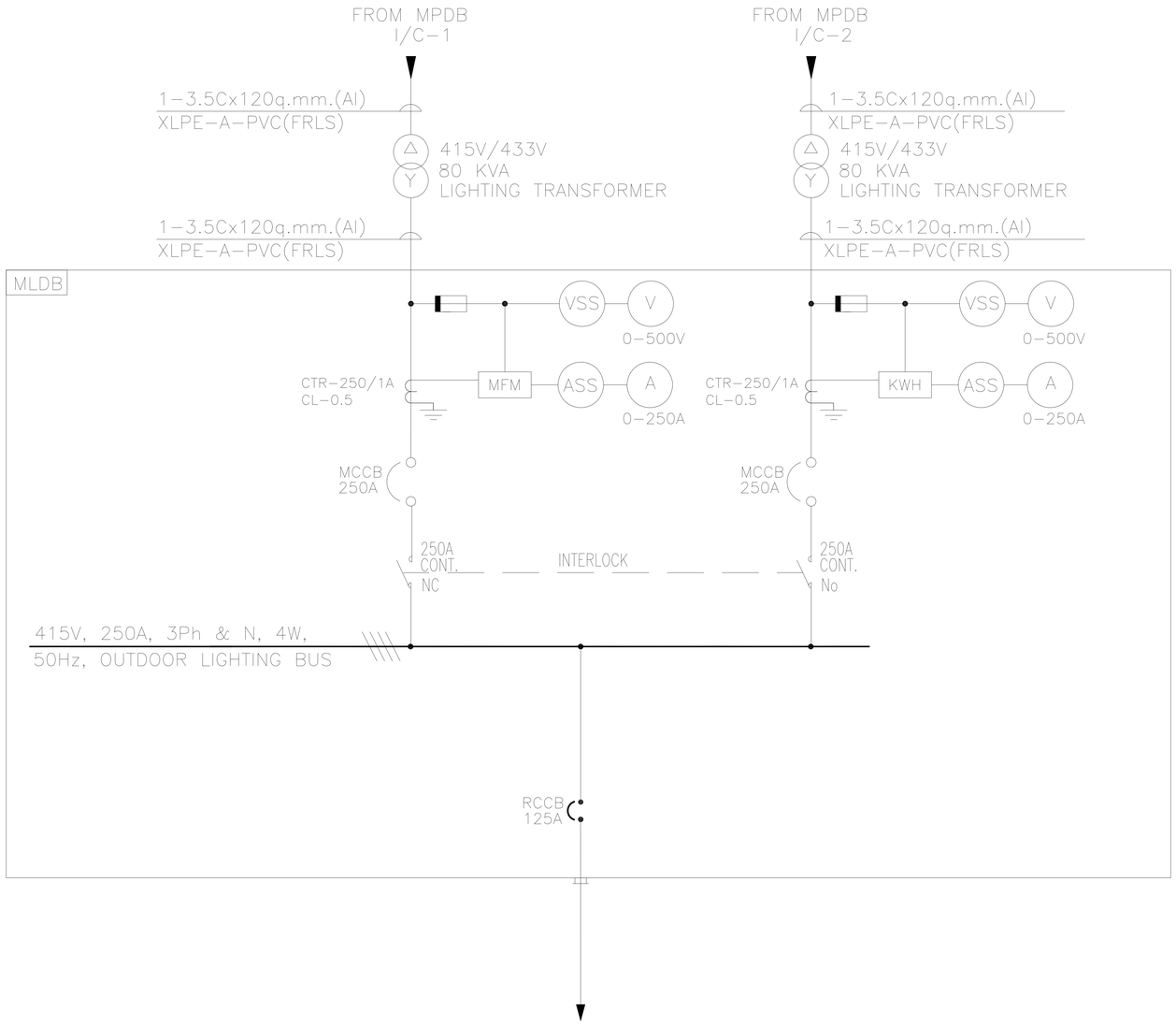
TITLE:- SINGLE LINE DIAGRAM (PDB-2)

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. CABLE ENTRY : INCOMER - BOTTOM
   OUTGOING - BOTTOM



S.NO	O/G FEEDER RATING	QTY.
1.	125A	4NOS.(FOR FPB -TOWNSHIP LIGHTING)
2.	125A	4NOS.(SPARE)

NOTE :-ALSO REFER FEEDER DETAILS

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	05.01.23	ISSUED FOR TENDER	SS	RK	SKB

Talcher Fertilizers

CLIENT:-
TALCHER FERTILIZER LIMITED

REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.

PROJECT:- RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

DRG. NO.- PC183-7411-0985J

TITLE:- TYPICAL SINGLE LINE DIAGRAM OF MLDB

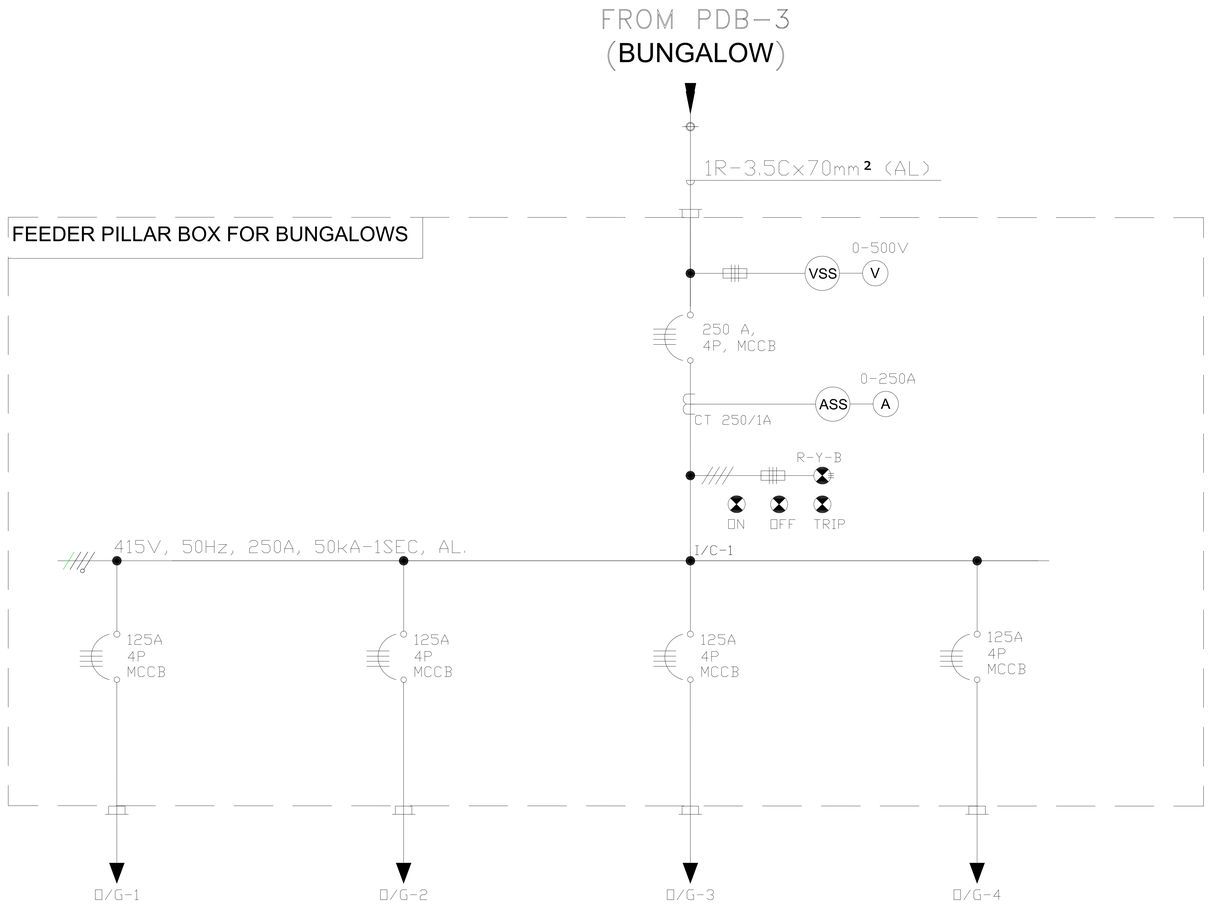
FILE:

पी डी आई एल PDIL

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



NOTE :-ALSO REFER FEEDER DETAILS

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	05.01.23	ISSUED FOR TENDER	SS	RK	SKB

CLIENT:-
TALCHER FERTILIZER LIMITED

PROJECT:- RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

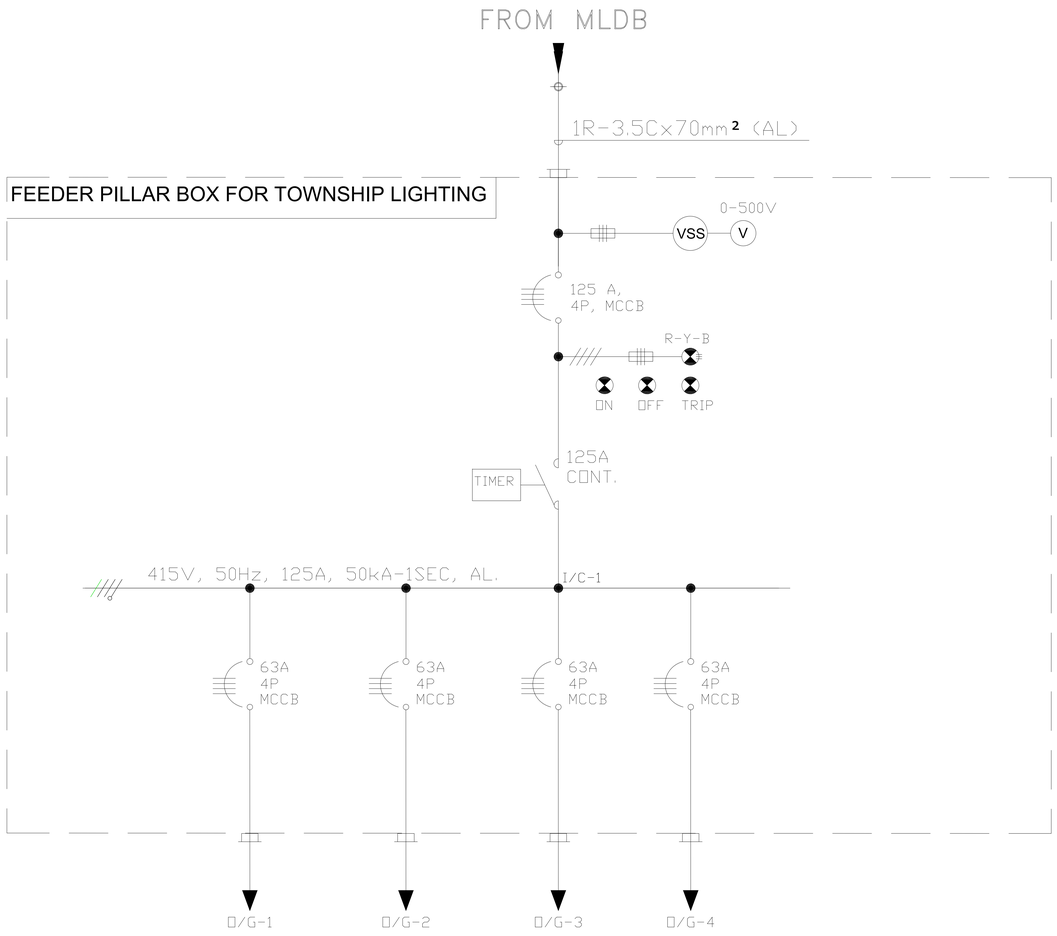
TITLE:- TYPICAL SINGLE LINE DIAGRAM OF FPB

REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.
DRG. NO.- PC183-7411-0985K
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



NOTE :-ALSO REFER FEEDER DETAILS

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	05.01.23	ISSUED FOR TENDER	SS	RK	SKB

Talcher Fertilizers

CLIENT:-
TALCHER FERTILIZER LIMITED

REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.

PROJECT:- RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

DRG. NO.- PC183-7411-0985L

TITLE:- TYPICAL SINGLE LINE DIAGRAM OF FPB

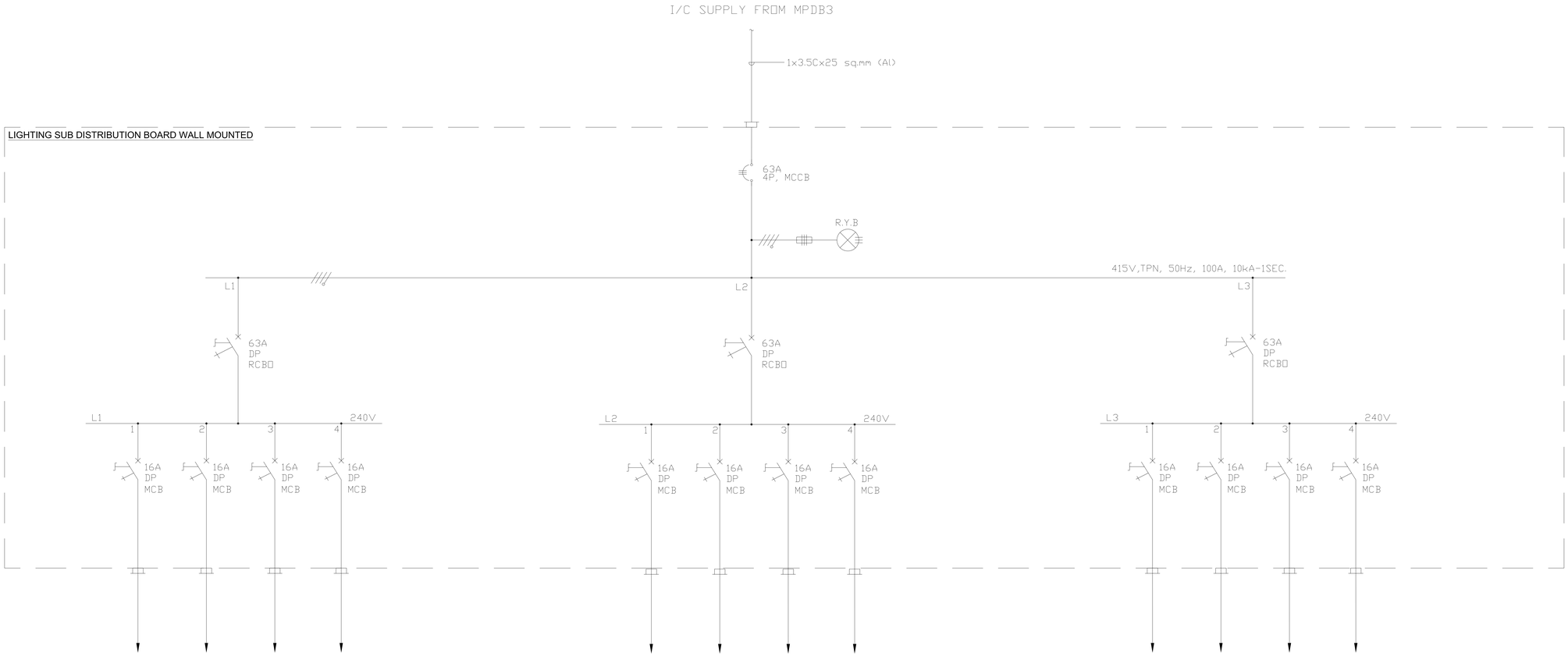
FILE:

पी डी आई एल PDIL

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. RATED SHORT CIRCUIT 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

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

Talcher Fertilizers

CLIENT:–
TALCHER FERTILIZER LIMITED

REV. 0 1

SHEET 1 OF 1

SCALE: N.T.S.

PROJECT:– RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

DRG. NO.– PC183–1215

TITLE:– TYPICAL SINGLE LINE DIAGRAM (LSDB)

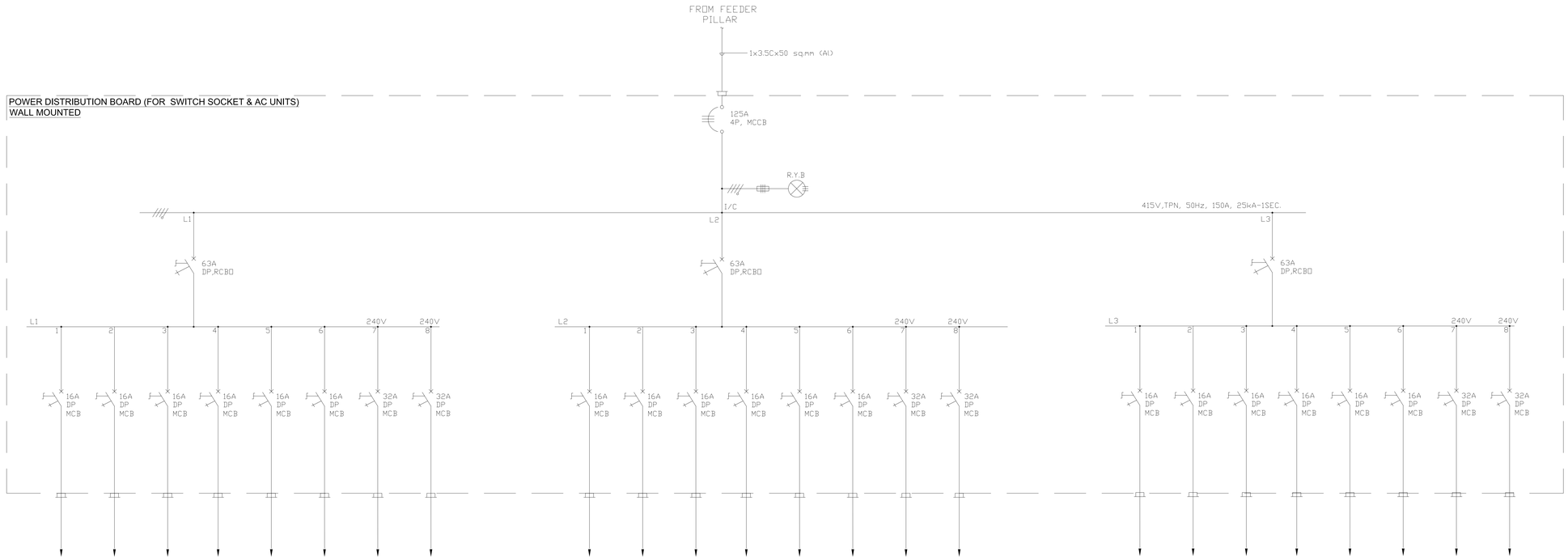
FILE:

पी डी आई एल PDIL

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



LEGEND:-

- FUSE
- INDICATING LAMP
- MCB/RCBO WITH THERMAL ELECTROMAGNETIC PROTECTION
- MCCB
- CABLE GLAND

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

Talcher Fertilizers

CLIENT:–
TALCHER FERTILIZER LIMITED

REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.

PROJECT:–
RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

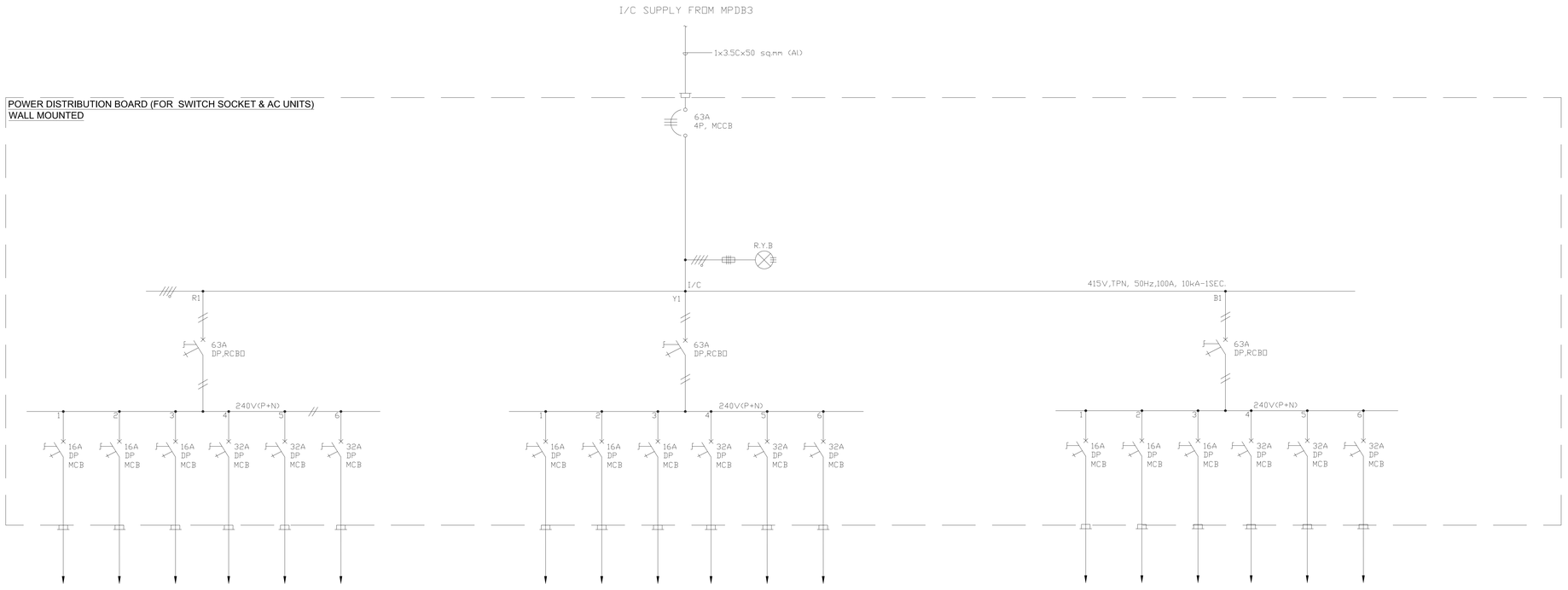
DRG. NO.–
PC183–1216

TITLE:–
TYPICAL SINGLE LINE DIAGRAM (PDB)

FILE:

पी डी आई एल PDIL

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

LEGEND:-

FUSE

INDICATING LAMP

MCB/RCBO WITH THERMAL ELECTROMAGNETIC PROTECTION

MCCB

CABLE GLAND

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

CLIENT:-
TALCHER FERTILIZER LIMITED

PROJECT:- RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

TITLE:- TYPICAL SINGLE LINE DIAGRAM (PDB)

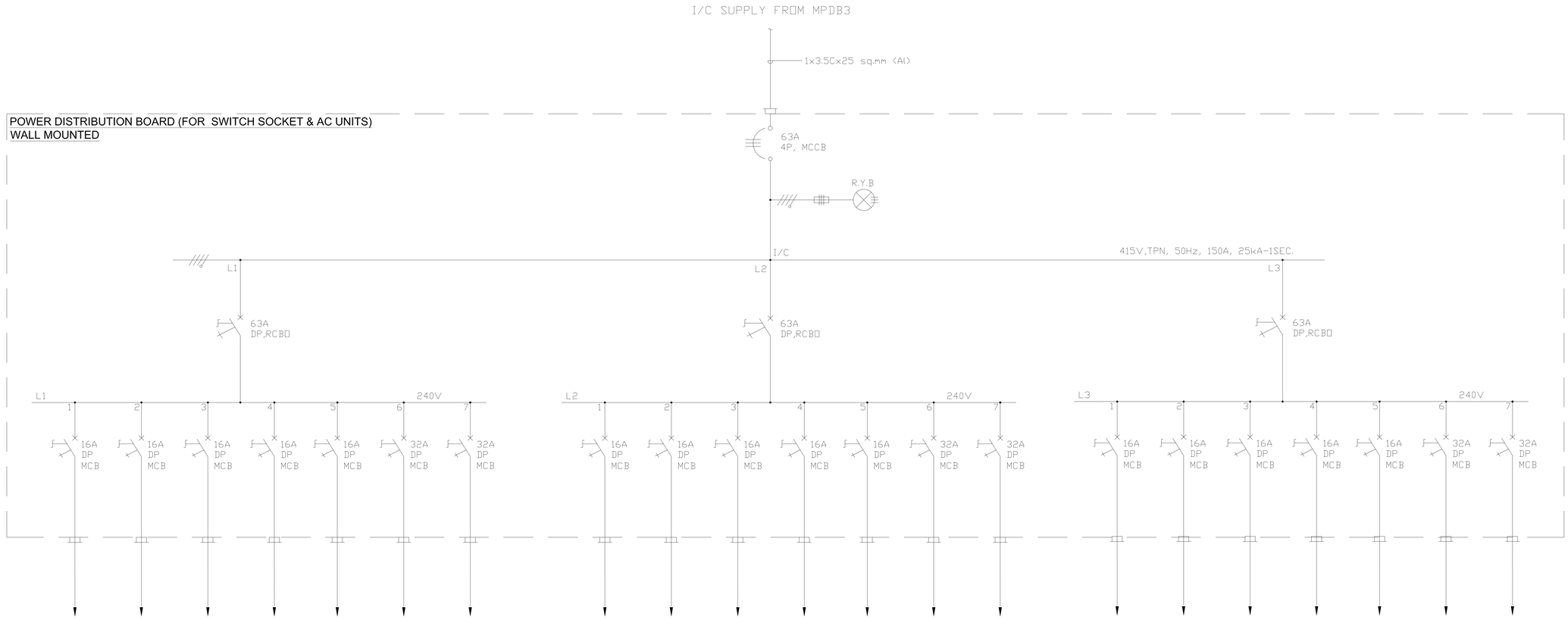
REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.
DRG. NO.- PC183-1216A
FILE:

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

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

Talcher Fertilizers

CLIENT:–
TALCHER FERTILIZER LIMITED

REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.

PROJECT:–
RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

DRG. NO.–
PC183–1217

TITLE:–
TYPICAL SINGLE LINE DIAGRAM (PDB)

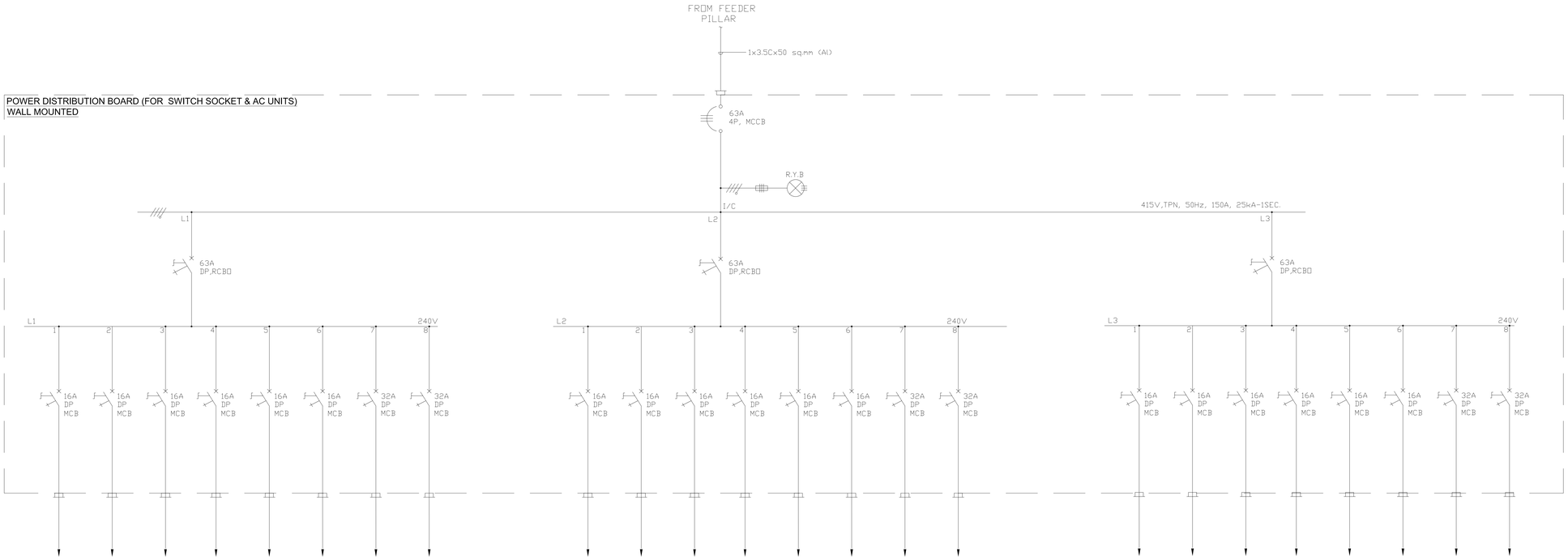
FILE:

पी डी आई एल PDIL

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

TYPICAL

FOR TENDER PURPOSE

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

CLIENT:– TALCHER FERTILIZER LIMITED

REV. 0 1

SHEET 1 OF 1

SCALE: N.T.S.

PROJECT:– RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

DRG. NO.– PC183–1218

TITLE:– TYPICAL SINGLE LINE DIAGRAM

FILE:

प्रोजेक्ट्स एंड डेवलपमेंट इंडिया लिमिटेड नोएडा
PROJECTS & DEVELOPMENT INDIA LTD.–NOIDA

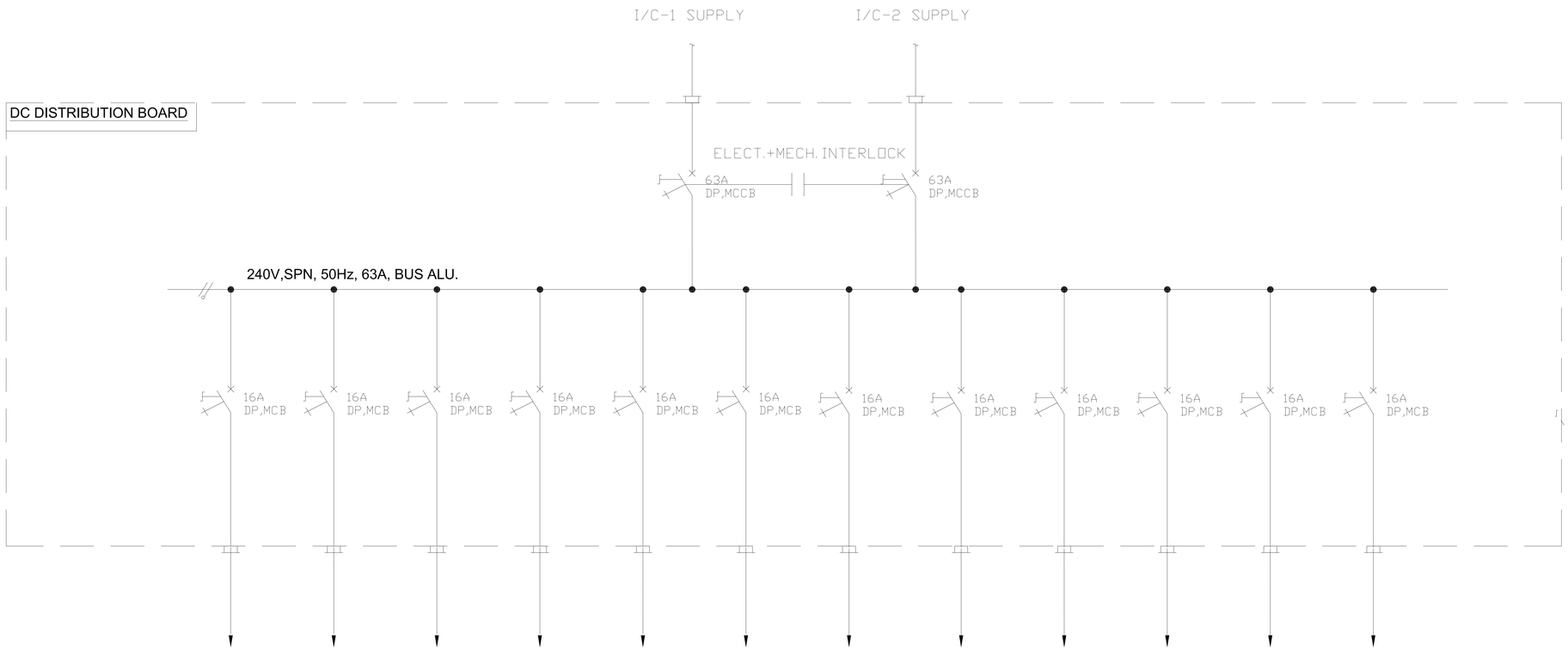
GENERAL NOTES:

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

REV.	DATE	DESCRIPTION	PPD.	CKD.	APPD.
1	12.04.24	ISSUED FOR TENDER	SS	DKG	DKG
0	04.03.21	ISSUED FOR TENDER	SS	RK	SKB

CLIENT:–
TALCHER FERTILIZER LIMITED

PROJECT:– RENOVATION WORKS FOR BARRACK BUILDINGS & OTHER ALLIED WORKS

TITLE:– SINGLE LINE DIAGRAM (DCDB)

REV. 0 1
SHEET 1 OF 1
SCALE: N.T.S.
DRG. NO.– PC83–1219
FILE:

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	AV	BKC / SC	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

CONTENTS

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 $75^{O}C$ 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 $75^{O}C$. 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 hysterisis 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 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 untanking 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 Imag 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.

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

REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD
2	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	AV	BKC / SC	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

CONTENTS

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 200ºC 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 bust duct shall be similar to the main bus-bars of the switchboard and as specified above.

5.8.3 Bust 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 80ºC. 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 - 240º 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:

-- 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	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	۲	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

REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD
2	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	AV	BKC / SC	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

CONTENTS

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 90ºC. The bus-bars shall also be designed to withstand the system fault current for 1 second without exceeding the temperature of 200ºC for bare aluminium and 250ºC 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.

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 - 240º 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.

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	AV	BKC /SC	BB
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	AV	BKC	BB
0	DEC. '97	--	ISSUED FOR IMPLEMENTATION	RNS/JKT/SC	JKT	HSW

CONTENTS

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 or 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.

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	AV	BKC/SC	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

CONTENTS

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 ± 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 - 250ºC
- 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

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 ± 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

- 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	AV	BKC / SC	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

CONTENTS

1.0 SCOPE

1.1 This standard covers the technical requi rements 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 testi ng of the equipment covered by this specification shall comply with the latest issue of IS: 8623 Specification for low voltage switchgear and control gear a ssemblies 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 i ssue of the Indian electricity Rules and other relevant Statutory Acts and Regulations. The supp lier 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 com ponents shall be suitable for operating at the specified rating continuously wit h the specified voltage and frequency variations under the ambient conditions i ndicated 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 fl oat mode. In Boost mode, for Initial c harging 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

4.3 The rated voltage of the float charger fo r 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 ± 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 servic e. Charger D.C. output voltage shall be maintained within ± 2% irrespective of the input supply variations as indicated in Specificati on 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 moni tored and in case voltage falls below 90% of the rated voltage the stand by charger sha ll 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 thr ough the same silicon controlled rectifier (SCR) which shall regulate the charger out put 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 c harging and vice versa shall be automatic as per the battery charge condition.

4.8 During boost charging operation, arr angement shall be made so that DC power to load is not interrupted even if AC pow er fails during this operation. During Boost charge period, battery backup to l oad shall be arranged by a tapping from suitable point of the battery.

4.9 Suitable dropper diodes shall be provi ded to reduce the voltage across the load to 105% of the rated volt age at rated load current. When power supply to the charger fails, the dropper diodes sha ll 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 char ging, no over/under charging of cells takes place.

4.12 All the automatic features specified above shall al so have provision of manual arrangement for control of charging ra tes and transfer from one charger to others.

4.13 Charger unit shall be provided with all r equired 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 s hall 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-hygr oscopic 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 fr ee 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 complete ly factory wired and ready for external connections.

5.15.2 The wiring shall be complete in all res pect 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 termi nals 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 neat ly 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 Specificat ion 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 mi nimum height of 75 mm from the bottom

of the switchboard. Two s pare 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, Thes e terminal blocks shall be pressure clamp type up to 35 Sq.mm, cable and bolt ed lug type for higher sizes of cables, These shall be protected type and rat ed 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 wir es 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 acco rding to circuit functions and suitably numbered. 20% extra terminals shall be provided in the terminal block.

5.16.10 For power connection, suitable marki ng 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 lowe r part of the board wit h 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 pr operly 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 pr eferably be made of extruded Aluminium properly machined and providing intima te contact with the stud for heat dissipation. Each thyristor/ diode sha ll be protected with properly designed snubber circuit.

6.3 Air Break Switches

The switches shall be heavy duty quick ma ke, quick break type conforming to IS:13947. Switches shall be snap action ro tary 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, se mi-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 c hutes 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 rela ys shall be provided. The bimetal relays shall be ambient temperature compens ated. The thermal relays shall be provided with a manual resetting device on the door.

6.7 All ammeters and voltmeters shall be cl ass 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 t hat 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. T hese 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 pr ovided 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 sele ctor 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 indi cate 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-vi sual alarm annunciation system shall be provided for the board. Audible annunciation shall be provi ded by means of hooter with provision of remote alarm and acknowledgment. Vi sual 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 connec ted 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 sha ll be adopted for audio visual alarm and indication:

System Condition	Visual Signal	Audible Signal
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 prov ided with a thermostatically controlled space heater, rated for 240 V, 50 Hz and controlled through double pole miniature circuit breaker. The space heat er supply shall be tapped from incomer power supply.

7.1.2 Name Plates

7.1.2.1 The board shall have a large name pl ate on the top to i ndicate its name and designation.

7.1.2.2 Each cubicle shall be provided with a name plate.

7.1.2.3 All control switches, push buttons, la mps etc. shall have f unction 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-treat ment 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, cr inkle or be removed by abrasion due to normal handling.

8.4 Unless otherwise specified the finishi ng 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 routi ne 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 specifi ed shall be carried out on one board of each rating.

9.3 All the above tests shall be carri ed out in presence of purchaser's representative. In addition, the equipment shall be subj ected 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.	**A.C. Input Side**			
	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.	**Rectifiers**			
	i) Semiconductor fuses	Yes	Yes	Yes
	ii) Filters with fuses	Yes	Yes	Yes
	iii) Surge Suppressors	Yes	Yes	Yes
3.	**DC Output Side**			
	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

Sl. No.	Description	To be mounted on		
		Float cum Load Charger	Standby Float cum Load Charger	Boost Charger
1	2	3	4	5
4.	**Common Items**			
	i) Droper Diodes	Yes		
	ii) Solid State facia annunciator for :	Yes	Yes	Yes
	-- 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			Yes
	iv) Battery under voltage relay			Yes
	v) Battery earth fault relay			Yes
	vi) DC Contactor			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	N	Y	Y
2.	Technical Particulars, duly filled-in	N	Y	Y
3.	General arrangement drawings showing overall dimensions of the charger board and m ounting details of various equipment inside the charger panel	N	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.	N	N	Y
7.	Characteristics curves for the charger and all ot her 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	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 sha ll 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	AV	BKC / SC	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

CONTENTS

1.0 SCOPE

1.1 This standard covers the technical require ments 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 t he 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 & batteri es, lead-acid type with plante 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 t he equipment offered shall comply with the provisions of the latest issue of the Indian Electricity Rules and other Statutory Acts and Regulations. The supp lier shall, wherever necessary, make suitable modifications in the equipment to comply with the above.

2.3 Wherever any requirement, laid down in th is 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 ra ted ampere hours when discharged at the 10 hours rate of discharge to a final vo ltage of 1.85 V per ce ll for Lead Acid and at the 5 hours rate of di scharge 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 ty pe as indicated in Specification Sheet and rated for specified voltage. Each batte ry bank shall consist of a specified number of cells.

5.2 Each cell shall be contained in a closed t op container preferably transparent and unbreakable and shall incorporate posit ive 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 s hall 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 s hall 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 Hydromet ers 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 re levant standards on two cells in the presence of Purchaser's representative, if specified in Specification Sheet.

7.2 Acceptance tests, if specified in Specif ication Sheet, shall be carried out as per relevant standards on each cell after installation at site.

7.3 In addition, the battery shall be subjec ted 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

before it is packed in crates. The pa cking box shall contain a copy of the installation operation and maintenance manual.

11.0 DEVIATIONS

11.1 Deviations, if any, from this standard sha ll 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	N	Y	Y
2.	Technical Particulars	N	Y	Y
3.	Dimensional drawings showing the cell arrangement on stand (Plan, front and side elevation) for each type of battery.	N	Y	Y
4.	Illustrative and descriptive literature giving the complete details of construction of battery	N	N	Y
5.	Operation and maintenance instructions	N	N	Y
6.	Test Certificates			
	-- Type	N	N	N
	-- Acceptance	N	N	Y
7.	Guarantee Certificates	N	N	Y
8.	Spare Parts lists	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 sha ll 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

1.0 SCOPE

1.1 This specification covers the design, engineering, manufacture, inspection, testing at LSTK contractor's and/or his Sub-Vendor's works, packing, transportation from place of manufacture, delivery and storage at site, erection, start-up and commissioning and performance testing of "DC & AC COMBINED UPS System" to feed essential Electrical Sub Station load as under.

Sr. No.	Description	Unit	Quantity
1	110V DC UPS System (FCBC Unit)	Set	01
2	230V AC UPS System (Inverter Unit)	Set	01

Please refer Single Line Diagram for configuration at Annexure-A

110 V DC UPS System (FCBC Unit) consist of

1. One no. Rectifier with input isolation transformer which will feed simultaneously current to (i) DC load of substation (ii) Battery set for Trickle or Boost charging depending upon battery condition and (iii) Inverter. Hence, the ampere capacity of rectifier shall be equal to Total AC & DC load of Electrical Sub Station PLUS Boost charging of Battery set. FCBC will have MODULAR construction, each unit of 10A/20/30A capacity having N+1 configuration.

2. One no. 100% or two nos. 50% AH capacity equal to 1 hours back up for AC & DC combined load, Low maintenance type Battery VRLA set Voltage rating of 110 V. The Battery set shall be common for DC UPS and AC UPS.

230V AC UPS System (Inverter unit) consist of

1. One no. Inverter with Output isolation transformer shall have 100% load feeding capacity PLUS 25% spare capacity for future & one no. ABB make REF 620/Eqivalent Make relay for disturbance recording.

2. One no. By-pass having SCVS (Servo Controlled Voltage Stabilizer) type arrangement and rating equal to Inverter rating along with "Static transfer switch and Maintenance bypass switch for transfer the load from Inverter to Bypass and vice versa" without any interruption in output.

1.2 Supply of Engineering software for ABB make Relay configurations & parameterization and UPS software if any to view on SCADA system.

1.3 Supply of Spares as mentioned in this specification at later stage.

1.4 Supply of Special Tools and tackles if any.

1.5 Supply of any other accessories required to make the system complete.

2.0 POWER SUPPLY SYSTEM

AC Power Supply	Configuration	Fault level
11 KV	3 Phase, 3 W, 50 Hz Non-effectively earthed	750 MVA
3.3 KV	3 Phase, 3 W, 50 Hz Non-effectively earthed	150 MVA
415 V	3 Phase, 4 W, 50 Hz, AC, Effectively earthed	35 MVA
Voltage Variation	± 10%	
Frequency Variation	+3% to -6%	
Combined Variation	10%	
Unbalance Voltage	2.5 %	
DC Power Supply	Configuration	Fault level
110V DC	2 W, Unearthed	5 MVA
Voltage Variation	+10% to -15%	

3.0 SERVICE AND ENVIRONMENTAL CONDITIONS

3.1 The “DC & AC Combined UPS” will be installed in hot, humid, tropical and corrosive atmosphere highly polluted with coal / chemical laden dust locations.

Site Location	Bharuch - Gujarat (India)
Ambient	50^0C
Altitude	~19.2 Meters above MSL, Barometric pressure: 1012.3 to 995.2 mbar, 1006 mbar average
Earthquake zone	Seismic zone - III, Seismic Co-eff. : 0.04
Climate	Hot, humid, highly corrosive and chemical dust laden.
Humidity	90% RH average in one month & vapour pressure~1018 mbar
Rain Fall	Max. Rainfall : 65 mm/hr
	Annual Average : 1000 mm
Wind	Velocity: 44 m/sec

	Pressure: 127 kg/m2 at 40 mtr height

4.0 CODES AND STANDARDS

4.1 The design, material, construction, manufacture, inspection, testing and performance of DC & AC Combined UPS System shall comply with all currently applicable statutes, regulations & safety codes in the locality where the equipment will be installed.

4.2 Equipment and materials conforming to any other national / international standard, which ensures equal or better quality, may be accepted. In case of any discrepancy between the standards, the most stringent stipulation will govern.

4.3 The equipment will meet the requirements of Indian Electricity Rules as amended up to date and relevant IS Codes of Practice. In addition, other rules and regulations as applicable to the work will be followed. In case of any discrepancy, the more restrictive rule will be binding.

4.4 The equipment shall also conform to the applicable standards specified in DATA SHEET-A1 latest revision as on the date of offer. Nothing in this specification shall be construed to relieve the LSTK contractor of this responsibility. In case of conflict between the standards and this specification, this specification shall govern.

5.0 RELIABILITY

All necessary care shall be taken in selection, design, manufacturing, testing and commissioning of the equipment for ensuring high system reliability.
The following design considerations shall be taken into account to ensure maximum availability of the system:

5.1 All components shall be time and type tested and standardized. Manufacturer shall state the safety factors used in selecting such items as semi-conductors, electrolytic capacitors, transformers etc.

5.2 In case of breakdown of the monitoring unit or disturbance in the internal communication bus, all units shall revert to their pre-programmed factory settings. This ensures that system stability is not affected and controller can operate further without causing any breakdown of the system.

5.3 In case of failure of inverter, complete load to be transferred to Bypass supply.

5.4 The equipment design shall be such that the MTTR is minimized by the use of self-diagnostic and monitoring features, with clearly labelled removable control cards. In all cases, the MTTR shall be less than 4 hours.

5.5 Any abnormality such as short circuit/flashover in one MODULAR SMPS rectifier module shall not affect performance/operation of other MODULAR SMPS rectifier modules/system.

5.6 The MTBF of MODULAR SMPS rectifier module shall be ≥ 2, 50,000 hours.

6.0 GENERAL REQUIREMENTS

6.1 This Technical specification shall be read along with "Electrical Design Philosophy and Design basis" attached separately but part of the tender.

6.2 The panels for "DC UPS System" and "AC UPS system" shall be separate.

6.3 The System shall be entirely built and tested at the works of manufacturer where regular assembly of similar systems takes place.

6.4 The "DC & AC UPS Combined System" shall be installed indoors in a clean but hot, humid and tropical atmosphere.

6.5 The system shall include all required components to meet required specifications including all protective devices, suppressors, instrumentation & essential components to ensure the integrity and reliability of the system.

6.6 Cubicles shall be sheet steel enclosed (Rittal / Hoffman make) and shall be dust, weather and vermin proof. Units shall comprise a continuous line up of free-standing, floor mounted sheet steel panels, with all access from the front.

6.7 The panel shall conform to the degree of protection IP-42 or better. Minimum thickness of sheet metal used shall be 2 mm while the hinged doors and covers shall be made from minimum 1.6 mm CRCA.

6.8 Enclosures shall accommodate bottom cable entry. The internal component shall be designed to allow all normal maintenance to be performed through the front hinged doors.

6.9 The doors shall be with concealed hinges and neoprene gaskets. Ventilating louvers shall be covered with fine wire mesh. Door over 600 mm width shall be of double-leaf design.

6.10 Natural / Forced ventilation shall be provided to ensure that the UPS system delivers the desired output.

6.11 Input air for the cooling fans shall be filtered and filters shall be easily removable for cleaning or replacement.

6.12 Panel cooling fans shall be equipped with monitoring facilities to trigger an alarm in the event of fan failure.

6.13 UPS shall be capable of continuously delivering its rated output with one no. cooling fan out of service without exceeding the maximum continuous temperature of components.

6.14 All cabinets shall be provided with suitable lifting lugs / eye bolts.

6.15 Bus bars shall be tinned copper/aluminium alloy of E91E grade as specified in the DATASHEET-A2 and shall be covered with insulation. Bus bars shall be of adequate cross section to carry the required continuous currents such that the operating temperature of the bus bar does not exceed 85^0 C considering 50^0 C ambient temperature. Bus bars shall be colour coded and live parts shall be shrouded / covered with transparent FRP sheet to ensure complete personnel safety. All equipment/component shall have device tag number as per the schematic diagram.

6.16 All electronics cards will be provided with “G3” Conformal coating.

6.17 All equipment within the panels shall be arranged in such a way that sufficient space for easy maintenance shall be available.

6.18 HMI, Meters, Indication lamps, etc. shall be flush mounted on the front of the panels. However, all MCCB’s, Switches shall be mounted inside panel but easily accessible & safe for operation.

6.19 Switches /MCBs / MCCBs shall be hand operated, air break, heavy duty, quick break and quick make type conforming to applicable standards.

6.20 Nameplates of approved size and type shall be provided for all circuits and devices.

6.21 The maximum height of the operating handles / switches shall not exceed 1800 mm and the minimum height shall not be below 200 mm.

6.22 System shall have all necessary arrangements to connect battery set cables, inverter load cables, AC input cables i.e. necessary wiring, terminal blocks, marking etc.

6.23 The electronic controller comprising of power supply card, soft start cum current limit card, auto trickle mode card with facility for setting trickle charge current and monitoring battery current, error amplifier cards and pulse generating cards for achieving the DC output voltage stabilisation of ±1% and also for achieving current limiting feature.

Additionally, the electronic controller shall have protection features with indications for under-voltage, over-voltage, earth fault, set output voltage and phase failure or voltage unbalance.

6.24 Adequately sized necessary built-in accessories shall be provided such that on failure of the controller in auto mode, the voltage can be effectively controlled manually.

6.25 Filter circuit comprising of smoothing choke and condensers complete with MCB with trip indication for filter condenser circuit.

6.26 Isolating switches shall be heavy duty, load break type, operated by an external handle with provision for padlocking in ON and OFF position.

6.27 All printed circuit cards shall be plug-in type, interlocked to prevent insertion in a wrong slot. Each card shall have LED indication on its front plate to indicate normal condition and readily marked test pins.

6.28 All components shall be accessible to the maintenance technician for easy disassembly and replacement. Access to parts of equipment shall be with minimum danger from all hazards.

6.29 All power & control wiring within the cubicle shall be done with stranded copper wires. The power wiring shall be adequately sized for the required rating. The minimum sizes for control wiring shall be 1.5 sq.mm and for power wiring shall be 4 sq.mm. Power and control cables shall be arranged separately. Wiring terminations at different voltages and of different signal levels shall be segregated and clearly marked.

6.30 All wire shall run in PVC channels with ample spare capacity. Each wire end shall have plastic sleeve type permanently embossed markers to match wiring diagrams and terminal numbers. For control wiring, pre-insulated crimped lugs with terminals shall be used. For power wiring crimped lugs with PVC shrouds shall be used. Screw less, clamp type terminals shall be used for control terminals. PVC wires with suitable connections shall be used for interconnections for Printed Circuit Boards (PCBs).

6.31 Flexible cable shall be used for connections to door mounted equipment. Wiring shall be wrapped in flexible PVC conduit and be firmly clamped at both ends to prevent movement at terminations.

6.32 The thickness of gland plate(s) shall be minimum 3 mm and adequately sized for all external cables. Terminals and gland plates shall be spaced so that at least 400 mm clear distance is available for terminating the core of external power cables.

6.33 Terminal blocks shall be supplied and clearly marked for external wiring that will be installed by the Client. Manufacturer's wiring for external connection shall be terminated to one side of terminal blocks and not more than two wires per terminal shall be permitted. Insulating barriers shall be provided to separate terminals belonging to different circuits.

6.34 An aluminium / copper earth bar, sized according to equipment rating, shall be provided, with all non-current carrying metal parts and shall have an external connecting stud of minimum 10 mm for terminating the plant earth. Ground terminals with isolating links shall be provided.

6.35 Each panel shall be illuminated with 7W LED lamps, operated by door limit switch and location shall be such that maximum illumination distributed equally in all component.

6.36 Panels shall be provided with 230 V AC, 1 phase 20 W space heater (Without thermostat) and 1phase 6A/16A switch socket for temporary connection.

6.37 External 1-phase 230V AC Supply provision to be considered for illumination lamp, space heater & switch socket. However separate terminal blocks & internal wiring up to terminal block to be supplied by manufacturer.

6.38 The colour shade shall be RAL 7032. The finish shall provide adequate protection against corrosion under the specified site conditions. All components shall be fully tropicalized. Paint thickness shall be 80-100 Microns.

6.39 Each outgoing circuits shall be provided with circuit designation labels. The panels shall have fitted a circuit directory within a clear plastic protective cover, located on the inside of the outgoing circuit compartment door.

6.40 The equipment name plate for UPS and Bypass system shall include minimum following:

(a) Name of manufacturer, and year of manufacture.
(b) Type of equipment.
(c) Input and Output ratings, voltage, phases and frequency.
(d) Manufacturers' serial numbers.
(e) Purchase order no. and date.

6.41 Necessary spare capacity shall be built in the MODULAR type construction to continuously supply full load even with one unit out of circuit.

7.0 DESIGN CRITERIA FOR "FLOAD CUM BOOST CHARGER"(FCBC)

7.1 Latest DSP (Digital Signal Processor) for fully controlled IGBT based Float cum Boost Battery Charger.

7.2 FCBC shall be suitable to operate at 415V, 3-phase, 50Hz input supply with +/- 15 % voltage variation & +3 to -6% frequency variation. It shall continue to provide DC output in case of failure of any one phase out of three phase.

7.3 Rectifier shall be fed from two AC source (one running & one standby) and shall have Float cum Boost Charger rated to supply 100% of the AC & DC load and boost charge the battery set simultaneously. Auto changeover of AC source is required in case of failure of one AC source.

7.4 If the rectifier unit rated temperature is less than the specified ambient at DATASHEET-A2 then the Rectifier Unit Power de-rating factor shall be considered. For continuous operation at specified ratings, temperature rise of the various components shall be limited to the final temperature of 85^0 C. considering ambient temperature as 50^0 C.

7.5 All components shall be rated for charging the battery set in both float & boost modes plus full load requirements at continuous operation.

7.6 All components shall be capable of withstanding the thermal and dynamic stresses resulting from internal and external short-circuits and circuit switching operations, etc.

7.7 The equipment shall be self-protecting against all AC and DC transients, voltage surges, and steady state abnormal voltage and currents.

7.8 The circuit protection shall be co-ordinated with short circuit capacity and protective device characteristics so that a fault on any circuit shall result in minimum loss of function.

7.9 AC & DC Moulded Case Circuit Breakers (MCCB) shall be in accordance with IEC 60947-2 and KA rating shall be as per fault current specified in DATASHEET-A2 for the requirement.

7.10 Contactors shall be compliant with IEC60947-4-1 and rated for continuous Operation for AC or DC application as appropriate to the service. The utilization category for DC contactors shall not be less than DC-1 and for AC contactors not less than AC-3.

7.11 The rectifier shall be galvanically isolated from input power supply system with Transformer.

7.12 The FCBC section shall be designed, keeping in view the fact that Lead acid tubular battery with high discharge characteristics shall form part of the DC system required for the UPS system.

7.13 It shall have a current limiting feature controlling the output current of the unit and the battery charging current in the float and boost modes.

7.14 Rectifier / charger shall be provided with current walk-in feature (3~8 Seconds) to avoid inrush currents when grid power is restored and after the UPS has been operated on battery bank.

7.15 The changeover between boost / float charge modes shall be effected automatically on sensing battery discharge current and restoration of supply. It shall be possible to boost charge the batteries manually. Necessary alarms to indicate battery discharged and DC over voltage condition shall be provided for selecting the float charge and boost charge mode.

7.16 The Manufacturer shall submit, as part of his quotation, the estimated maximum heat loss in kW from the equipment.

7.17 FCBC efficiency and power factor shall be at least 90% and 0.98 respectively at all loads from 50-100 % load.

7.18 The following manual controls shall be provided on the front of the panel: -

(a) Selection of float, equalizing, boost charge.
(b) Voltage setters for setting the output of float / equalizing / boost charge. Setting shall be independent of each other so that setting of one voltage shall not require resetting other.
(c) Current limit setter.
(d) Alarm window reset button.

7.19 The DC output voltage during charging shall be stabilized within ±1% of the set bus voltage even during DC load variation of 0 to 100%.

7.20 The maximum allowable RMS ripple voltage, with battery disconnected, shall be equal to or less than 1% rms of the nominal output voltage.

7.21 The Input voltage & current Harmonic distortion shall be 3 % overall.

7.22 Battery current limit protection shall be provided for Rectifier charger unit in Float condition. In case battery draws more current than the set value in Float condition, voltage of Float Charger in float mode shall start decreasing, thus limiting the charging current to the battery.

7.23 The controller shall have facility to change set points, prepare or examine an event or alarm log, etc. Access to settings and configuration shall be password-protected.

7.24 System shall have DC insulation monitoring system with alarm & event log.

7.25 In case of failure or loss of input AC supply or failure of rectifier unit, the battery will feed the rated DC & AC load for the period of minimum three hours without any interruption.

7.26 When the lost AC source is restored, and after a time delay requested by the Client, the rectifier unit shall automatically resume to its normal duty mode.

7.27 When Boost charging mode is selected, the charger shall initially charge the battery as per battery Manufacturer's recommendation. The battery current shall be monitored, controlled and limited to set value irrespective of the value of load current.

7.28 The boost charge current settings shall be adjustable between 25% to 100% of maximum boost charging current. The setting of output DC bus voltage shall be adjustable between ± 10% of normal rated voltage. All the components shall be rated to withstand and operate the voltage during Boost charging.

7.29 Facility for initial charging of the uncharged battery shall also be provided.

7.30 The process of changeover from Float to Boost charging and reverting from boost to float charging shall be selectable in Automatic or Manual mode using controller.

In Automatic mode, the changeover from float to boost charging shall be initiated through a current sensor set at a pre-set value. Similarly, the change from boost to float charging shall also be automatic based on battery current sensing.

In Manual mode, both the changeovers from float to boost charging and vice e versa shall be performed manually.

7.31 Energizing or de-energizing any portion of the system serviced by the UPS shall not cause output changes which will affect the operation or integrity of the remaining portions of the system in any way.

7.32 The charger unit modules and controllers shall be protected against damage from on load reversed battery polarity or reverse overvoltage from parallel connected modules.

7.33 The design of the charger unit shall be such that replacement of a MODULAR SMPS rectifier module can easily be carried out and shall be hot swappable / hot pluggable.

7.34 DC UPS shall be provided with “one overall controller” to supervise, control and monitor all MODULAR SMPS units, which shall be of the constant power/constant current type. Each MODULAR SMPS units shall have a minimum of 1 No. volt-free relay contacts for alarm outputs for common fault, high ambient temperature voltage adjustment de-rating and shutdown if required, as well as setting and monitoring range limit alarm and protection values for overvoltage, under voltage, etc.

7.35 Output voltage at load terminals shall be kept in specified tolerance by means of dropper diodes. Group of series connected silicon diodes shall be switched in

and off the circuit by means of voltage sensing Control unit to achieve the voltage regulation at load side.

7.36 Required blocking diodes to be used for each rectifier unit output & considering battery @ 80% tap cell terminal.

7.37 MODULAR SMPS Shall be installed in two tier.

7.38 Difference of Load sharing between the MODULAR SMPS rectifier modules shall be within ±5%.

7.39 The MODULAR SMPS rectifier Module shall be CE certified, European Union RoHS complied, safe and environment friendly.

7.40 The MODULAR SMPS rectifier Module shall be able work up to ambient 50^0 C with power de-rating.

7.41 The MODULAR SMPS rectifier Module's input current harmonics (THDi) shall not be more than 5% at Nominal Loading conditions of module.

7.42 The MODULAR SMPS rectifier module shall have Soft Start feature (3~8 Seconds).

7.43 The MODULAR SMPS rectifier module/ the charger shall have Black Start feature.

7.44 On failure of one unit, the total DC load shall be supplied by the healthy unit along with its battery charging current. A blocking diode shall be provided in the output of each unit (if not there in module) and the volt drop across the diode shall be considered in arriving at the output voltage of the MODULAR SMPS rectifier system.

7.45 It shall be possible to connect the DC UPS SYSTEM unit, via either a RS485 or Ethernet to SCADA system for selected analogue and digital data to be made available. Communication shall be either standard TCP/IP protocol or MODBUS.

8.0 DESIGN CRITERIA FOR INVERTER

8.1 DSP (Digital Signal Processor) for fully controlled IGBT based PWM (Pulse Width Modulation) shall be preferred for inverter.

8.2 25% design margin for future load shall be considered while finalising the rating of UPS based on load.

8.3 System shall provide a regulated and uninterrupted single phase 230 V, 50 Hz, 2 wire output within specified tolerance to critical Electrical load.

8.4 System shall have separate Bypass unit and static switch with auto and manual bypass facility.

8.5 Energizing or de-energizing any portion of the system served by Inverter shall not cause affect the operation of the remaining portions of the system in any way.

8.6 The equipment shall be self-protecting against all AC and DC transients, voltage surges, and steady state abnormal voltage and currents.

8.7 The circuit protection shall be co-ordinated with output short circuit capacity and protective device characteristics so that a fault on any circuit shall result in minimum loss of function.

8.8 The system shall be so designed as to permit clearing of a fault in any of the branch circuits having conventional MCCB/HRC fuses with a maximum rating equal to 10% of the system capacity. During such faults in the branch circuits, the loads connected to the healthy circuit shall not get affected and fault clearing shall be within 4 milli-seconds.

8.9 All non-interrupting components shall be capable of withstanding the available short circuit current without damage.

8.10 For continuous operation at specified ratings, temperature rise of the various components shall be limited to the final temperature of 85^0 C. considering ambient temperature as 50^0 C.

8.11 Entire inverter shall be galvanically isolated from load i.e. output shall have isolation transformer at output.

8.12 Automatic adjustable current limit shall be provided to protect the inverter against overloads and short circuits at the output. Once the overload is removed, the inverter shall automatically resume normal operation at full voltage.

8.13 In case of any fault in the inverter or the inverter voltage falling below a pre-set value (adjustable from 80 % to 100 %) or rising above a pre-set value (adjustable from 100 % to 125 %), the load shall be automatically transferred to the By-pass through the static switch.

After rectification of the inverter faults the loads shall be manually transferred back to the inverter through the static switch without any interruption to the output voltage of the system. The transfer time in any case shall not exceed 4 milli-seconds. However, if Bypass is inhibited due to overload, the transfer back to inverter shall be automatic.

8.14 UPS system shall have a short circuit & overload capacity of 105 % continuous, 125% for 15 minutes, 150% for 1 minute, 300 % for 1 second, and 1000% for 100 milli second.

8.15 The inverter shall be able to sustain surge currents of at least ten times normal current (1000% of I_n), so as to operate the circuit breakers within 50 milliseconds in the event of a short-circuit and shall be capable of switching an inrush current onto a steady load. It shall be suitably sized such that the start-up load does not exceed the crest factor of the UPS system.

8.16 Any break in the inverter output exceeding a time duration of "4" milli-seconds shall be considered as interruption in output.

8.17 The efficiency of inverter section shall be at least 90% at rated load.

9.0 SYSTEM CONCEPT & TECHNICAL REQUIREMENTS OF “AC UPS SYSTEM”

9.1 DC power source and AC power source are available to UPS. The system is so designed that its load shall be served without interruption as long as one of the above power sources is available within specified limit of voltage and / or frequency.

9.2 On failure of inverter, its load gets automatically transferred to bypass through static transfer switch. Normally inverter will be independently with a frequency same as that of the bypass in the adopted frequency band.

9.3 On failure of inverter, By-pass shall supply 100% UPS load automatically through static transfer switch.

9.4 The LSTK contractor shall ensure that the audible noise level generated by the one UPS set shall not exceed 75 dBA at a distance of one meter and if total components are present, the noise level shall not exceed 70 dBA.

9.5 Bypass and manual bypass lines shall be provided with Servo stabilizer to maintain the output voltage of the system within tolerable limits of + 1.5% (steady state).

9.6 Bypass transformer shall be natural air cooled type, suitable for indoor location. It shall be located in a separate cubicle with isolation means.

Inverter

9.7 The static inverters shall be solid state IGBT to convert direct current power to essentially sinusoidal alternating current power.

9.8 The inverter equipment shall include all necessary circuitry and devices to conform to requirements like voltage regulation, transient recovery, protection, and automatic synchronisation, wave shaping etc. as specified herein.

9.9 Upon transfer of full load, the inverter output voltage shall not drop below 90% of nominal voltage during the first half cycle after transfer and 98% of nominal voltage in the next half cycle.

9.10 The recovery to within ±1% of voltage shall be in less than 50 milli-seconds (Single inverter in operation).

9.11 On occurrence of a fault in branch circuit, the inverter shall be capable of clearing the highest rated branch circuit MCCB/ fuse in 4 milli-seconds or less (Single inverter in operation).

9.12 The inverter shall be protected against overload, short circuit, 100% loss of load, as well as excursions, loss or restoration of DC input voltage and synchronizing voltage.

9.13 The DC input current shall never exceed twice the full load current except for a short circuit within the inverter.

9.14 For any value of the load and load power factor drawn by the equipment served, the inverter shall not impose on DC source any voltage oscillations in excess of 5 volts (RMS total all frequencies) or any current oscillations in excess of 3 percent (RMS total all frequencies) of the DC current at full load.

9.15 It shall be possible to isolate individual equipment's of the system such as chargers, inverters and Servo Controlled Voltage stabilizer for maintenance of the individual components without any disturbance in the output of the system.

Automatic Synchronisation

9.16 Inverter equipment shall include stable solid state oscillator devices designed to automatically maintain the inverter output in phase and in synchronism with the Bypass AC source.

9.17 Facility shall be provided for automatic transfer to internal oscillator operation when the stand-by source frequency is beyond specified limits and the frequency shall be automatically controlled within 50 Hz +/- 0.5Hz when the inverter operates in this mode.

9.18 Retransfer to Bypass AC source for synchronization shall be automatic after the stand-by source frequency is restored to permissible limits and remains within this limit for an adjustable time delay period (up to 5 seconds).

9.19 Provision shall be made for step less adjustment of synchronism disconnect frequency range from 50 Hz ± 0.5 Hz to 50 Hz + 1.5 Hz, -3.0 Hz.

9.20 Automatic adjustment of phase relationship between inverter output and Bypass AC source shall be gradual at a controlled slew rate which shall not exceed one hertz per second.

Static Transfer Switch Assembly

9.21 The static transfer switch assembly shall be solid state type using SCR type for automatic / manual transfer of load from "Inverter" to "By pass-source" and vice-versa. Automatic load transfer from inverter to the Bypass supply shall be possible in synchronized if the inverter output voltage drops below or exceeds the set value OR the inverter output current exceeds its limits due to fault in output.

9.22 The transfer time including sensing shall not be more than one- fourth cycle. Further the transition shall be make-before-break in both directions.

9.23 Asynchronous transfer time for frequency difference of 3Hz shall be less than 10ms.

9.24 The capacity of static transfer switch shall be double the continuous full-load capacity of the inverter.

9.25 The switch transfer switch shall be provided with protective devices in both normal and alternate power by pass source.

9.26 The static transfer switch assembly shall be furnished with contact to alarm failure of the alternate source or opening of any fuse protecting the static switch.

9.27 The static transfer switch shall include all necessary circuitry and devices to meet the functional requirements of “Transfer initiation”, “Transfer inhibit” and “Re-transfer back to normal” as below.

Transfer Initiation

a. The transfer of static switch from normal 'Inverter' position to By-pass position shall be initiated by one of the following causes.

i. Inverter failure and UPS system trouble.
ii. Inverter output voltage failure.
iii. The inverter output current exceeds its limits due to fault in output.
iv. Manual push button operation.

b. The UPS shall be monitored by two voltage detectors. One fast acting circuit shall be used for detecting a complete and instantaneous voltage loss while the other slower acting averaging circuit with adjustable trip level shall be employed to detect voltage deviation beyond selected limits. Both voltage detector circuits shall automatically initiate operation of transfer switch.

c. The static switch shall automatically transfer the load from inverter to By-pass source when the maximum I^2t capability of the inverter is reached and when the inverter output drops below 90%.

Transfer Inhibit

Automatic or manual transfer from inverter to By-pass AC source or vice-versa shall be inhibited when the inverter frequency is not synchronised to the alternate source. However, provision of manual transfer with security feature shall be made for asynchronous mode.

Retransfer to normal

a. The return to inverter mode shall be manual in all cases.
b. Manual transfers shall be initiated by push button actuation.

<u>Diagnostic / Monitoring</u>

9.28 One number ABB make Numerical Relay having model number REF620 (NBFN AA NN ND A1BNN1 1G (4I + 5U + 24BI + 14BO) shall be installed on each UPS to verify transient phenomena w.r.t. voltage regulation, transfer time, faults, etc. with communication to SCADA system. List of voltage channels, current channels and binary contacts to be wired to relay shall be given after placement of order.

Manual By-pass Switch

9.29 Manual by-pass switch is used to isolate any static transfer switch for maintenance or repair without interruption to the UPS load.

9.30 The switch has also the facility of by-passing the static transfer switches during start-up at the option of the operator.

9.31 Switch contact shall be make - before - break type.

9.32 The switch shall have current rating equal to the full load inverter current and necessary short time load carrying and interrupting capacity to meet the requirement of UPS system.

Bypass system

9.33 A three phase to single phase Ultra isolation transformer along with associated voltage stabilizer shall be furnished with the UPS system.

9.34 The transformer and voltage stabilizer shall be sized for 100 per cent UPS load and shall coordinate with the largest branch circuit protection device for feeder short circuit current without sacrificing voltage regulation.

9.35 The voltage stabilizer shall employ servo stabilizer circuitry and shall maintain the specified output voltage for 0 to 100% load with maximum input voltage variation as indicated in the specification. The make and rating shall be subject to Owner's approval.

9.36 The transformer shall be sized for 100% UPS load.

10.0 BATTERY SET

General

10.1 The battery set shall be of 110 V, Ampere-hour capacity equal to three-hour supply back up for 100 % capacity of “DC & AC Combined UPS”, Low maintenance and Lead acid tubular type.

10.2 The plates shall be designed for maximum durability during all service conditions including high rate of discharge and rapid fluctuation of load.

Construction

10.3 Each cell shall be of high strength acid or alkali-resistant, non-porous material.

10.4 The containers shall be heat resistant shock absorbing, robust, transparent SAN type. The top lid shall be fusion welded to the container.

10.5 Electrolyte level shall be marked on clear container for upper and lower limits.

10.6 The venting device shall be anti-splash type and shall allow gases to escape freely & shall effectively prevent the electrolyte from coming out. Provision shall be made for drawing the electrolyte samples, checking & topping up of electrolyte.

10.7 The Separator used for the cells shall be micro-porous, resin based with polyester mat back bone have high porosity, low electrical resistance and high temperature stability, alkali-resistant and have insulating capacity to avoid shorting or leakage of the current between plates of opposite polarity.

10.8 The cells shall be supported on porcelain insulator fixed on to the rack with adequate clearance between adjacent cells.

10.9 Positive and Negative terminals posts shall be clearly and indelibly marked for easy identification. Terminal posts shall be designed to accommodate external bolted connection conveniently and positively.

10.10 Copper plate, tubular copper lugs, clamp, bolts, nuts, washers etc. shall be provided for connection to out-going cables.

10.11 Inter-cell, Inter-tier Inter row connectors and terminal posts shall be of low resistance corrosion resistant alloy copper. All the metal parts of the terminals shall be lead coated if necessary. The LSTK contractor shall indicate this in the bid.

10.12 The junction between terminal posts & cover and between cover & container shall be so sealed as to prevent any seepage of electrolyte.

10.13 The Battery shall be delivered in uncharged condition with the electrolyte furnished in a separate non-returnable container. Ten percent (10%) extra electrolyte shall be furnished to cover spillage during transport and erection.

10.14 Batteries having complete cell weight of 50kg or more shall be arranged in single tire.

10.15 The battery shall have maximum recharge time of 8 hours.

10.16 The LSTK contractor shall indicate in tender requirements of ventilation in battery room.

Racks

10.17 The racks for supporting battery cells shall be constructed of best quality & heavy duty FRP sections.

10.18 Racks shall be rigid, mechanically strong, free standing type and free from wrap and twist.

10.19 The completed racks shall be suitable for being bolted end to end to form a continuous row. Insulators shall be provided below the legs of the stands.

10.20 Numbering tags for each cell shall be attached on to the racks. Each cell shall be marked in a permanent manner in accordance with relevant standards.

Accessories

10.21 The battery shall be complete with accessories and devices, including but not limited to the following:

(a) Insulators for racks.
(b) Set of Inter-cell, Inter-tier, Inter-row and terminal post connectors as required for the complete installation.
(c) Other accessories for testing and maintenance e.g. DC voltmeter, Hydrometer, Thermometer, PVC apron, PVC gloves, Insulated wrench etc.

11.0 MEASUREMENT, PROTECTION, CONTROL & COMMUNICATION

11.1 The “DC & AC Combine UPS” set shall be provided controller with a Digital Signal Processor which shall be based on microprocessor architecture so as to provide integrated control, monitoring and signalling.

11.2 Minimum functions of Controller shall be float charge, boost charge, boost charge automatic, battery test, charge current limitation.

11.3 Operating status and diagnostic indications shall be provided by LCD HMI with a keypad driven menu and light-emitting diodes (LEDs). Each LED / alarm circuit shall have built-in test facilities, with the exception of LEDs associated with PCBs. Failure of an HMI shall not cause mal operation or affect the correct functioning of the remote common alarm signal.

11.4 All settings shall be easily modified at site using the front keypad without any external hardware.

11.5 The micro controller shall have fault history (events with real time stamped) logging & retrieval facility. Controller shall have one RS-485 & Ethernet port facility to monitor all the parameters indicated below from remote location. Controller shall have facility to change the alarm set points at site (password protected).

11.6 Digital meter shall be provided for input voltage, current and KW monitoring for UPS and Bypass.

11.7 Minimum Measurement, alarm and protection to be provided on the front outside panel via a menu driven LCD display as per Data Sheet-A2.

11.8 Minimum 256 Alarms /Events shall be stored with real time stamped in controller.

11.9 Different password levels shall allow selective access to trained maintenance or service engineers.

11.10 The system shall be provided with a RS-485 connection facility using standard MODBUS protocol.

11.11 In addition, the UPS shall have connectivity to an Ethernet network with TCP / IP protocol for remote or local monitoring and diagnostic using a standard Web browser.

11.12 The Alarm/Event log shall be locally as well as remotely downloadable with real time stamped.

12.0 Alarms & Potential free contacts:

12.1 A master relay will get energized to provide group alarm signals for Owner's remote panel. All alarm for warning / fault shall be appear on display unit with alarm/hooter.

12.2 Alarm contacts shall be rated 0.5 A at 110 V DC and 5A at 230 V AC

12.3 Electrically independent, potential free alarm contacts for each of the points mentioned in the annexure shall be wired up to the terminal block for Owner's use.

13.0 Lamp / Space heaters / receptacles

13.1 The panels shall be provided with: -

(a) Internal illumination lamp with door switch.
(b) Space heater without thermostat control.
(c) 3-pin 5/16A receptacle with plug.

13.2 Lamp, heater and receptacle circuits shall have individual switch fuse units.

14.0 Wiring / Cabling / Termination

14.1 The panels shall be completely wired-up. All wiring shall be routed through wiring troughs. Wires shall be ferruled at both ends for identification.

14.2 Panels shall have removable gland plates at the bottom for cable entry. All incoming / outgoing cables shall be terminated in suitable terminals blocks.

14.3 Control terminal blocks shall be ring type PHONIX / WAGO 10mm^2 or approved equal. 20% spare terminals shall be furnished.

14.4 Minimum 400 mm space shall be kept between termination block and gland plate for input and output power Aluminium conductor armoured cable termination.

15.0 Grounding

15.1 Normal A.C power supply will be grounded at the source.

15.2 The inverter DC input and AC output shall be electrically isolated from each other and from cabinet ground.

15.3 The panels shall have fully rated ground bus with two ground terminals, one at each end.

15.4 Each terminal shall comprise two-bolt drilling with M10 G.I. bolts and nuts to receive ground connection of 50 x 6 mm G.I. flat.

15.5 Flexible copper conductor of at least 4 mm² shall be provided between doors and panel structure for effective grounding of the metal door.

16.0 Tropical protection

16.1 All equipment accessories and wiring shall have fungus protection, involving special treatment of insulation and metal against fungus, insects and corrosion.

16.2 Screens of corrosion resistant material shall be furnished on all ventilating louvers to prevent the entrance of insects.

17.0 Painting

17.1 All steel surfaces shall be sand blasted, grounded and pickled as required to produce a smooth, clean surface free of scale, grease & rust.

17.2 The panels shall be chemically cleaned, phosphated and sprayed with two coats of high quality primer and stove after each coat.

17.3 The panels shall be finished in RAL-7032 with two coats of epoxy paint. Sufficient quantity of touch up paint shall be furnished for application at site.

18.0 Nameplate

18.1 Name plate of approved design shall be provided for each instrument & device mounted inside or outside compartment, control compartment and also at the top of each equipment.

18.2 The material of the nameplate shall be lamecoid or approved equal, 3 mm thick with white letters on black background. Nameplate shall be minimum 20 x 75 mm for instrument/devices and 40 x 150 mm for panels.

18.3 Caution notice, with matters and dimensions as specified in Indian Electricity Rules, on suitable metal plate shall be fixed on both sides of the UPS.

19.0 ONLINE BATTERY SET HEALTH TESTING FACILITY

19.1 The DC & AC Combined UPS system shall be provided with online battery test facility for checking battery healthiness. In this test, DC output voltage of charger drops down below battery voltage, hence the system load shall be transferred on the battery and battery shall start discharging for a set time or set level of discharge voltage. After completion of test, output voltage of the charger shall normalize automatically and the chargers shall feed the system load and charging the battery.

19.2 The system shall be capable of monitoring, recording and displaying of following values:

(a) Total battery bank voltage
(b) Total Battery bank current

20.0 SOFTWARE

20.1 Necessary software for communication between “DC & AC Combined UPS System” and remote end SCADA for graphical trends for analysis of stored data shall be provided with the system.

20.2 Logging of all measuring parameters and alarm conditions as well as event log of all activities shall be possible with date / time stamp. Logged data shall be possible to be exported in MS Excel / MS Word format.

21.0 TESTS ON CHARGER UNIT.

21.1 All equipment’s to be supplied shall be of type tested quality. The LSTK contractor shall submit for Owner's approval the reports of all the type tests as listed in this specification and carried out within last five years from the date of bid opening. These reports should be for the tests conducted on the equipment similar to those proposed to be supplied under this contract and the test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client.

21.2 In case, the LSTK contractor is not able to submit report of the type test(s) conducted within last five years from the date of bid opening, or in case the type test report(s) are not found to be meeting the specification requirements, the LSTK contractor shall conduct all such tests under this contract free of cost to the owner and submit the reports for approval.

21.3 All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price.

21.4 All acceptance and routine tests shall be performed in presence of Owner's representatives, if so desired by the Owner. The contractor shall give at least 30 (thirty) days advance notice of the date when tests are to be carried out.

21.5 All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price.

21.6 The LSTK contractor shall ensure that instruments and gauges to be used for testing and inspection of critical parameters have valid calibration and the accuracy can be traced to National/International standards.

21.7 Vendor shall ensure use of calibrated test equipment having valid calibration test certificates from standard laboratories traceable to National Standards.

21.8 Routine tests are as listed below:

(a) Complete physical examination.
(b) Temperature rise test at full load.
(c) Insulation resistance test
(d) High voltage (power frequency) test on power and control circuits except low voltage electronic circuits.
(e) Ripple content test at

i. No load
ii. Half load
iii. Full load

(f) Automatic voltage regulator operation test at specified A.C. supply variations at
i. No load
ii. Half load
iii. Full load

(g) Load limiter operation test
(h) Efficiency and power factor measurement
(i) Input and output surge withstand capability test. Surge Voltage as per ANSI-C37.90a shall be applied for period not less than 2 sec. At the following points of the Charger operating at 50 deg. C. at full load.

i. Across each A.C. input phase
ii. Across AC input line to ground.
iii. Across D.C. output terminals
iv. Across each D.C. output terminal to ground

The Charger shall not exhibit any component damage and there shall be no change in performance as per (g) and (h).

(j) Environmental Tests

Steady state performance tests (g) and (h) shall be carried out before and after each of the following tests:

(k) Soak Test : NA

The electronic modules shall be subjected to continuous operation for a minimum period of 72 hours. During last 48 hours, the ambient temperature shall be maintained at 50 deg. C. The 48-hour test period shall be divided into four equal 12-hour segments. The input voltage during each 12 hours shall be nominal voltage for 11 hours followed by 110% of nominal voltage for 30 minutes, followed by 90% of nominal voltage for 30 minutes.

(l) Dynamic response test (Overshoot & Undershoot) in output voltage of the charger as a result of sudden change in load from 100% to 0% and 0% to 100% shall be measured.

22.0 TESTS ON "AC UPS SYSTEM" : INVERTER UNIT

Routine test

22.1 Routine tests on the complete UPS system shall be carried out as per relevant standards for each major sub-system in the UPS, viz., Rectifier, Inverters, batteries, stand-by supply etc.

22.2 System tests shall be performed on the completely assembled UPS system. System tests shall include frequency regulations, Voltage regulation, current limiting feature and harmonic content tests in addition to the tests to prove the functional requirements such as synchronisation with range of adjustments, transfer of static switches for conditions of loss of square wave, overload and under voltage conditions.

22.3 Heat run test shall be carried out on each branch of UPS including bypass (if provided) and on overall UPS system at rated load under relevant ambient conditions for a period of 8 hours.

This test shall be repeated at site by the vendor and during these tests, output voltage and frequency shall remain within the limits specified and continuously recorded. Temperature measurements on power components and wound components shall be made during these tests. Test results for each of these tests shall be submitted by the vendor for owner's records.

22.4 Full load test at 0.7 lag, 0.7 lead and Unity power factor at rated KVA - Measurement of output parameters, correct operation of meters and control switches, functioning of protective and warning devices and operation of remote signalling.

22.5 For testing individual bought out items such as Servo controlled regulator. 'V' transformer, input / output adaptor panels etc.

22.6 Various arrangements required to be made for carrying out the above mentioned functional and type tests shall have to be made by the vendor only. These arrangements include provision of load bank also as specified in this tender.

22.7 Irrespective of whether testing of individual equipment's such as static voltage regulator, input / output adaptor panels is witnessed by owner's authorised representative or not testing of the complete UPS system comprising chargers , inverters, static voltage regulator and functional tests in the presence of owner's authorised representative is an essential requirement to accept the offered UPS system.

22.8 Functional test for various components.

Functional test shall include but not limited to the following: -

(a) Physical checking of the system and auxiliary devices.

(b) Insulation test-megger value should be more than 3.0 mega ohms with 500 V megger.

(c) Light load test- Measurement of output parameters, correct operation of meters and control switches, functioning of protective and warning devices and operation of remote signalling.

(d) Measurement of output voltage and frequency with 100 % variation of load as per specification.

(e) Measurement of output voltage and frequency with +10 % variation of input supply as per specification.

(f) Measurement of input and output harmonic distortion and individual harmonic content. This test is to be repeated at site after installation and guaranteed performance parameter are required to be ensured at actual load.

(g) Transient response test - effect of 100 % of step load change on voltage dip / rise and recovery time to establish values given in the technical particulars.

(h) Current limit operation - To observe drooping characteristics of output voltage at some pre-set value of output current.

(i) Efficiency of individual equipment's such as inverter, charger etc. and efficiency of the complete UPS system comprising input / output adaptor panels, static voltage regulator and inverters.

(j) Overload test - for overloads specified in the data sheet and it shall be ensured that temperature rise is within permissible limits.

(k) AC input failure test - voltage dip and recovery time shall be measured.

(l) AC input return test - voltage dip and recovery time shall be measure.

(m) Fuse blowing test (Single Inverter on Battery supply)

(n) MCCB trip on SC protection

(o) Transfer test :-

i. Manually initiated transfer from inverter to bypass and vice versa.
ii. Automatic transfer from inverter to bypass and vice versa.
iii. Transfer time measurement in each case referred above.

(p) Individual inverter / charger isolation : -

i. Manual isolation of one system from the other.
ii. Manual addition of one system to the other.
iii. Automatic isolation of faulted unit from the system due to the failure.
iv. Operation of manual bypass switch (make before break type).
v. Fuse clearing capability of inverters.

vi. Transfer and re-transfer of static switches under influence of under - voltage and over current.
vii. Tests on chargers for compliance with this tender specification.

22.9 Special tests to be carried out are:

(a) Synchronisation test.
(b) O/L capability test.
(c) Short circuit current capability test along with recording of transient phenomena.
(d) Step load put on & throw off test.
(e) In put harmonic Distortion.
(f) Drift test.

23.0 Tests Witness

All tests shall be performed in presence of Owner's representatives, if so desired by the Owner. The contractor shall give at least 30 (thirty) days advance notice of the date when tests are to be carried out.

24.0 SPARES

LSTK contractor supply mandatory spare parts as specified in separate section of tender specification indicating unit price.

25.0 QUALITY CONTROL PLANS

25.1 The Quality Control Plan shall list and define in sequential order all process control activities, inspection and tests proposed to be performed on the equipment/material starting from component procurement and from testing stages to product dispatch. The Quality Control Plan shall indicate and identify the applicable standards, detailed description with diagram the procedure, acceptance criteria, extent of check and record to be generated. VENDOR shall submit the Quality Assurance Plans (QAPs) for the Owner's approval.

26.0 PACKING, MARKING AND SHIPMENT

26.1 The LSTK contractor shall follow the "Packing, Marking and Shipping Instructions" (PMS).

27.0 DRAWINGS and DOCUMENTATION

27.1 Drawings and Documentation shall be submitted by LSTK contractor as per DATA SHEET-C.

A	Drawings and Documentation to be submitted with Bid (2 Sets-Consultant, 2 Sets-Owner)
B	Drawings and Documentation to be submitted for Approval After Award Of Contract (2 Sets-Consultant, 2 Sets-Owner)
C	Drawings and Documentation to be submitted for Information After Award Of Contract (2-Sets Consultant, 2-Sets Owner)
D	Final Drawings and Documentation (Six-Sets of Hard Copies and Three-Sets of Soft copy on DVD)

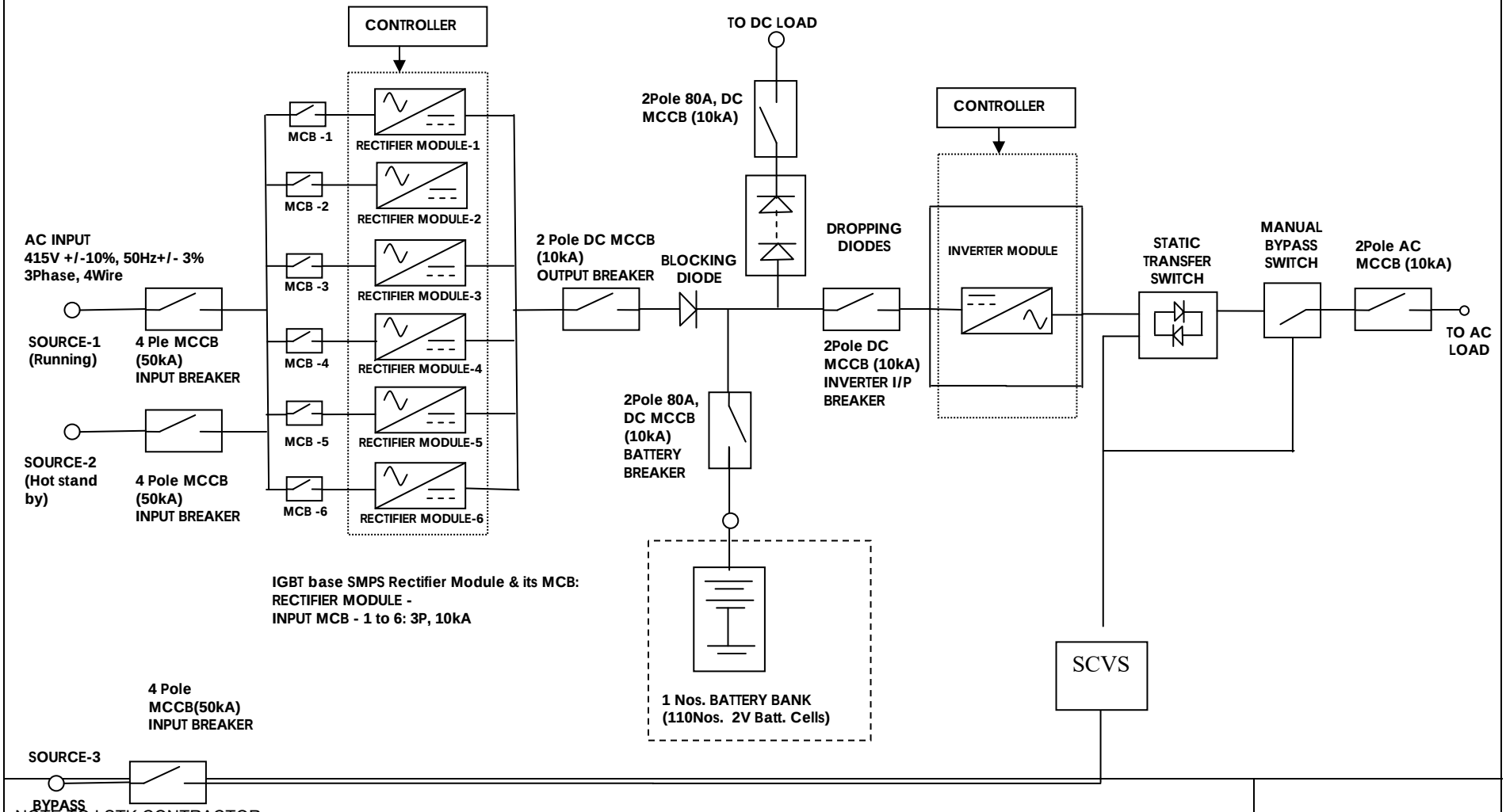
28.0 GUARANTEE

The equipment shall be guaranteed for the specified duty, for repair / replacement, free of cost to OWNER of any defect, fault or deficiency in vendor's design, engineering, material, workmanship, construction and manufacture for a period mentioned in commercial part of tender.

29.0 DEVIATIONS

Deviations, if any, from this standard shall be clearly indicated in the offer with reasoning.

SINGLE LINE DIAGRAM FOR DC & AC COMBINED UPS SYSTEM



NOTE TO LSTK CONTRACTOR

3. ITEMS WHICH DEVIATE FROM THE SPECIFICATION SHOULD BE MARKED WITHIN ASTERISK(*) (DETAILS TO BE GIVEN IN SCHEDULE OF DEVIATIONS)
4. DATA SHEET SHALL BE FILLED UP COMPLETELY AND A COPY SHALL BE ENCLOSED WITH EACH COPY OF THE BID.

LSTK CONTRACTOR`S
SIGN
& STAMP
WITH DATE

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LSTK CONTRACTOR`S SIGN & STAMP WITH DATE

SL. NO.	BRIEF TITLE	APPLICABLE STANDARDS		
[A]	**DC UPS SYSTEM (CHARGER UNIT)**			
1.	BASIC CLIMATIC AND MECHANICAL DURABILITY TESTS FOR COMPONENTS FOR ELECTRONIC AND ELECTRICAL EQUIPMENT	☐IS 9000	☐BS	☐IEC
2.	METAL CLAD BASE MATERIAL FOR PRINTED CIRCUITS FOR USE IN ELECTRONIC AND TELECOMMUNICATION EQUIPMENT	☐IS 5921	☐BS	☐IEC 60249
3.	TRANSFORMERS AND INDUCTORS (POWER, AUDIO, PULSE AND SWITCHING) FOR ELECTRONIC EQUIPMENT	☐ IS 6297	☐BS	☐ IEC
4.	PRINTED WIRING BOARDS	☐ IS 7405	☐ BS	☐ IEC 60326
5.	ENVIRONMENTAL REQUIREMENTS FOR SEMICONDUCTOR DEVICES AND INTEGRATED CIRCUITS	☐ IS 6553	☐BS	☐ IEC
6.	TERMINALS FOR ELECTRONIC EQUIPMENT	☐ IS 4007	☐ BS	☐ IEC
7.	FACTORY BUILT ASSEMBLIES OF SWITCHGEAR AND CONTROLGEAR FOR VOLTAGES UPTO AND INCLUDING 1000V A.C. AND 1200VD.C.	☐ IS 8623	☐BS 5486	☐ IEC 60439
8.	AIR BREAK SWITCHES	☐ IS 13947	☐BS EN60947-3	☐IEC 60947
9.	MINIATURE CIRCUIT BREAKERS	☐IS 8828	☐BS 3871	☐ IEC 60898
10.	CONTACTORS	☐IS 13947	☐BS 775	☐IEC 60947
11.	CONTROL SWITCHES /PUSH BUTTONS	☐IS 6875	☐BS	☐ IEC
12.	INDICATING INSTRUMENTS	☐IS 1248	☐BS 89	☐IEC 60051
13.	DEGREE OF PROTECTION	☐IS 2147	☐BS	☐ IEC 60529
14.	CLIMATE PROOFING OF ELECTRICAL EQUIPMENT	☐IS	☐ BS	☐IEC
15.	CODE OF PRACTICE FOR PHOSPHATING IRON AND STEEL	☐ IS 6005	☐ BS 3189	☐IEC
16.	SEMI-CONDUCTORS CONVERTER	☐ IS	☐ BS	☐ IEC 60146

NOTE TO LSTK CONTRACTOR

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2. DATA SHEET SHALL BE FILLED UP COMPLETELY AND A COPY SHALL BE ENCLOSED WITH EACH COPY OF THE BID.

LSTK CONTRACTOR`S SIGN & STAMP WITH DATE

17.	SEMICONDUCTOR RECTIFIER EQUIPMENT SAFETY CODE	☐IS 6619	☐ BS	☐IEC
[B]	**AC UPS SYSTEM (INVERTER UNIT)**			
1.	UPS	☐IS	☐ BS	☐ IEC - 62040 (Part-III)
2.	BASIC CLIMATIC & MECHANICAL DURABILITY TESTS FOR COMPONENTS FOR ELECTRONIC AND ELECTRICAL EQUIPMENT	☐ IS 9000	☐ BS	☐ IEC
3.	TRANSFORMER AND INDUCTORS (POWER, AUDIO, PULSE & SWITCHING) FOR ELECTRONIC EQUIPMENT	☐ IS 6297	☐ BS	☐ IEC
4.	SEMICONDUCTOR CONVERTERS	☐IS	☐ BS	☐ IEC 146
5.	ESSENTIAL RATING & CHARACTERISTIC OF SEMICONDUCTOR DEVICES	☐IS 3700	☐ BS	☐ IEC
6.	CODE OF PRACTICE FOR USE OF SEMICONDUCTOR JUNCTION DEVICES	☐IS 5409	☐ BS	☐ IEC
7.	PRINTED WIRING BOARDS	☐ IS 7405	☐ BS	☐ IEC
8.	ENVIRONMENTAL REQUIREMENTS FOR SEMICONDUCTOR DEVICES AND INTEGRATED CIRCUITS	☐ IS 6553	☐ BS	☐ IEC
9.	TERMINALS FOR ELECTRONIC EQUIPMENT	☐ IS 4007	☐ BS	☐ IEC
10.	HRC CARTRIDGE FUSES	☐ IS 9224	☐ BS	☐ IEC 60269-1
11.	INDICATING INSTRUMENTS	☐ IS 1248	☐ BS	☐ IEC 60051
12.	DEGREE OF PROTECTION	☐ IS 13947	☐ BS	☐ IEC60 529
13.	SEMICONDUCTOR CONVERTERS	☐ IS	☐ BS	☐ IEC 60146
14.	SEMICONDUCTOR RECTIFIER EQUIPMENT CODE	☐ IS 6619	☐ BS	☐ IEC
15.	THYRISTOR CONVERTERS	☐ IS 5082	☐ BS	☐ IEC
16.	EMERGENCY STD BY POWER SYSTEMS	☐ IS	☐ IEEE 446	☐ IEC
17.	SEALED LEAD ACID CELLS	☐ IS	☐ BS	☐ IEC 60896-2

18.	1100V CABLES	☐ IS 1554	☐ BS 6231	☐ IEC
19.	SURGE WITHSTAND CAPABILITY TEST IN ACCORDANCE WITH	☐ IS	☐ BS	☐ IEC 60255-5
20.	HARMONIC LEVELS	☐ IS	☐ IEEE-519	☐ IEC
21.	ESSENTIAL RATING AND CHARACTERISTIC OF SEMICONDUCTOR DEVICES.	☐ IS-3700	☐ BS	☐ IEC
22.	LETTER SYMBOLS FOR SEMICONDUCTOR DEVICES	☐ IS-3715	☐ BS	☐ IEC
23.	CODE OF PRACTICE FOR USE OF SEMICONDUCTOR JUNCTION DEVICES.	☐ IS-5409	☐ BS	☐ IEC
24.	CONTACTORS FOR VOLTAGE NOT EXCEEDING 1000V AC OR 1200V DC	☐ IS-2959	☐ BS	☐ IEC
25.	DRY TYPE POWER TRANSFORMERS FOR TRACTION, REACTORS AND STATIC CONVERTERS APPLICATION	☐ IS	☐ BS	☐ IEC-726 & IEC-310
26.	HEAVY DUTY AIR BREAK SWITCHES	☐ IS-4047	☐ BS	☐ IEC
27.	SHEET METAL ENCLOSURE	☐ IS	☐ BS	☐ IEC-162/508
28.	ELECTROMAGNETIC COMPATIBILITY (EMC)	☐ IS	☐ BS	☐ IEC 61000
29.	ELECTROMAGNETIC COMPATIBILITY FOR INDUSTRIAL PROCESS MEASUREMENT AND CONTROL EQUIPMENT. PART 3: RADIATED ELECTROMAGNETIC FIELD REQUIREMENTS	☐ IS	☐ BS	☐ IEC 60801-3

NOTES

1. EQUIPMENT, ASSOCIATED ACCESSORIES, COMPONENTS/PARTS, RAW MATERIAL AND TESTS SHALL IN GENERAL CONFORM TO ☐ IS ☐ BS ☐ IEC
2. OFFERS CONFORMING TO OTHER AUTHORITATIVE STANDARDS MAY ALSO BE CONSIDERED/MAY NOT BE CONSIDERED.
3. USE ☑MARK FOR **APPLICABLE**☒ MARK FOR **NON APPLICABLE** FOR RELEVANT IS AND IEC.

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
1.0	**GENERAL**		
1.1	Application	Critical load of control supply of DCS and PLC of instrumentation load etc.	
1.2	Rating	UPS with individual battery bank and with Bypass unit having Servo stabilizer Output 230 V AC at 50 Deg. Ambient.	
1.3	Installation	Free standing Floor mounted, Indoor & Normal Ventilation	
1.4	Ambient Temperature (^{0}C)	50	
1.5	Relative Humidity	Up to 95% Non-Condensing	
2.0	**ENCLOSURE**		
2.1	Sheet steel thickness	Minimum 2 mm & the hinged doors and covers shall be made from minimum 1.6 mm CRCA.	
2.2	Dimension	OGA shall be submitted with offer	
2.3	Degree of protection as per IS-13947	Minimum IP42	
2.4	Paint (Exterior & Interior)	RAL 7032, Epoxy Powder coated	
2.5	Cable Entry	Bottom	
2.6	Maximum allowable Acoustic Noise level Measured at a distance of 1m	65 dB	
2.7	Space heater, 230V, 1 Ph.	Required	
2.8	Type of cooling	Natural / Force air cooling	
3.0	**DESIGN REQUIREMENTS FOR RECTIFIER AND CHARGER UNIT.**		
3.1	AC input voltage and frequency	415 V, 3 Phase, 4 Wires ±10%. And 50 Hz, +3 / -6%	
3.2	Type of control	Digital signal processor	
3.3	Rectifier cum charger configuration.	3 phase full wave with IGBT. Alternatively, having 12 pulse rectification to limit input PF and THDi as specified.	
3.4	PWM switching frequency		

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
3.5	Rectifier & charger are separate (Yes/No)		
3.6	Nominal O/P Voltage of rectifier		
3.7	Features of Charger and Rectifier	1] Current limiting [2] Soft start [3] Battery monitoring System [BMS]	
3.8	Nominal O/P Voltage of charger	Vendor shall design the charger O/P	
3.9	Charger configuration if separate from rectifier		
3.10	IGBT Rectifier feature.	Bi-directional rectifier to perform battery dip discharge through mains.	
3.10.1	Battery charging principle	Constant current, constant voltage	
3.10.2	Battery charging mode	Boost & Float	
3.10.3	Boost charger	Auto & Manual mode	
3.10.4	Boost Mode	@ 2.7V/Cell It shall be programmable	
3.10.5	Boost charger Manual mode timer	1 to 24 Hrs. programmable	
3.10.6	Boost charger Auto mode	Based on battery current sensing	
3.10.7	Boost charger current controllability	0 to 30 A adjustable.	
3.10.8	Float Mode	@ 2.2V/Cell (It shall be programmable)	
3.10.9	Ripple content in D.C. O/P without battery	Maximum 1 % RMS	
3.10.10	Rectifier IGBT/SCR details		
3.10.11	Make and Type		
3.10.12	Peak inverse voltage and current		
3.10.13	Starting delay	Soft start @ 3 ~ 8 sec	
3.10.14	Reliability MTBF	Minimum 2,50,000 Hrs.	
3.11	**Input Isolation Power transformer & Inductor**		
3.11.1	Transformer KVA rating		
3.11.2	Transformer Primary /Secondary Voltage		
3.11.3	Transformer & Inductor	H class insulation.	

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
	Insulation class		
3.11.4	Inductor rating (Inductance & current)		
3.11.5	Protection of Charger and Rectifier		
3.12	Circuit breaker & Load break switches for isolation (MCCB & MCB)		
3.12.1	Input breakers	4 Pole, AC MCCB (50kA)	
3.12.2	Battery breaker	2P, DC MCCB (35 kA)	
3.13	DC System Earthing	Un-earthed	
3.14	Design temperature for system to consider de-rating for required components	50 Deg. C	
3.15	DC Insulation Monitoring	DC insulation online monitoring features to be provided with Alarm & event	
3.16	Battery set health Monitoring	Online battery health test facility without any disturbance at load side	
3.17	Battery management functions	1) Automatic battery charge management 2) Automatic battery activation on line 3) Automatic battery capacity test 4) Battery boost charge protection 5) Battery float protection 6) Battery capacity management 7) Automatic boost charge recovery upon Ac power-off.	
3.18	**PERFORMANCE.**		
3.19.1	DC voltage setting adjustment for float charger	±10% of nominal voltage	
3.19.2	Voltage stabilisation for, constant voltage regulator with AC input variation±10%& 10-100% load variations.	±1% of set D.C. voltage	
3.19.3	Maximum permissible	±1%	

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
	variation in DC voltage (no load to full load)		
3.19.4	D.C. voltage setting adjustment for boost charging	70% to 100% of max. Boost charging voltage	
3.19.5	D.C. current adjustment for boost charging current	30% to 100% of max.	
3.19.6	Current stabilisation for constant current regulator for boost charger	±2%	
3.19.7	Minimum permissible power factor at rated continuous load	0.98	
3.19.8	Permissible ripple content (maximum) at rated continuous load	1%	
3.19.9	Maximum permissible harmonics with or without battery	5%	
3.19.10	Minimum Efficiency at full load (i.e. at max current & voltage)	≥90%	
4.0	**DESIGN REQUIREMENTS OF "AC UPS SYSTEM" : INVERTER**		
4.1	Type and control	PWM IGBT Based and Digital signal processor	
4.2	Duty	Continuous	
4.3	Cooling	Natural Convention or forced cooling using redundant fans Identical rating & model cooling fan shall be provided in Bypass, Rectifier and Inverter.	
4.4	Inverter capacity		
4.5	Input voltage	180V DC – 320 V DC	
4.6	Harmonic content (Input voltage)	<5%	
4.7	Output		

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
4.7.1	Output voltage	230V +/- 1 % AC grounded, 1 PH	
4.7.2	AC voltage accuracy (steady state) over entire load, load PF & DC voltage range.	± 1% for load	
4.7.3	Transient voltage regulation	8% at 100% load step	
4.7.4	Transient recovery	Return to steady state condition within 50 ms after disturbance	
4.7.5	Voltage wave from	Sinusoidal	
4.7.6	Range of adjustment of AC output voltage	± 5% at rated load	
4.7.7	AC Harmonic content (THD-Voltage & Current)	As per IEEE 519	
4.7.8	Phase displacement for three phase output	$120^0 \pm 1^0$ for balance load $120^0 \pm 3^0$ for 20% unbalanced load	
4.7.9	Nominal frequency	50 Hz	
4.7.10	Frequency regulation (Without static by-pass source)	± 0.1 %	
4.7.11	Frequency regulation (With static by-pass source)	± 2 Hz	
4.8	**Output Isolation Power transformer & Inductor**		
4.8.1	Transformer KVA rating		
4.8.2	Transformer Primary / Secondary Voltage		
4.8.3	Transformer & Inductor Insulation class	H class insulation.	
4.8.4	Inductor rating (Inductance & current)		
4.9	**Feature**		
4.9.1	[1] True sign wave [2] Current limiting circuitry [3] Smoothing filter circuit [4] Inverter operation without battery		
4.10	**Protections**		

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
4.10.1	1] Fast acting fuse for IGBT [2] Output Over load & short circuit [3] Output over / under voltage [4] Inverter stack over temperature		
4.11	**Bypass supply system / AC standby supply**		
4.11.1	Servo controlled voltage stabilizer (SCVS)	Required	
4.11.2	(a) Rating	To match UPS continuous rating	
4.11.3	(b) Overload capacity	10 times rated current for 100ms	
4.11.4	(c) Input voltage phase & frequency	415V ± 10% 3 ph 4 wire 50 HZ	
4.11.5	(d) Output voltage phase & frequency	1-Ph; 230 V ± 1% AC; 50 Hz ± 1%.	
4.11.6	(e) Percentage voltage regulation	± 2%	
4.11.7	(f) Spike busters / surge suppressors and input filters	Required	
4.12	Isolation transformer		
4.12.1	(a) Rating	*	
4.12.2	(b) Input voltage phase & frequency	415V, 3 phase, 50 Hz	
4.13	Maintenance by pass switch	Required	
4.14	Overload Capacity (Typical test reports are essential to prove offered design)	105% continuous	
4.14.1		110% for 60 Min.	
4.14.2		125% for 10 Min.	
4.14.3		150% for 1 Min.	
4.14.4		300% for 1 sec.	
		700% for 600m.s.	
		1000% for 100m.s.	
4.15	Short Circuit Capacity	1000% for 50 ms to operate MCB & clear fault	

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
4.16	Power walk in	20-100% in 5 sec. ~ 15 sec.	
4.17	**Synchronising**		
4.17.1	Between inverters and standby supply	Required	
4.18	Mode of Operation	Single mode for single Inverter unit.	
4.19	Synchronising Range	50 ± 3 Hz (adjustable)	
4.20	Voltage regulation		
4.20.1	Dynamic response or transient voltage regulation at 100% step load change (application or removal)	± 4% (Max.) recovery to nominal & recovery 25 ms +/- 1 % of nominal voltage	
4.20.2	Dynamic response or transient voltage regulation at abrupt ± 10% change of input voltage	± 1% (Max.)	
4.20.3	Transient recovery or response time.	Voltage should recover to; • ± 5 % within 5 ms, • ±3 % within 10 ms, • ±1.5 % within 100 ms	
4.20.4	Steady state (0-100% load at all input voltages and all power factors)	± 1%	
4.21	**Wave form**		
4.21.1	Nominal frequency	50 Hz	
4.21.2	Frequency range for all conditions of input supplies, loads and temperature occurring simultaneous or in any combination (automatically controlled)	± 0.1 Hz	
4.21.3	Synchronisation limits (for maintenance of synchronism between inverter and standby A.C source)	47.00 Hz to 51.5 Hz (factory set)	
4.21.4	Field adjustment range for (c) above	50 ±0.5 Hz to 50 + 1.5 Hz, 50 - 3.0 HZ	
4.21.5	Total harmonic content	< 3 % in Liner load & < 5 % in non-liner load	

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SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
4.21.6	Harmonic content for any single harmonic	< 2 %	
4.21.7	Frequency accuracy for internal oscillation.	± 1%	
4.21.8	Slew rate (Adjustable)	0.1 Hz to 1 Hz per sec.(Max)	
4.21.9	Output voltage adjustment range at rated load	± 5%	
4.21.10	Rated output current at Rated output voltage with current limit not operating		
a	Current	150% / 200%	
b	Duration (Sec.)	60 / 10 seconds	
4.21.11	Efficiency at full load(Watt output/watt input)	90% or better	
4.21.12	Peak inverse voltage above rated voltage (minimum)	50%	
4.22	Circuit breaker & Load break switches for isolation (MCCB & MCB)		
4.22.1	Inverter Input breaker	2P, 100A DC MCCB (35kA)	
4.22.2	Inverter output breaker /ACDB Input Breaker	2P, 250A AC MCCB (35kA)	
4.22.3	Bypass input breaker	4P, 100A, AC MCCB (50kA)	
5.0	**STATIC TRANSFER SWITCH**		
5.1	Type	Solid-state, SCR	
5.2	Duty	Continuous	
5.3	Cooling	Natural Convention or forced cooling using redundant fans	
5.4	Capacity		
5.4.1	Continuous	Double to full load capacity of the inverter	
5.4.2	Overload	125% for 15 minutes & 150% for 1 minute	
5.4.3	Peak	1000% of continuous rating for 5 cycle	
5.5	Normal Voltage	230V, 50 Hz, 1-phase.	
5.6	Transient Voltage Tolerance	320V peak above the nominal line voltage	

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
5.7	Maximum transfer time	5ms (1/4th cycle)	
5.8	Short time current rating	1000% for 10 milli seconds	
5.9	Asynchronous Transfer time for frequency deviation of 3 Hz.	<10 ms	
5.10	Average sense voltage	± 10% factory set (adjustable + 2% to + 10%)	
5.11	Instantaneous sense voltage	- 15% factory set (adjustable minus 2% to minus 25%)	
5.12	Anti-cycling circuit	Required	
5.13	Synchronous Disconnected range	± 5% of 50 Hz	
6.0	**MANUAL BY-PASS SWITCH**		
6.1	Type	Make before break type	
6.2	Voltage	600 V	
6.3	Rated Current	250 A	
7.0	**HMI for metering, Controls, Monitoring & Alarm system**		
7.1	Display size & Type	Minimum 7" TFT HD LCD touch screen display	
7.2	Metering	1) Input voltage 2) Input Current 3) Input Frequency 4) Battery voltage 5) Battery current 6) Output Voltage 7) Output current 8) Load voltage 9) Load current 10) E/F current 11) Ripple 12) Harmonics	
7.3	Alarms	1) AC I/P supply fail 2) AC Breaker trip alarm 3) Rectifier unit fail 4) Battery discharged/low 5) Battery Breaker trip 6) Battery on Boost charge 7) Battery over temperature 8) Battery E/F 9) Battery over voltage	

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
		10) DC/DC converter fail 11) DC under voltage 12) DC over voltage 13) DC insulation fail 14) DC Breaker trip alarm 15) DC outgoing E/F 16) Charger DC over load 17) Charger current limited protection operated 18) Load on battery 19) Load breaker trip 20) Cubicle fan failure / cubicle temperature high 21) Inverter unit fail 22) Bypass supply fail 23) AC load on bypass 24) Manual bypass ON	
7.4	Fault log & alarm log	Minimum 256 with time stamped	
7.5	Remote communication	RS-485 / Ethernet on Modbus / IEC61850	
7.6	Protections	1) Surge suppressors 2) Soft start 3) Battery charger current limit & Voltage limit 4) Control circuit with MCB 5) Battery test discharging protection 6) Key-parameter error-proof protection 7) SMPS rectifier module's input protections: a) O/V & U/V voltage c) Over current d) Single phasing or unbalanced bet. phases 8) DC insulation monitoring	
7.7	Potential free contacts	Minimum 5 Nos. configurable	
8.0	**Battery set**		
8.1	Name of Manufacture	*	
8.2	Type of Battery	Low maintenance, Lead Acid	

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
		Tubular plate Battery	
8.3	Manufacturer's cat No.	*	
8.4	No. of cell per set for	110 nos.	
8.5	AH capacity at 10 Hr. rate	*	
8.6	Nominal Voltage	2 V /Cell	
8.7	10 Hr. discharge rate at 27°C with end cell voltage	*	
8.8	1 hr. discharge rate at 27°C with end cell voltage	*	
8.9	Short circuit current.		
8.9.1	Float charge at 2.2 V / Cell	*	
8.9.2	Boost charge at 2.75V/cell	*	
8.10	Cell discharge Performance	Type II HDP as per IS 1651	
8.11	Guaranteed efficiency at 10-Hr. discharge rate in Percentage.	*	
8.11.1	AH	> 90 %	
8.11.2	WH	> 80 %	
8.12	Ripple current permissible	< 3 %	
8.13	Operating temperature range	0 to 50 deg. C.	
8.14	Internal resistance /cell	*	
8.15	Recommended charging rate		
8.15.1	Initial charging start / finish amp.	*	
8.15.2	Max. Boost charging Amp	*	
8.15.3	Trickle charging Amp	*	
8.16	Recommend specific gravity at 27°C		
8.16.1	First filling	*	
8.16.2	Fully charge	*	
8.16.3	Fully discharged at end of 10	*	

SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
	Hrs.		
8.17	Dimensions of Battery Cell L X W X H in mm.	*	
8.18	Container material	SAN transparent having good chemical resistance and high insulating quality	
8.19	Electrolyte level marking	Min and Max. level marking on the SAN container.	
8.20	Cell weight without acid	*	
8.21	PVC shroudon +ve and –ve terminals	Yes	
8.22	Number of positive plate	*	
8.23	Type of Positive plate	Tubular	
8.24	Positive plate construction	High pressure casting	
8.25	Type of Negative plate	Flat pasted	
8.26	Separator Type	*	
8.27	Separator Material	Microporous	
8.28	Separator Thickness	*	
8.29	Vent Plug	Micro porous ceramic type & anti splashing	
8.3	Connectors Type of construction	Nu Bolt type	
8.31	Minimum Size of connector (Width x Thick)	*	
8.32	Connector material.	Lead coated Copper flat	
8.33	Thickness of lead coating on connector & hardware	Minimum 0.025 mm as per IS 1651.	
8.34	Insulation sleeve for all types of connector	PVC heat shrinkable	
8.35	Hard ware	Environment coating SS 304	
8.36	Battery stand Material	GRP	
8.37	Battery stand section size	Minimum 2” X 2”	
8.38	Battery stand Hardware	SS 304 fasteners	
8.39	List of accessories	*	

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SL. NO.	ITEM	TECHNICAL PARTICULARS	VENDOR TO FILL DATA
8.40	Amount of electrolyte per cell	*	
* Shall be decided by vendor			

SR.NO.	ITEM	UNIT	TECHNICAL PERTICULARS BY LSTK CONTRACTOR
[A]	**CHARGER UNIT**		
1.0	**General**		
1.1	Make		
1.2	Cat. No.		
1.3	Type and Model		
1.4	Rating	Amp	
1.5	Reference Standard		
1.6	Rectifier Unit		
1.7	Make		
1.8	Type and Model		
1.9	Rating		
2.0	**Enclosure**		
2.1	Material & Thickness	mm	
2.2	Overall dimensions (L x W x H)	mm	
2.3	Degree of protection as per IS-13947		
2.4	Paint shade (Exterior & Interior)		
2.5	Paint thickness	Micron	
2.6	Mode of cooling (Natural/Force)		
2.7	Earth bus material & size	mm	
2.8	Cable entry		
3.0	**A.C Input**		
3.1	Voltage ± %variation	Volt	
3.2	Phase	No.	
3.3	Frequency ± variation	Hz.	
3.4	Input Amps at the following loads in addition to supply the battery charging current		
a)	50% rated load	Amp	
b)	100% rated load	Amp	
c)	110 rated load	Amp	
3.5	Charger maximum inrush current	Amp	
3.6	Short circuit level	kA	
3.7	System earthing		
4.0	**D.C. Output for Rectifier**		
a)	Voltage	Volt DC	
b)	Current	Amp	
c)	Rated output	kW	
5.0	**D.C. Output for Charger**		
a)	Voltage	Volt DC	
b)	Current	Amp	
c)	Rated output	kW	
6.0	**Controller for rectifier**		

a)	Make		
b)	Model		
7.0	**HMI**		
a)	Make		
b)	Model		
c)	Display Type & Size		
d)	Communication Ports & protocols		
8.0	**Voltage Dropping Diode if applicable**		
a)	Make		
b)	Model		
c)	RMS current Rating	Amp	
d)	Peak Inverse Voltage	Volt	
e)	Quantity	Nos.	
9.0	**Online Battery test facility Module/Inbuilt**		
a)	Make		
b)	Model		
10.0	**MCB's & MCCB's for isolation**		
10.1	Input breakers MCCB		
a)	Make		
b)	Model		
c)	Rating	A	
d)	Short circuit rating	kA	
10.2	Rectifier input / Output solation MCB		
a)	Make		
b)	Model		
c)	Rating	A	
d)	Short circuit rating	kA	
10.3	Charger input / Output isolation MCB		
a)	Make		
b)	Model		
c)	Rating	A	
d)	Short circuit rating	kA	
10.4	Battery breaker / O/P MCCB		
a)	Make		
b)	Model		
c)	Rating	A	
d)	Short circuit rating	kA	
10.5	DC Output breaker		
a)	Make		
b)	Model		
c)	Rating	A	
d)	Short circuit rating	kA	
11.0	**PERFORMANCE**		

11.1	Regulation for 0-100% rated load with - 10% input voltage and -5% input frequency variation	%	
11.2	Ripple content in D.C. O/P a) with Battery b) without battery	%	
11.3	Efficiency at		
a)	50% Rated load	%	
b)	100% Rated load	%	
11.4	Power Factor at rated load		
a)	50% Rated load		
b)	100% Rated load		
11.5	Maximum fault current for the short circuit at output terminals		
a)	With current limiting device operative	KA	
b)	With current limiting device inoperative	KA	
11.6	Input amps at the following loads in addition to supply the battery charging current		
a)	50% rated load	Amp.	
b)	100% rated load	Amp.	
c)	110% rated load .	Amp.	
11.7	Type of AVR/controller		
a)	Voltage regulation with AVR when supply voltage fluctuation is ±10% and frequency fluctuation is ±5%	%	
b)	Voltage regulation with manual controller	%	
11.8	Indicate the protective devices provided		
11.9	Type of voltage/current control and adjustment provided for boost charger		
12.0	**Miscellaneous**		
12.1	Charger provided with following features		
a)	Automatic voltage regulation		
b)	Current limiting circuit		
c)	Smoothing filter circuit		
d)	Soft start feature		
e)	Automatic load sharing during parallel operation		
f)	Additional features (if any)		
12.2	Fault indicating lamps or on LCD display and necessary circuit provided as required	Yes/No	
12.3	DC insulation monitoring	Yes/No	
12.4	Potential free contacts for each fault provided	Yes/No	
12.5	Common alarm contact provided	Yes/No	
12.6	Charger auxiliary equipment along with necessary alarms furnished as per specification	Yes/No	

12.7	Relay OMRON make only	Yes/No	
12.8	Cooling : Cooling fan Identical rating/model fan in Inverter/rectifier & bypass unit	Yes	
a)	Type		
b)	Number of fans	Nos.	
c)	Operating time at full load without forced air cooling		
12.9	Terminals		
a)	Make WAGO / Connect well / Phoenix		
b)	Type & Model		
c)	Power TB Bus bar bolted type Elmex make DPBB 120 & Control terminals: Wago make 281-101 with 20% spare terminals.	Yes/No	
12.10	Technical literature for charger and auxiliary equipment furnished?	Yes/No	
12.11	Weight	Kg	
[B]	**"AC UPS SYSTEM" : INVERTER**		
1.0	**General**		
1.1	Make		
1.2	Cat No.		
1.3	Type		
1.4	Reference Standard		
2.0	**D. C. Input**		
2.1	Voltage	Volt	
2.2	Current		
	a) No load	Amp.	
	b) Full load	Amp.	
3.0	**A.C. Output**		
3.1	Voltage % variation	Volt	
3.2	Frequency ± % variation	Hz.	
3.3	No load current	Amp.	
3.4	Full load current	Amp.	
3.5	Max. inrush current during inverter energization	Amp.	
3.6	Output Rating at °C Ambient	kVA	
3.7	Mains Input at load PF 0.8	kVA	
3.8	Mains Tolerance Range		
3.8.1	Voltage	%	
3.8.2	Frequency	%	
3.7.3	Combined	%	
3.9	Design Ambient Temperature Range		
3.9.1	For Operation	°C	
3.9.2	For Storage	°C	
3.10	Relative Humidity	%	

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3.11	Installation Altitude range without de-rating	m	
4.0	**Capacity**		
4.1	Rated full load capacity at unity power factor		
4.2	Rated full load capacity at 0.8 power factor		
5.0	**MCB's& MCCB's for isolation**		
5.1	Inverter Input breaker		
5.1.1	Make		
5.1.2	Model		
5.1.3	Rating	A	
5.1.4	Short circuit rating	kA	
5.2	Inverter output breaker /ACDB Input Breaker		
5.2.1	Make		
5.2.2	Model		
5.2.3	Rating	A	
5.2.4	Short circuit rating	kA	
5.3	Bypass input breaker		
5.3.1	Make		
5.3.2	Model		
5.3.3	Rating	A	
5.3.4	Short circuit rating	kA	
5.3.5	Short circuit rating	kA	
6.0	**HMI**		
6.1	Make		
6.2	Model		
6.3	Display Type & Size		
6.4	Communication Ports & protocols		
6.5	ABB make Numerical Relay REF 615 (Model no: REF 615 HBFHAEAGNDA1BNN11G) For Disturbance recorder.		
7.0	**Performance**		
7.1	Regulation for 0-100% rated load at all input voltage and all power factor	%	
7.2	Transient output voltage regulation on application and removal of 100% load	%	
7.3	Time to recover from transient to normal voltage	ms	
7.4	Frequency variation of all conditions of input supply, load and temperature occurring simultaneously or in any combination.	%	
7.5	Total harmonic content at rated load	%	
7.6	Harmonic content of any single harmonic	%	
7.7	Overload capacity at 100% Voltage		
7.7.1	For 4 milliseconds (for clearing)	%	

7.7.2	For 50 milliseconds (for clearing)	%	
7.7.3	For 60 seconds	%	
7.7.4	For 10 minutes	%	
7.7.5	Capacity to clear maximum fuse rating and duration		
7.8	Overload capacity at 90% voltage		
7.8.1	For 4 milli second (for clearing)	%	
7.8.2	For 50 milliseconds	%	
7.8.3	For 60 seconds	%	
7.8.4	For 10 minutes	%	
7.8.5	Capacity to clear maximum fuse rating and duration		
7.9	Efficiency [Watt output / Watt input]		
7.9.1	100% load at 1.0 PF/0.8 Pf	%	
7.9.2	50% load at 1.0 PF/0.8 Pf	%	
7.9.3	33% load at 1.0 PF/0.8 Pf	%	
7.10	Voltage		
7.10.1	Inverter input/battery output		
7.10.2	Nominal Output		
8.0	**Miscellaneous**		
8.1	Inverter Provided with following Features		
8.1.1	Automatic voltage regulation		
8.1.2	Current limiting circuitry		
8.1.3	Wave shaping circuit		
8.1.4	Transient recovery		
8.1.5	Automatic synchronizing circuit		
8.1.6	Soft-start feature		
8.1.7	Smoothing filter circuit		
8.2	IGBT provided with		
8.2.1	Surge Protection		
8.2.2	Fast acting HRC fuse		
8.3	Fuse type size and characteristics		
8.3.1	Inverter Input		
8.3.2	Inverter output		
8.4	IED for metering/wave capture		
8.5	Inverter auxiliary equipment along with necessary alarms furnished as per specification	Yes/No	
8.6	Cooling		
8.6.1	Type		
8.6.2	Number of fans	Nos.	
8.6.3	Operating time at full load without forced air cooling		
8.7	Technical literature for inverter & auxiliary eqpt. Furnished?	Yes/No	
9.0	**Dimension & Weights**		
9.1	Number of cabinets		

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9.2	Dimension of Inverter (UPS) Cabinet [W x H x D]	mm	
9.3	Dimension of static switch Cabinet [W x H x D]	mm	
9.4	Dimension of charger Cabinet [W x H x D]	mm	
9.5	Dimension of transformer and stabilizer panel [W x H x D]	mm	
9.6	Dimension of any other UPS-Input X'mer cabinet, if furnished [W x H x D]	mm	
9.7	Overall dimension [L X H X D)	mm	
9.8	Weight of the following with all equipment installed		
9.8.1	Inverter cabinet	Kg.	
9.8.2	Static Switch Cabinet	Kg.	
9.8.3	Charger cabinet	Kg.	
9.8.4	Transformer & stabilizer panel	Kg.	
9.8.5	Other UPS cabinet	Kg.	
9.8.6	Total weight	Kg.	
10.0	**Heat load for ventilation / Air conditioning**		
10.1	Inverter & static switch at 100% load		
10.2	Inverter & static switch at 50% load		
10.3	Inverter & static switch at 33% load		
10.4	Charger and accessories at 100% load		
10.5	Charger and accessories at 50% load		
10.6	UPS battery		
[C]	**STATIC TRANSFER SWITCH**		
1.0	**General**		
1.1	Make		
1.2	Cat No.		
1.3	Type		
1.4	Reference Standard		
2.0	**Ratings**		
2.1	Rated voltage	Volt	
2.2	Rated current (Double rating shall be considered.)	Amp.	
2.3	Transfer time	ms.	
3.0	**Performance**		
3.1	Overload capacity		
3.1.1	For 100 mili sec.	%	
3.1.2	For 60 seconds	%	
3.1.3	For Indefinite Period	%	
4.0	**Miscellaneous**		
4.1	Oscillographic records for transfer operation furnished	Yes/No.	
4.2	Static transfer switch auxiliary equipment along with necessary alarm furnished as per specification	Yes/No	
4.3	Technical literature for static transfer switch	Yes/No	

	and auxiliary equipment furnished		
[D]	**MANUAL BYPASS SWITCH**		
1.0	**General**		
1.1	Make		
1.2	Cat. No.		
1.3	Type		
1.4	Reference Standard		
2.0	**Ratings**		
2.1	Rated voltage	Volt	
2.2	Rated Current	Amp.	
3.0	**Miscellaneous**		
3.1	Contact configuration and type of switch as per specification furnished?	Yes/No	
3.2	Technical literature on manual by-pass switch.	Yes/No	
[E]	**VOLTAGE STABILIZER**		
1.0	**General**		
1.1	Make		
1.2	Type		
1.3	Number of phase		
1.4	Frequency	Hz	
1.5	Type of cooling		
1.6	Class of insulation		
2.0	**Rating**		
2.1	Capacity	KVA	
2.2	Rated voltage	KV	
H	**Output Transformer**		
1.0	**General**		
1.1	Make		
1.2	Type		
1.3	Number of phase		
1.4	Frequency	Hz	
1.5	Type of cooling		
1.6	Class of insulation		
2.0	**Rating**		
2.1	Capacity	KVA	
2.2	Rated voltage		
2.2.1	H.V	Volt	
2.2.2	L.V	Volt	
2.3	Rated current		
2.3.1	H.V	Amp	
2.3.2	L.V	Amp	
2.3.3	Impedance in %		
2.4	Regulation at full load, unity power factor at 75 deg. C	%	
3.0	**Performance**		
3.1	Guaranteed loss at 100% rated voltage and		

	rated frequency		
3.2	No load losses	kW	
3.3	Copper loss at full load at 75°C	kW	
3.4	**Efficiency** at 75 Deg. at unity power factor		
3.4.1	At 100% full load	%	
3.4.2	At 75% load	%	
3.4.3	At 50% load	%	
4	**Fuse**		
4.1	Make		
4.2	Type & characteristic for branch circuit protection		
5	**Terminals**		
5.1	Make		
5.2	Type		
5.3	20% spare terminals furnished?	Yes/No	
6	**Enclosure**		
6.1	Sheet Thickness / Material	mm	
6.2	Degree of protection as per IS 13947		
6.3	Mode of Cooling		
6.4	Earth Bus material & size		
6.5	Cable Entry type		

Specification Technical requirements for Performance of the offered system

Fuse Blowing Capacity for 230V, UPS on Single Inverter operation on battery supply without bypass within < 4 milisec DC link Voltage should be 110V DC

Type Of Fuse	Requirements by Owner	Confirmation by LSTK contractor
Slow acting HRC	16A	
Fast Acting HRC(GSB)	20A	
Ultra-Fast acting HRC(GSG)	30A	

A	DRAWINGS & DOCUMENTS TO BE SUBMITTED WITH BID
1.0	Filled data sheet of Technical and Performance Particulars
2.0	Detailed catalogues and technical literature of Rectifier, Charger, Inverter, Controller, HMI, SCVS unit, etc.
3.0	All test certificates as per relevant IS standards
4.0	Other technical particulars
5.0	Performance Data
6.0	Test certificates as specified in general specification
7.0	Overall layout drawing with dimension
8.0	General Arrangement drawing of UPS panels
9.0	Bill of Materials
10.0	Schematic drawing of UPS system
11.0	Manufacturing bar chart
12.0	QAP
13.0	Inspection test plan

B	DRAWINGS & DOCUMENTATION TO BE SUBMITTED FOR APPROVAL AFTER AWARD OF CONTRACT
1.0	Technical parameters of Battery health monitoring system.
2.0	Test Reports
3.0	Completely filled-in data sheet
4.0	Take-off terminals connection details
5.0	Detailed schematic diagram of the UPS system showing all components
6.0	General Arrangement drawing showing overall dimensions, foundation fixing details, location of various devices, mimic diagram, list of protections, annunciation and meters, cable openings, etc.
7.0	Detailed bill of materials indicating rating & type designation of components /final data sheet/trouble shooting chart
8.0	Instruction manuals
9.0	Any other relevant drawing or data necessary for satisfactory installation, operation & maintenance and repairs
10.0	Manufacturing bar chart
11.0	QAP
12.0	Inspection test plan

C	DRAWINGS & DOCUMENTATION TO BE SUBMITTED FOR INFORMATION AFTER AWARD OF CONTRACT
1.0	General Technical Data
2.0	Installation instructions
3.0	Technical Catalogues

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C	DRAWINGS & DOCUMENTATION TO BE SUBMITTED FOR INFORMATION AFTER AWARD OF CONTRACT
4.0	Shipping Details

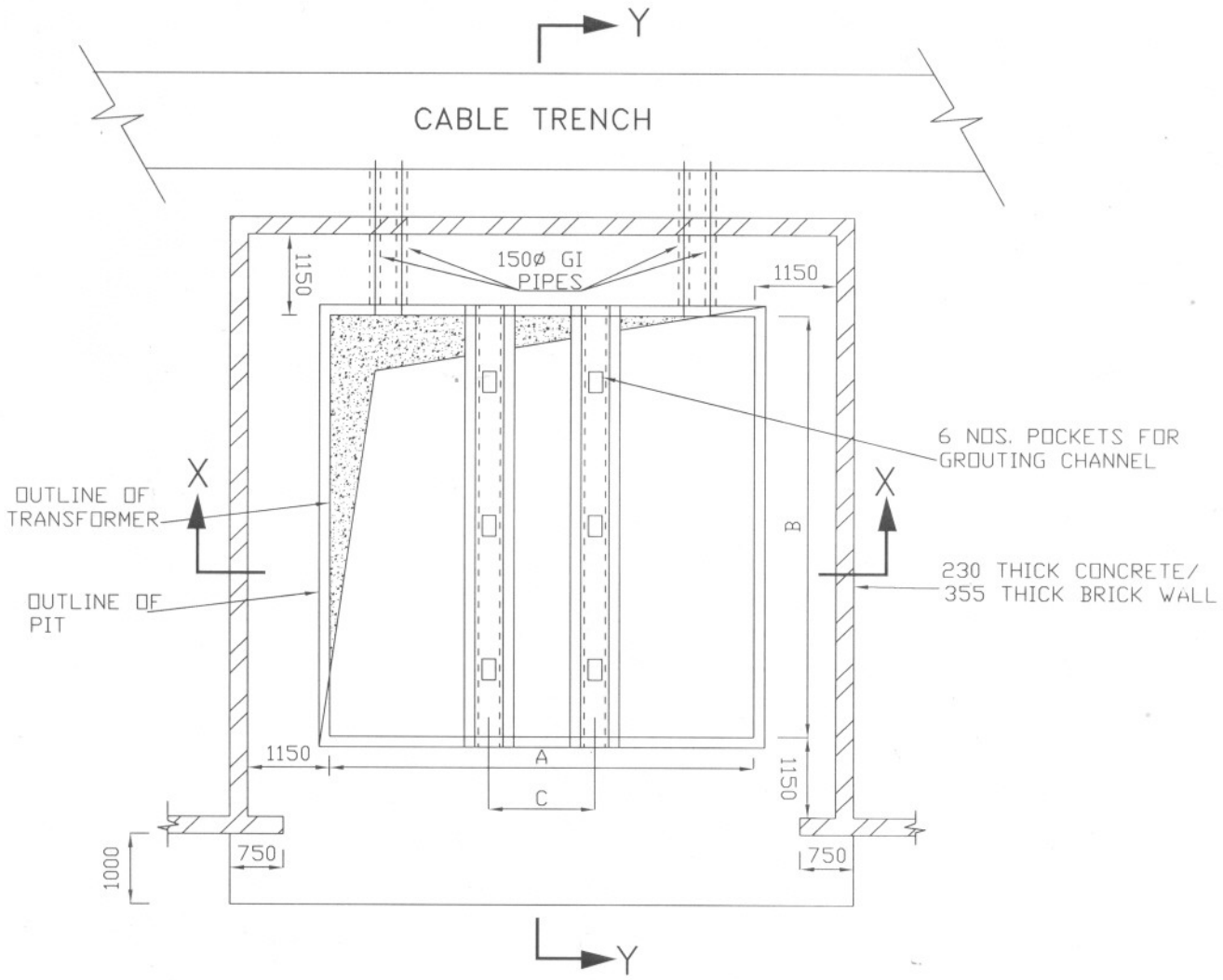
D	FINAL DRAWINGS & DOCUMENTATION
1.0	Filled data sheet of Technical & Performance Particulars
2.0	Detailed catalogues & technical literature
3.0	Detailed drawings (including sectional) for all equipment & accessories
4.0	All test certificates as per relevant IS standards
5.0	Other technical particulars
6.0	Performance Data
7.0	Manufacturing bar chart
8.0	QAP
9.0	As- built drawings & documents
10.0	Operation & maintenance manuals

NOTE TO LSTK CONTRACTOR

3. ITEMS WHICH DEVIATE FROM THE SPECIFICATION SHOULD BE MARKED WITHIN ASTERISK(*) (DETAILS TO BE GIVEN IN SCHEDULE OF DEVIATIONS)
4. DATA SHEET SHALL BE FILLED UP COMPLETELY AND A COPY SHALL BE ENCLOSED WITH EACH COPY OF THE BID.

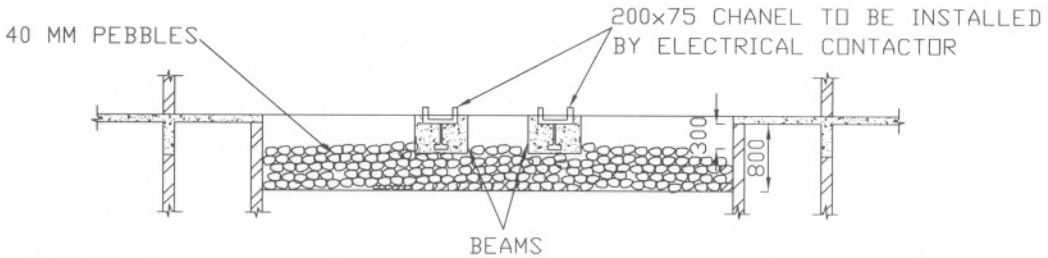
LSTK CONTRACTOR`S SIGN & STAMP WITH DATE

PDIL	FOUNDATION DETAIL OF 11/.433 KV TRANSFORMER	PDS:E 113	0
		DOCUMENT NO.	REV
		SHEET 1 OF 1	

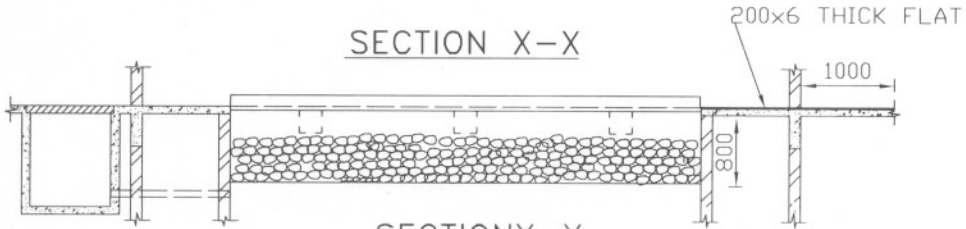


PLAN

TYPICAL DETAIL OF 11/.433KV T/F



SECTION X–X



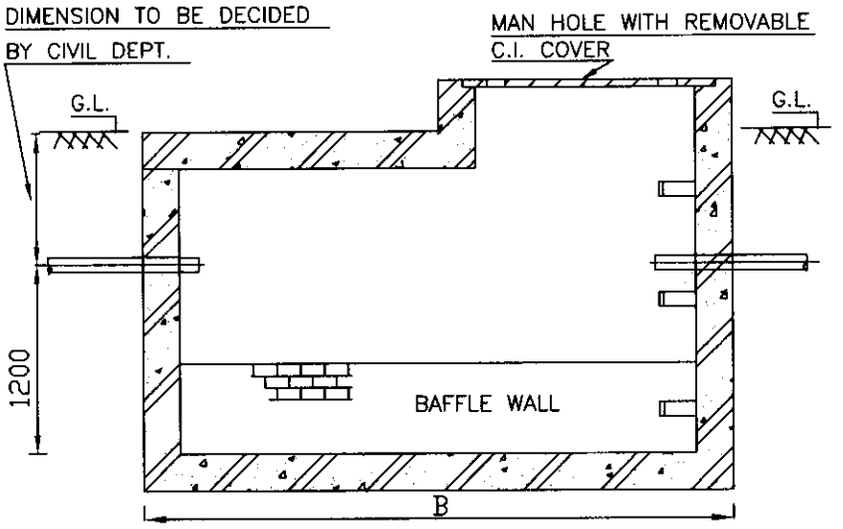
SECTIONY–Y

NOTE :

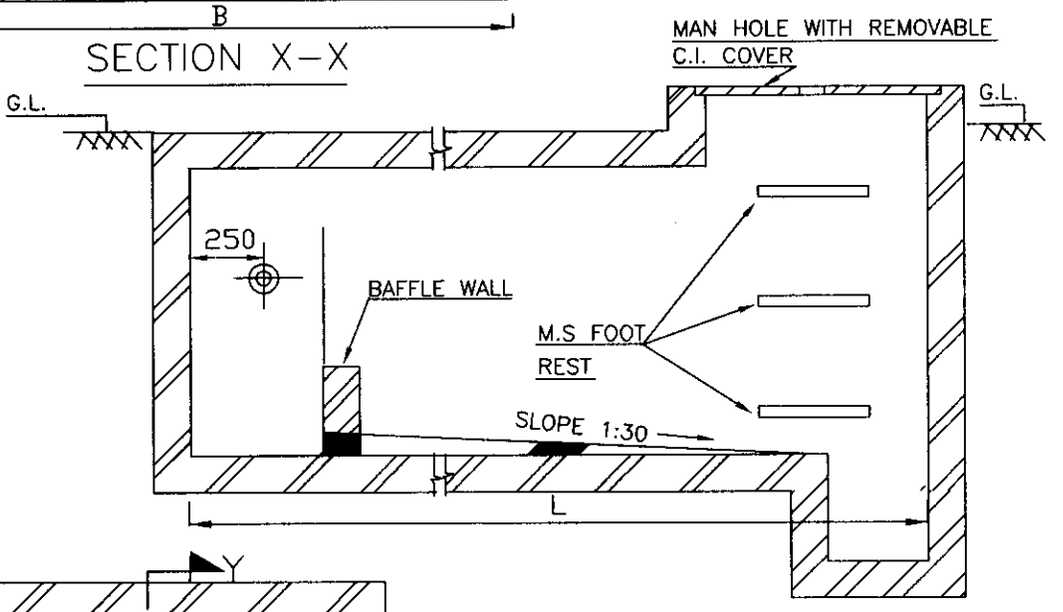
TRANSFORMERS RATED ABOVE 10MVA SHALL BE MOUNTED ON 200MM x 8MM THICK PLATES.

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	20.01.07	01.02.07	ISSUED FOR IMPLEMENTATION	RUNDA/AV	SC	BB

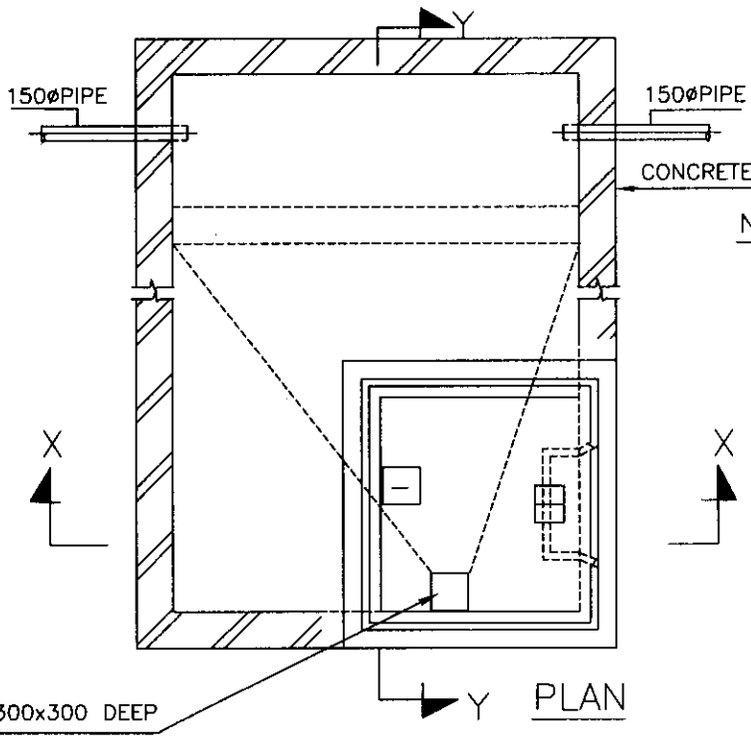
PDIL	SUMP PIT FOR TRANSFORMER OIL	PDS:E 116	1
		DOCUMENT NO.	REV
		SHEET 1 OF 1	



SECTION X–X



SECTION Y–Y



PLAN

NOTES:–

1. DIMENSION 'L' AND 'B' SHALL BE DECIDED BASED ON OIL VOLUME OF HIGHEST RATED TRANSFORMER.
2. ALL DIMENSIONS ARE IN mm

SL. No.	OIL CAPACITY	L	B
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

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	RUNDA	AV	BB

PDIL	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 CONJUCTION WITH EARTHING & LIGHTNING PROTECTION LAYOUT DRGS. AND RELEVENT EARTHING STANDARDS (PDS:E)
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.

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

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.
3. EARTHING ARRANGEMENT OF MOTOR AND ASSOCIATED LOCAL CONTROL STATION SHALL BE AS SHOWN IN PDSE: 608.
4. EARTHING ARRANGEMENT OF RAILS SHALL BE AS SHOWN IN PDSE: 609 WITH BOTH ENDS EARTHED.
5. 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.
6. 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.
7. IN SWITCH YARD AND GENERATING STATIONS SUITABLE EARTHING MAT SHALL BE PROVIDED TO REDUCE THE VALUE OF STEP/TOUCH POTENTIAL TO PERMISSIBLE VALUE.
8. SWITCH YARD FENCE SHALL BE CONNECTED TO EARTH AT A REGULAR INTERVAL, NOT EXCEEDING 10 M.

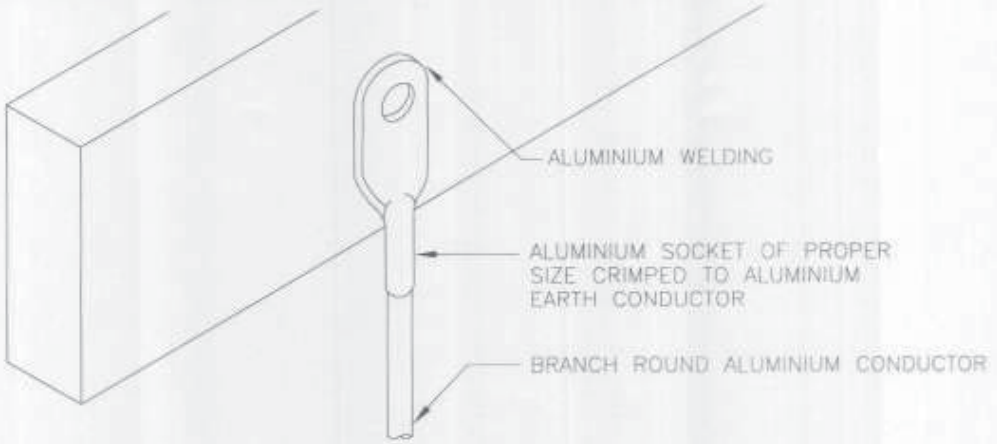
D. STATIC EARTHING

1. ALL PROCESS EQUIPMENT WHICH ARE LIKELY TO GET STATICALLY CHARGED, e.g. STORAGE TANKS, HIGH PRESSURE & MIDIUM PRESSURE VESSELS/PIPES, HIGH PRESSURE COMPRESSORS. HIGH PRESSURE STEAM EJECTORS ETC. SHALL BE EARTHED AGAINST STATIC CHARGE ACCUMULATION.
2. EARTHING ARRANGEMENT ACROSS PIPE JOINTS/VALVES SHALL BE AS SHOWN IN PDSE: 612
3. DETAILS OF EARTHING OF VESSELS SHALL BE AS SHOWN IN PDSE: 613.
4. MOBILE EQUIPMENT, REQUIRING EARTHING AGAINST STATIC CHARGE, SHALL BE TEMPORARILY EARTHED AS SHOWN IN PDSE: 608.
5. PIPE TRESTLE CARRYING PIPES WITH HYDRO CARBONS SHALL BE CONNECTED TO EARTH GRID AT REGULAR INTERVALS, NOT EXCEEDING 25 M.
6. WHEREVER PROCESS EQUIPMENT ARE MOUNTED ON STEEL STRUCTURE, THE BASE OF THE STRUCTURES SHALL BE EARTHED INSTEAD OF EARTHING THE INDIVIDUAL EQUIPMENT.

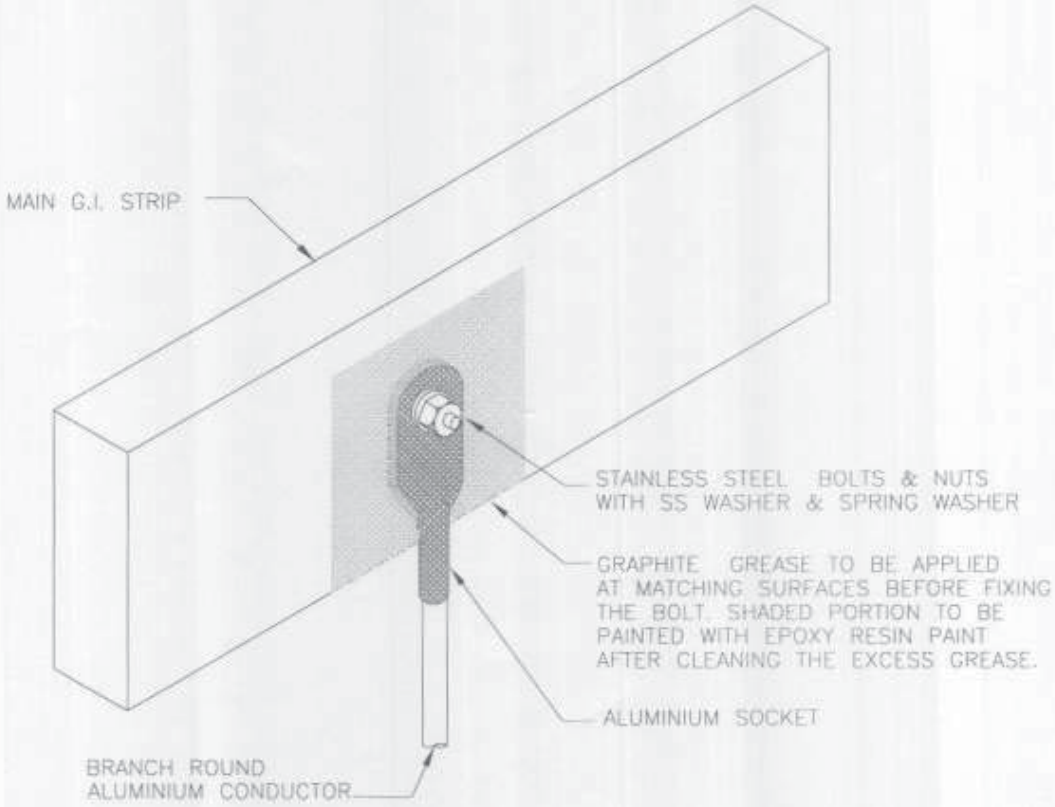
E. LIGHTNING PROTECTION

1. FIXING ARRANGEMENT ON AIR TERMINATION AND ROOF/DOWN CONDUCTOR FOR LIGHTNING PROTECTION SYSTEM SHALL BE AS SHOWN IN PDSE: 614.
2. 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.
3. LIFT SHAFT SHALL NOT BE USED FOR FIXING THE DOWN CONDUCTOR.
4. 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.
5. FOR ALL HIGH RISE CONCRETE STRUCTURES, TEMPORARY LIGHNING 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.

PDIL	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	

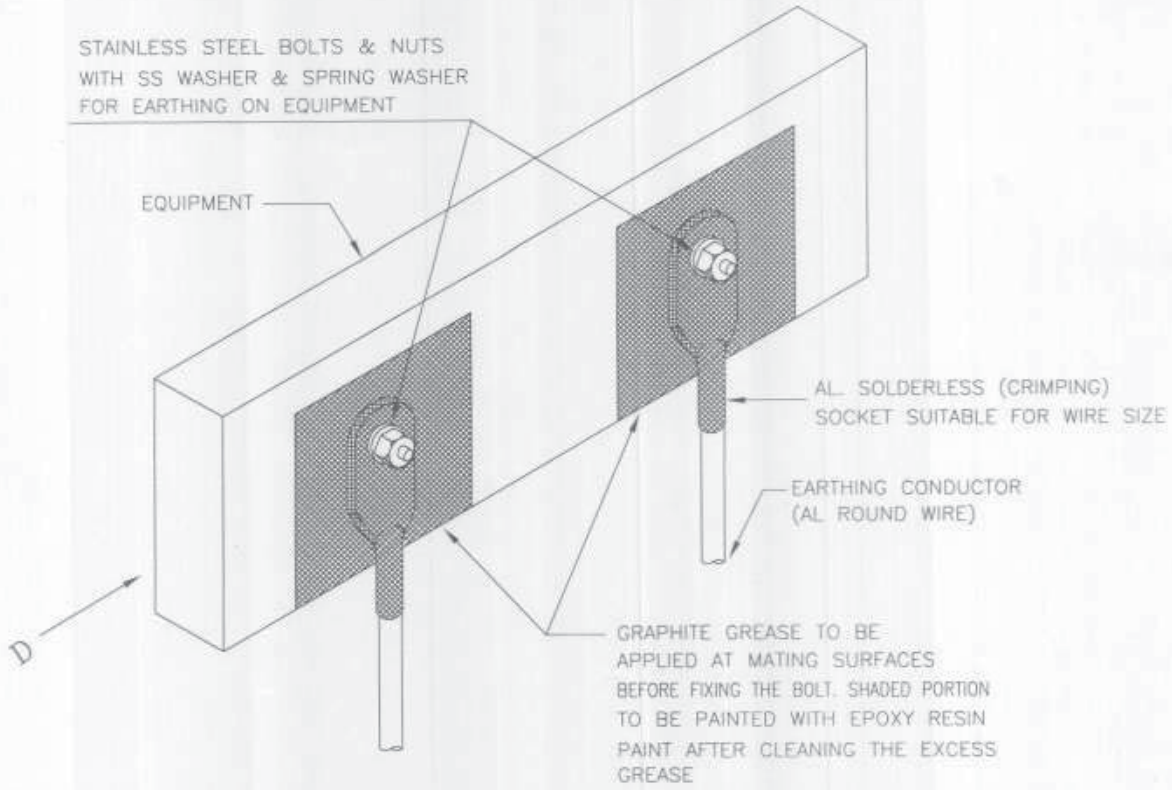


' T ' JOINT ALUMINIUM STRIP TO ROUND ALUMINIUM CONDUCTOR

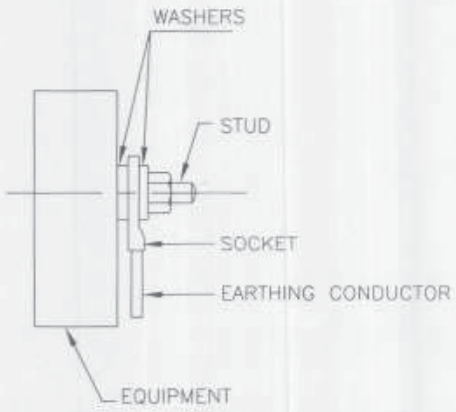


' T ' JOINT G.I. STRIP TO ROUND ALUMINIUM CONDUCTOR

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

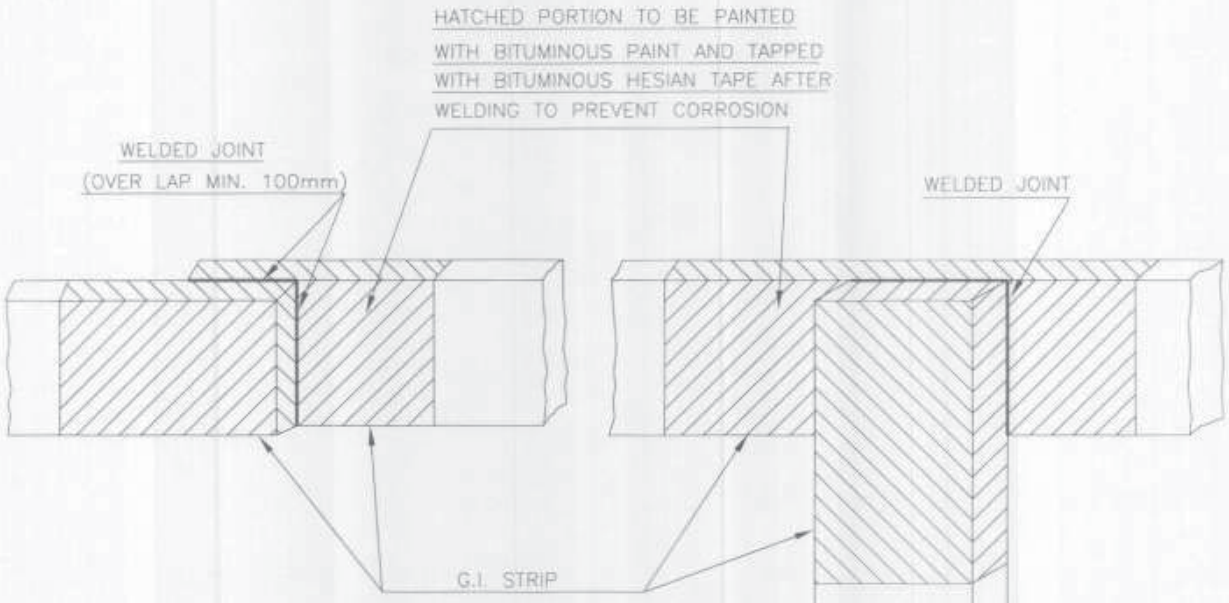


ARRANGEMENT OF DOUBLE EARTH CONNECTIONS TO EQUIPMENT



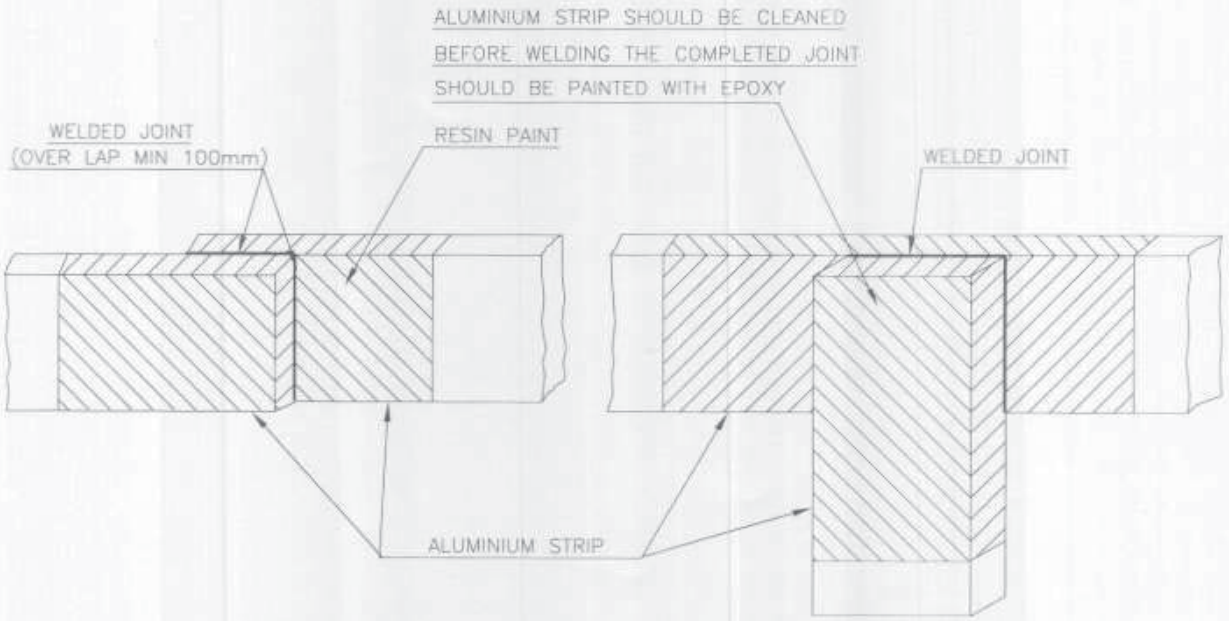
V I E W F R O M – D

PDIL	ARRANGEMENT OF CONNECTIONS OF EARTH CONDUCTORS (STRAIGHT & T – JOINT G.I. & AL. STRIP)	PDS:E 603	0
		DOCUMENT NO.	REV
		SHEET 3 OF 6	



STRAIGHT JOINT G.I TO G.I. STRIP

" T " JOINT G.I. TO G.I. STRIP

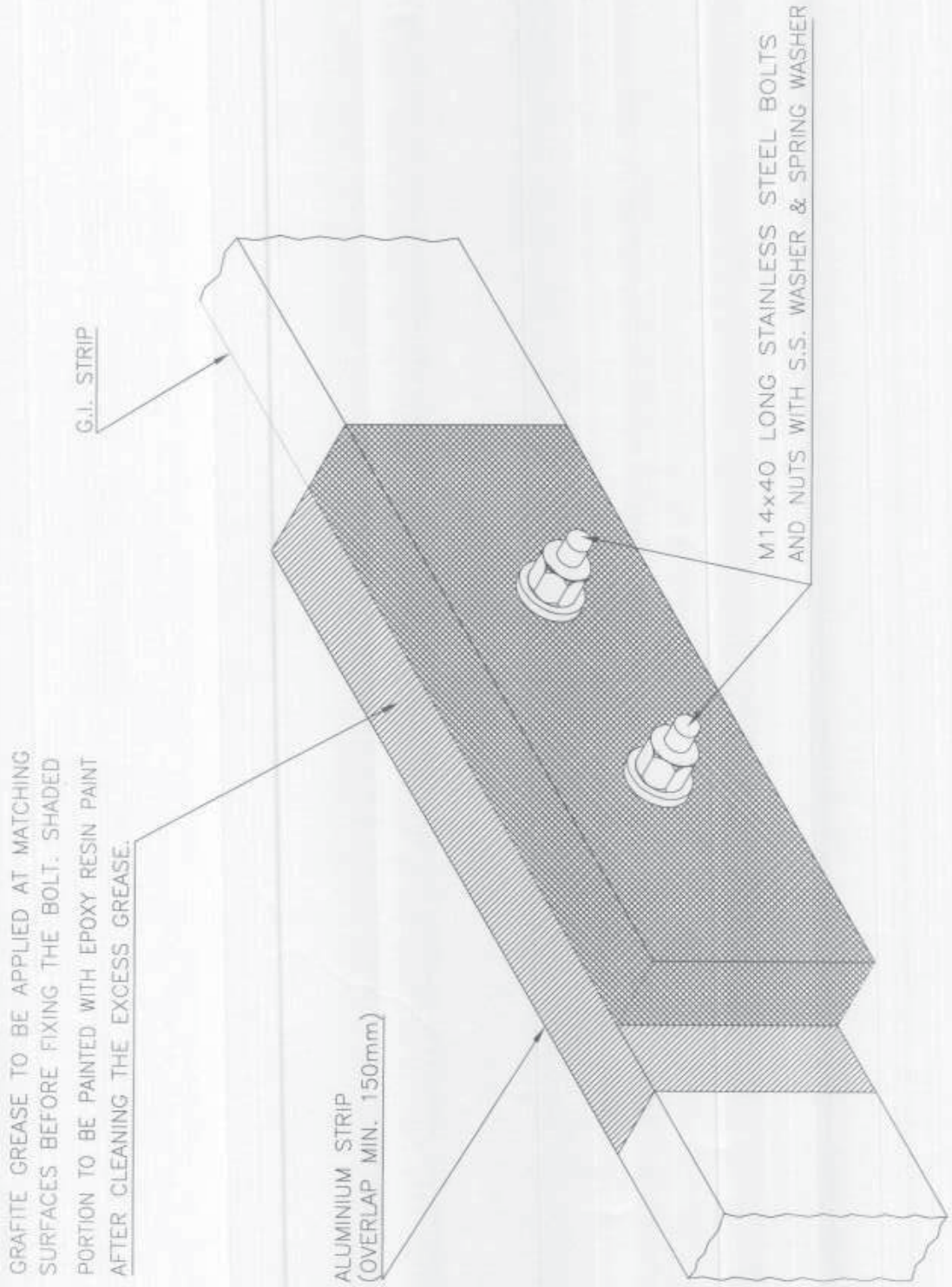


STRAIGHT JOINT AL. TO AL. STRIP

" T " JOINT AL TO AL STRIP

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

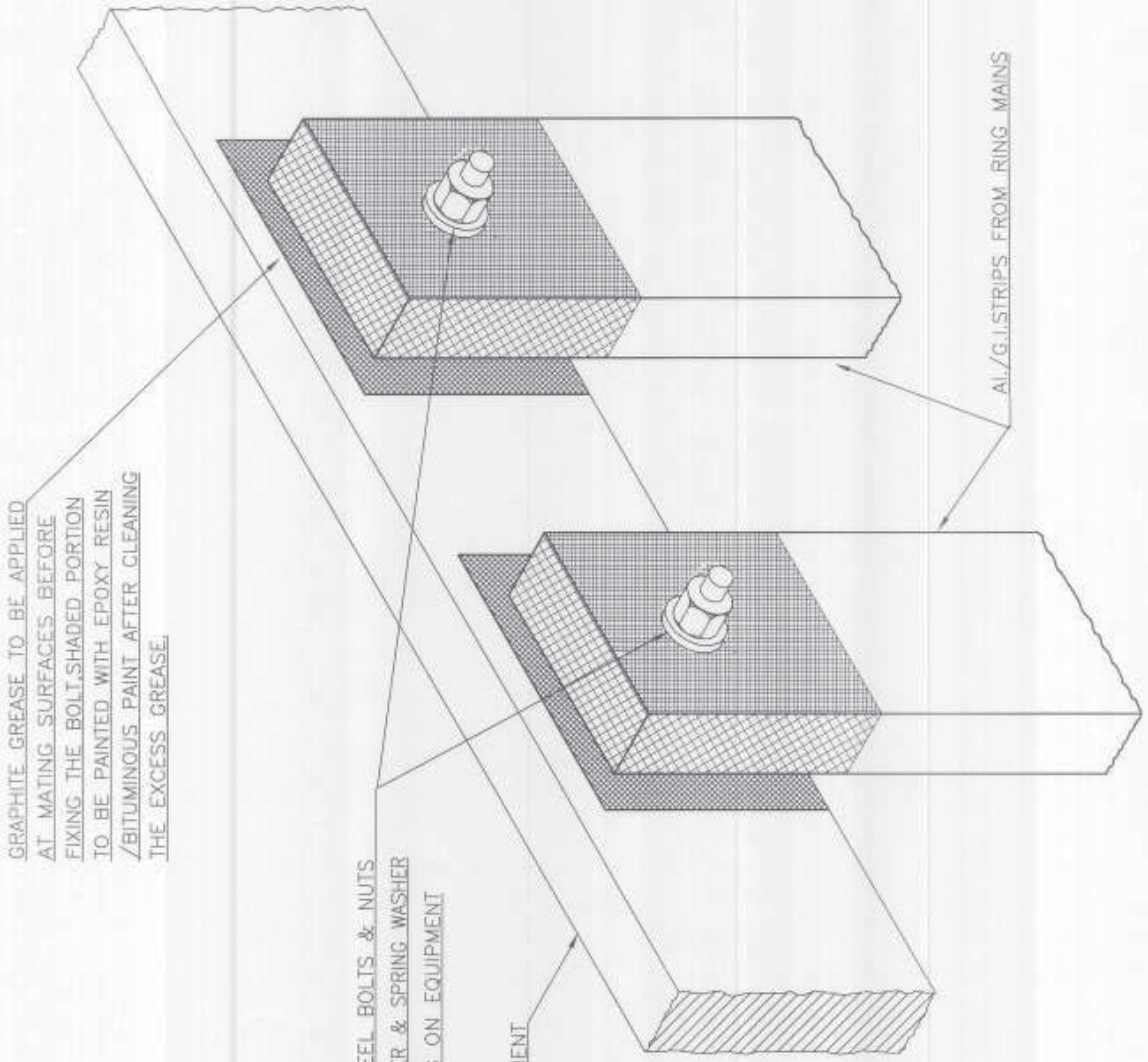
PDIL	ARRANGEMENT OF CONNECTIONS OF EARTH CONDUCTORS STRAIGHT JOINT GI TO AL STRIP	PDS:E 603 | 0 DOCUMENT NO. | REV SHEET 4 OF 6



ARRANGEMENT OF LAP JOINT BETWEEN
AL. EARTH STRIP TO G.I. EARTH STRIP

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

PDIL	ARRANGEMENT OF CONNECTIONS OF EARTH CONDUCTORS TERMINATION OF AL / GI STRIP AT EQUIPMENT	PDS:E 603	0
		DOCUMENT NO.	REV
		SHEET 5 OF 6	

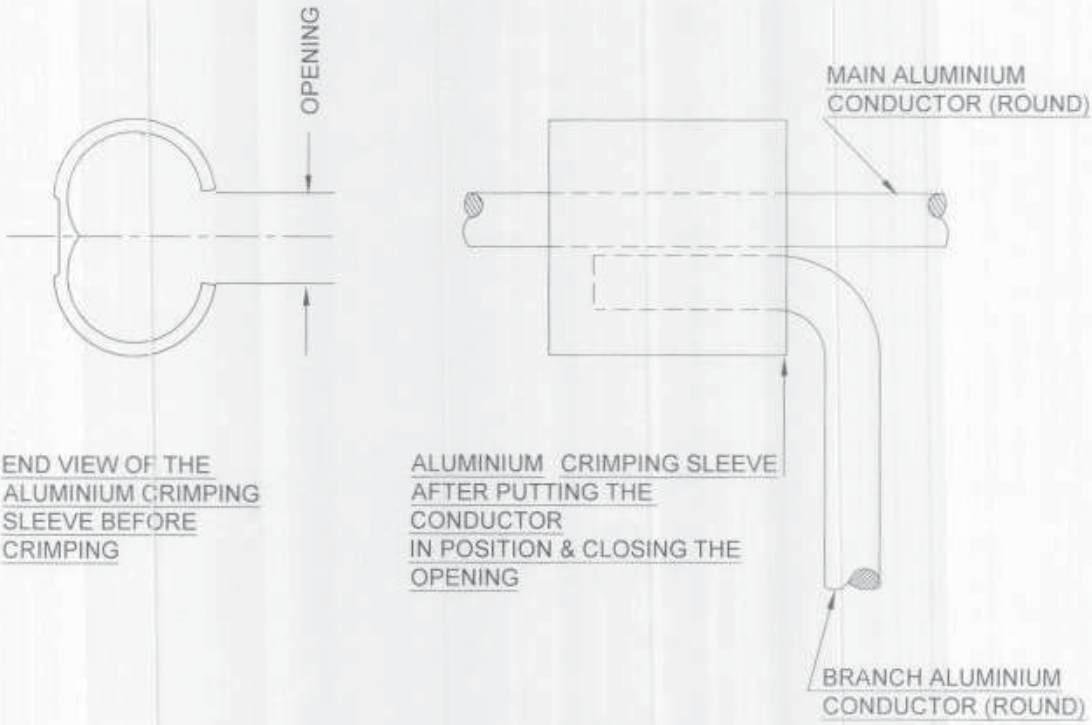


ARRANGEMENT OF DOUBLE EARTH CONNECTION ON EQUIPMENT

NOTE:-

EPOXY RESIN PAINT SHALL BE USED FOR AL STRIP AND BITUMINOUS PAINT FOR G.I.STRIP.

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB



"T" JOINT ROUND ALUMINIUM CONDUCTOR TO ROUND ALUMINIUM CONDUCTOR (CRIMPING TYPE)

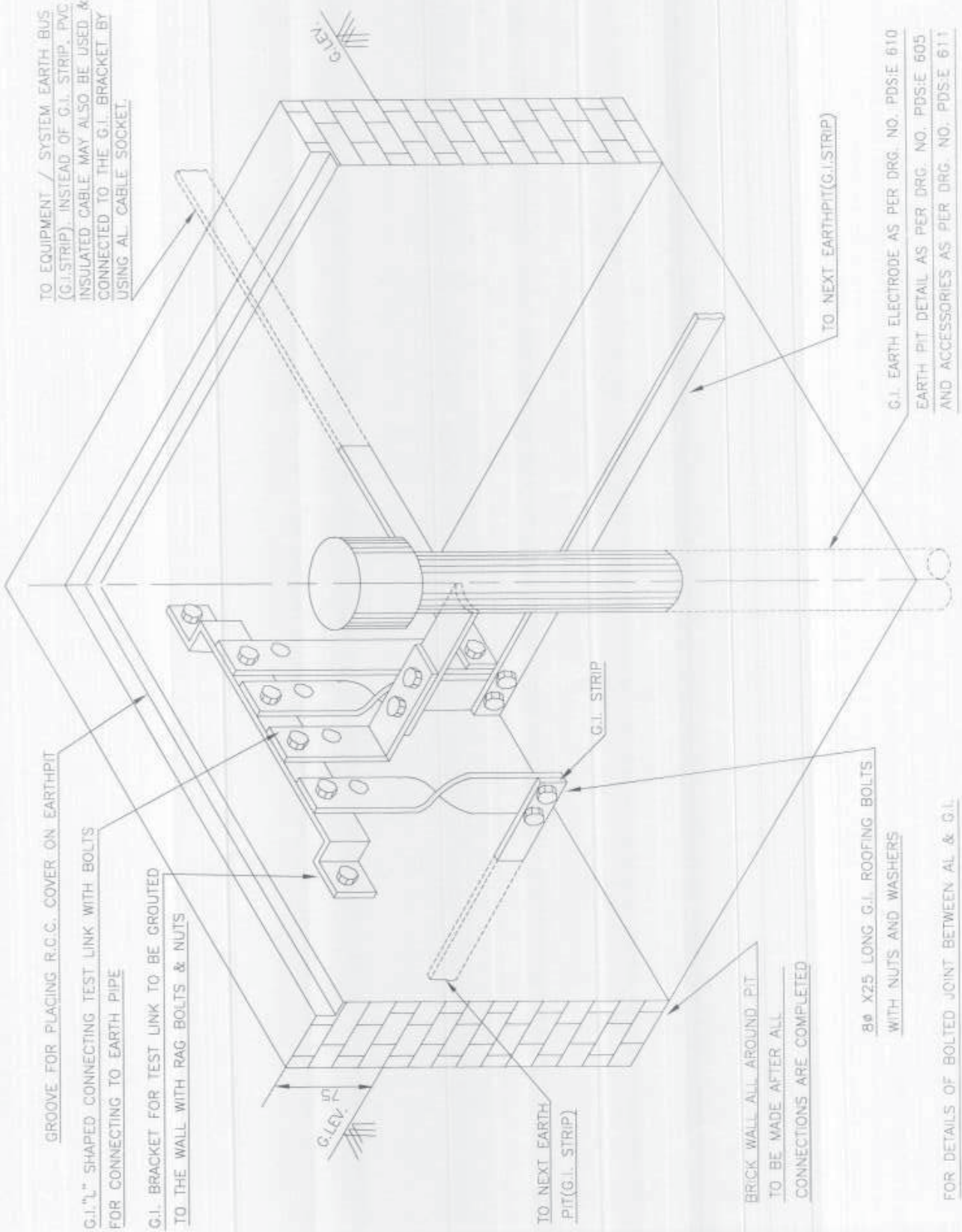
NOTE :-

USE CORRECT SIZE OF COMPRESSION DIES.

PDIL

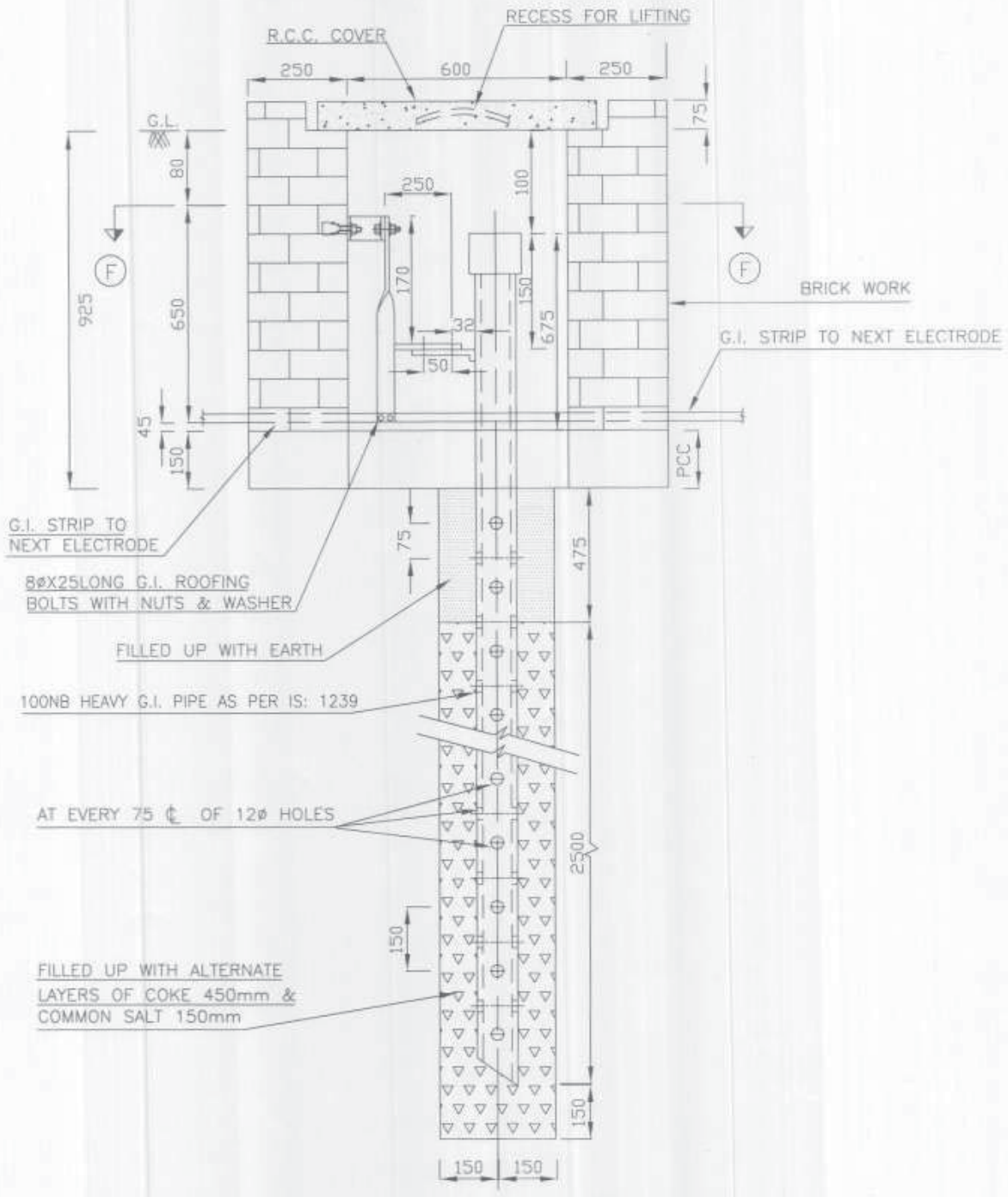
TYPICAL DETAILS OF CONNECTIONS IN EARTH PIT

PDS:E 604	0
DOCUMENT NO.	REV
SHEET 1 OF 1	



REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

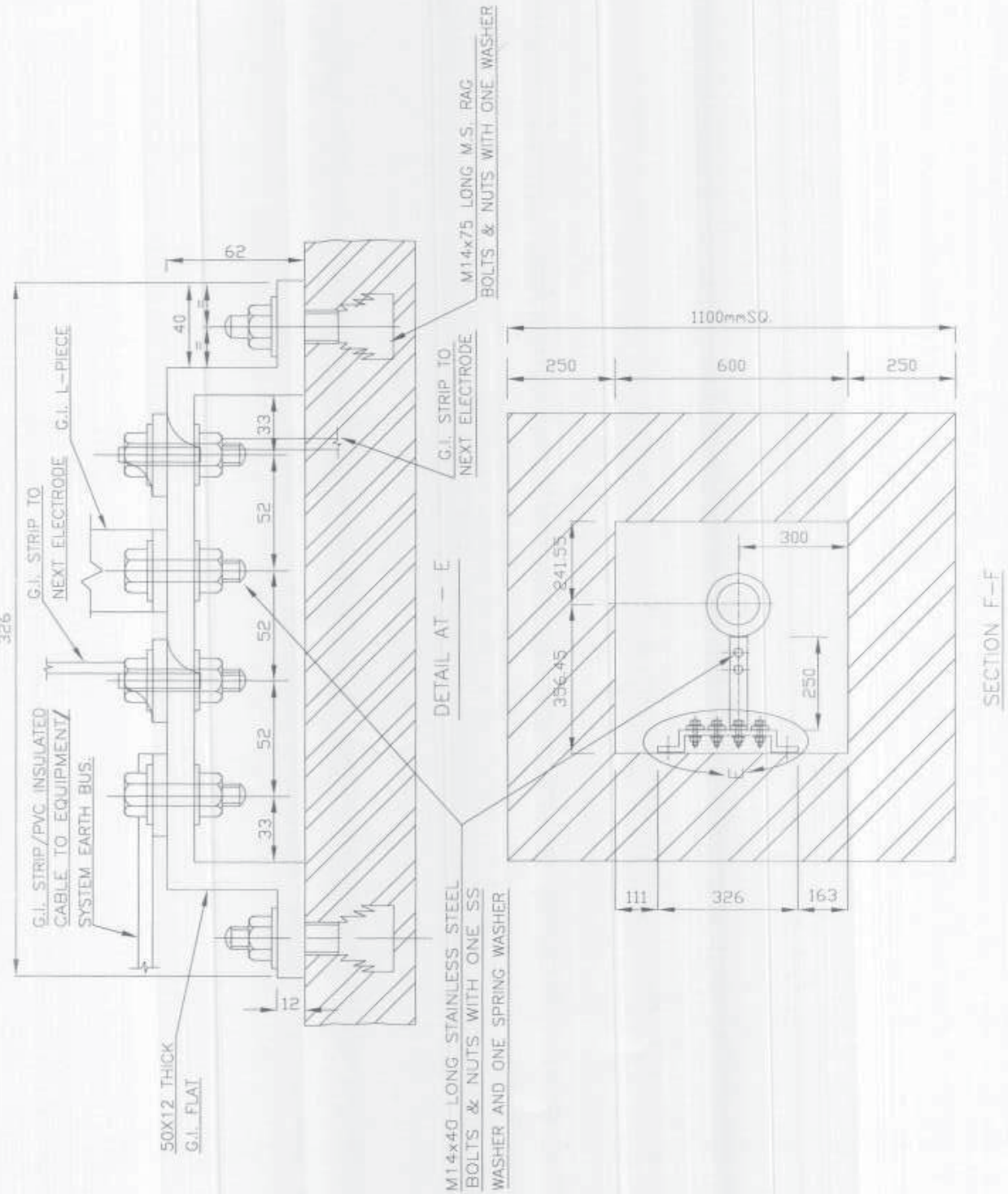
PDIL	EARTH PIT DETAILS	PDS:E 605 / 0 DOCUMENT NO. / REV SHEET 1 OF 2



SECTIONAL ELEVATION OF EARTH PIT

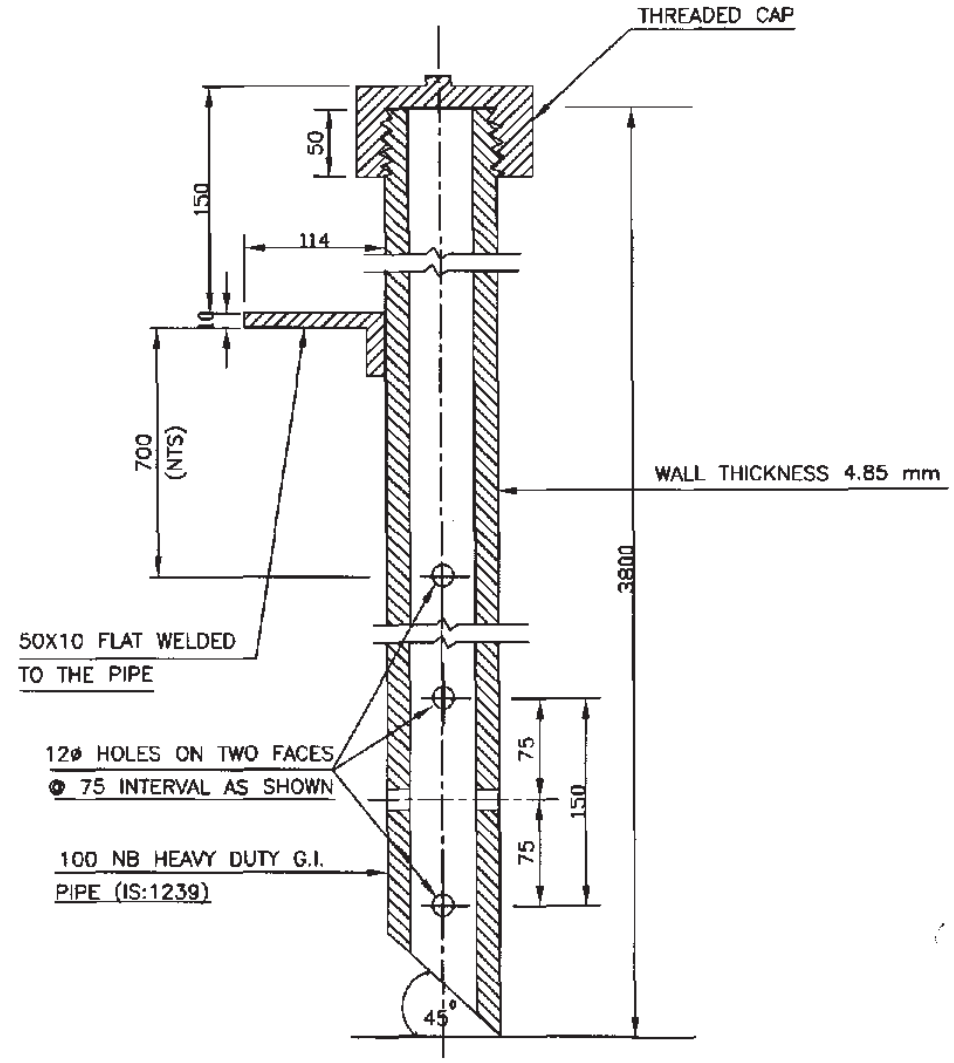
REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

PDIL	EARTH PIT DETAILS	PDS:E 605 / 0 DOCUMENT NO. / REV SHEET 2 OF 2

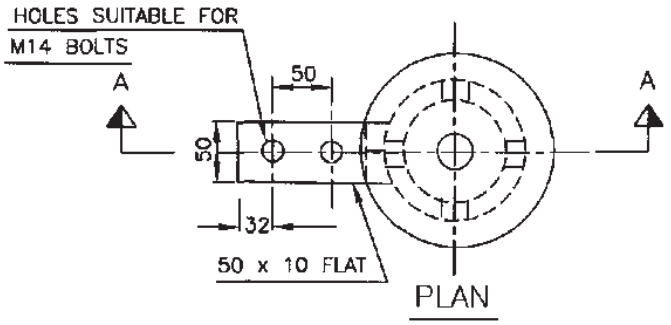


REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

PDIL	3.8M G.I. ELECTRODE FOR EARTHING	PDS:E 610	1
		DOCUMENT NO.	REV
		SHEET 1 OF 1	



SECTION A–A



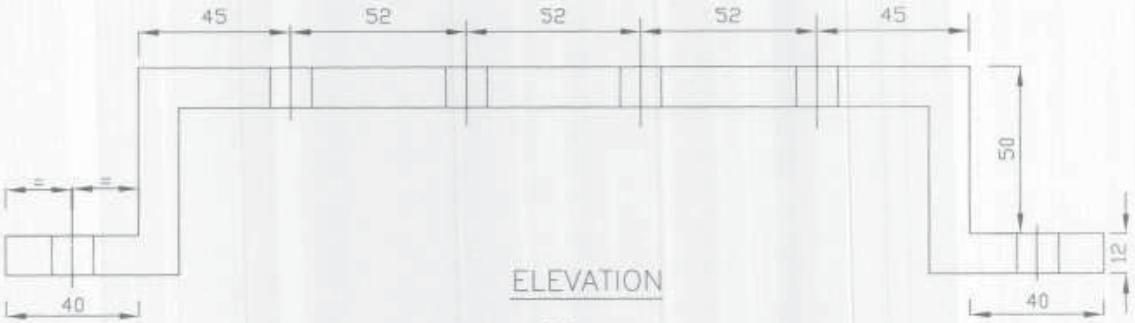
PLAN

NOTE:–

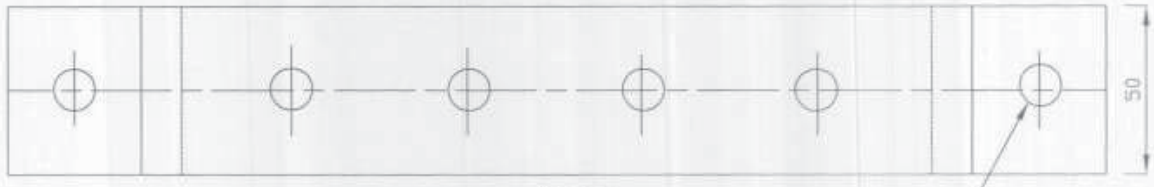
1. 12ø HOLES WILL BE PROVIDED AT 75mm INTERVAL ON TWO FACES THROUGHOUT THE LENGTH OF PIPE. THE FIRST ONE SHALL START 700mm BELOW THE WELDED FLAT.
2. ALL DIMENSIONS ARE IN mm.

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	RUNDA	AV	BB

PDIL	GI / AL. ACCESSORIES FOR EARTH PIT	PDS:E 611	0
		DOCUMENT NO.	REV
		SHEET 1 OF 2	



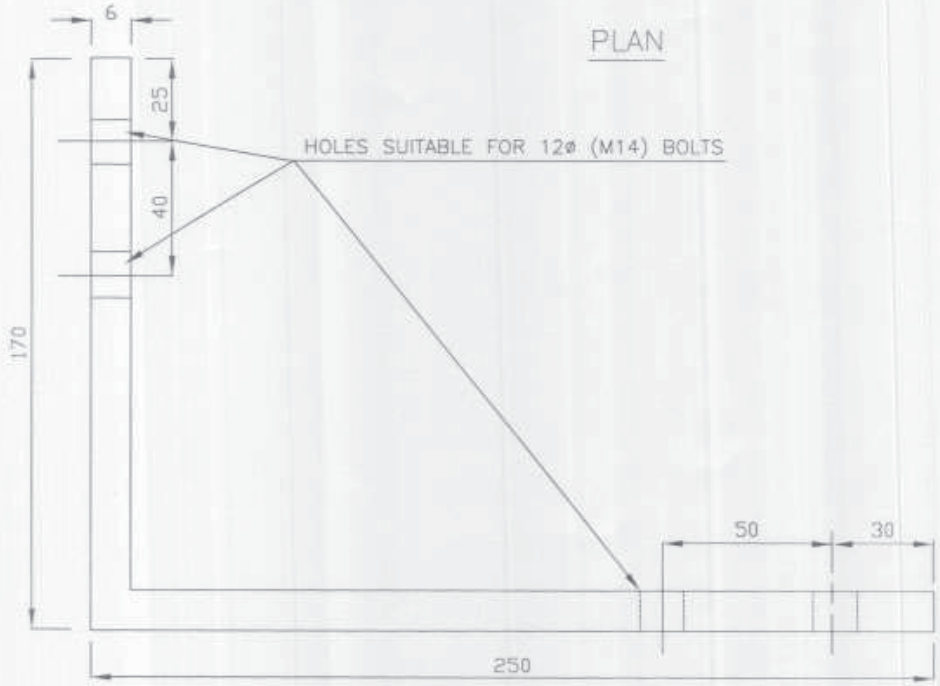
ELEVATION



PLAN

G.I. TEST LINK

PLAN

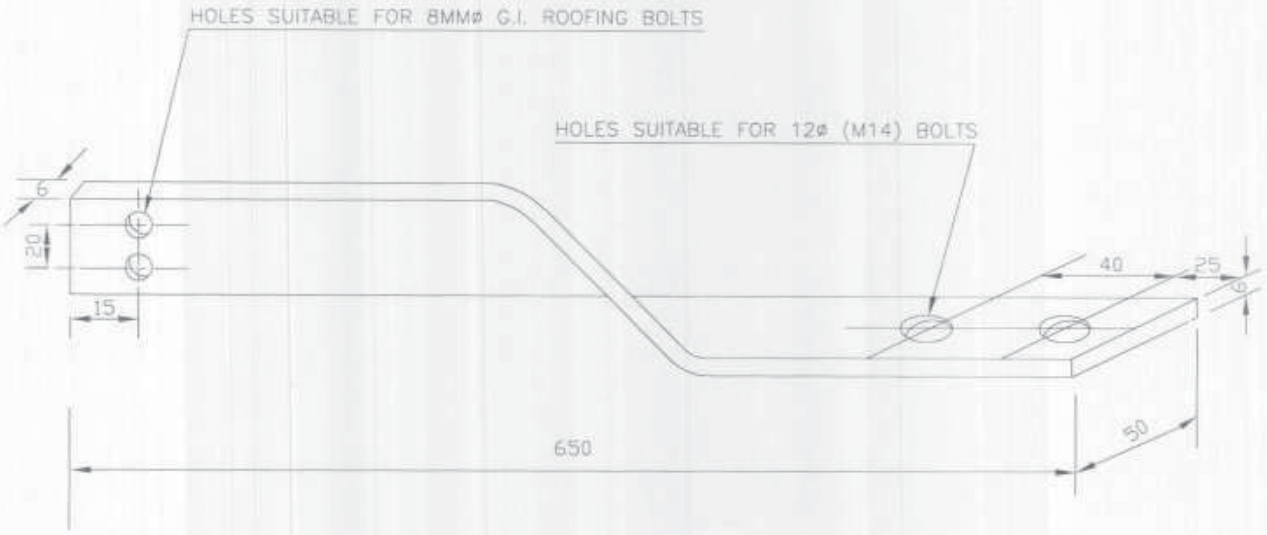


ELEVATION

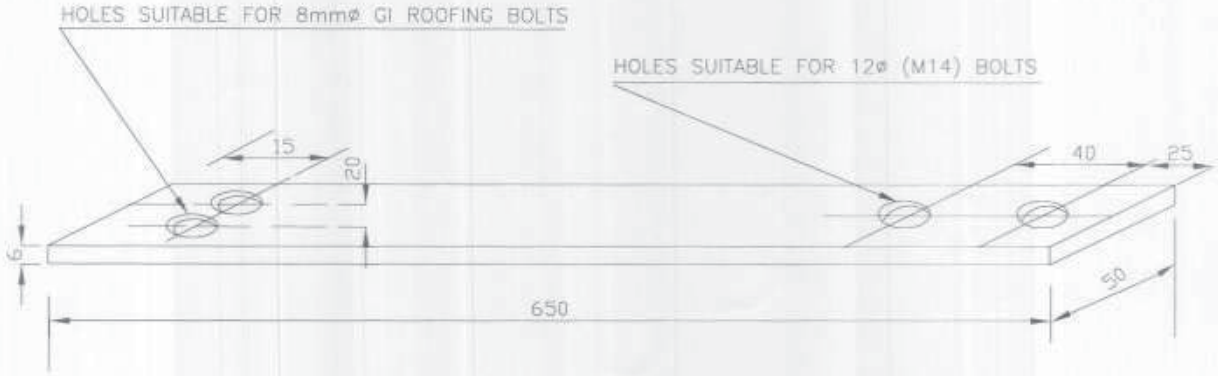
G.I. 'L' PIECE

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

PDIL	GI/AL. ACCESSORIES FOR EARTH PIT	PDS:E 611 / 0 DOCUMENT NO. / REV SHEET 2 OF 2



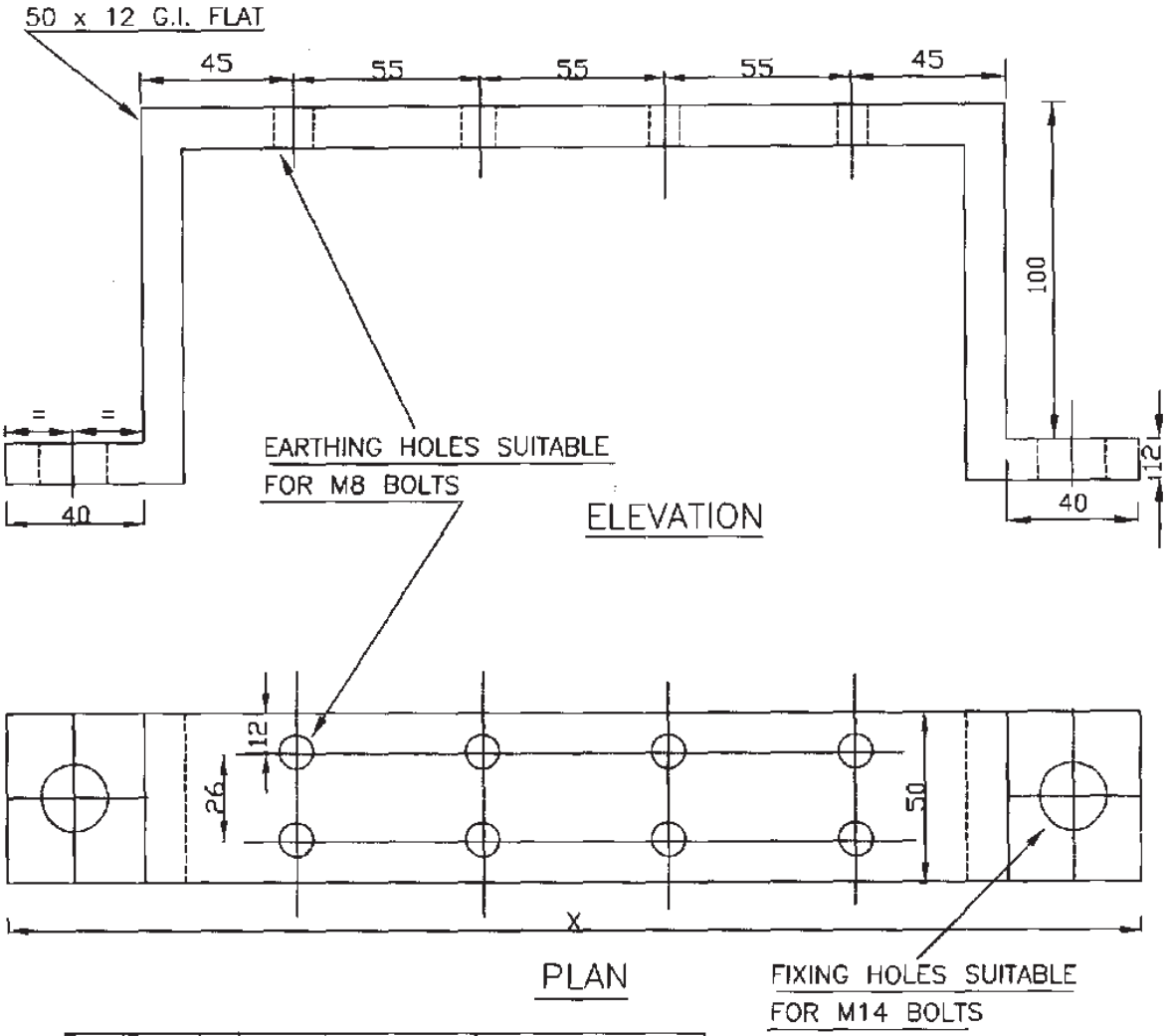
CONNECTING TWISTED ALUMINIUM FLAT PIECE



CONNECTING ALUMINIUM / G.I. FLAT PIECE

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
0	03.01.07	15.01.07	ISSUED FOR IMPLEMENTATION	NKR	AV	BB

PDIL	G.I. EARTH BUS	PDS:E 615	1
		DOCUMENT NO.	REV
		SHEET 1 OF 1	



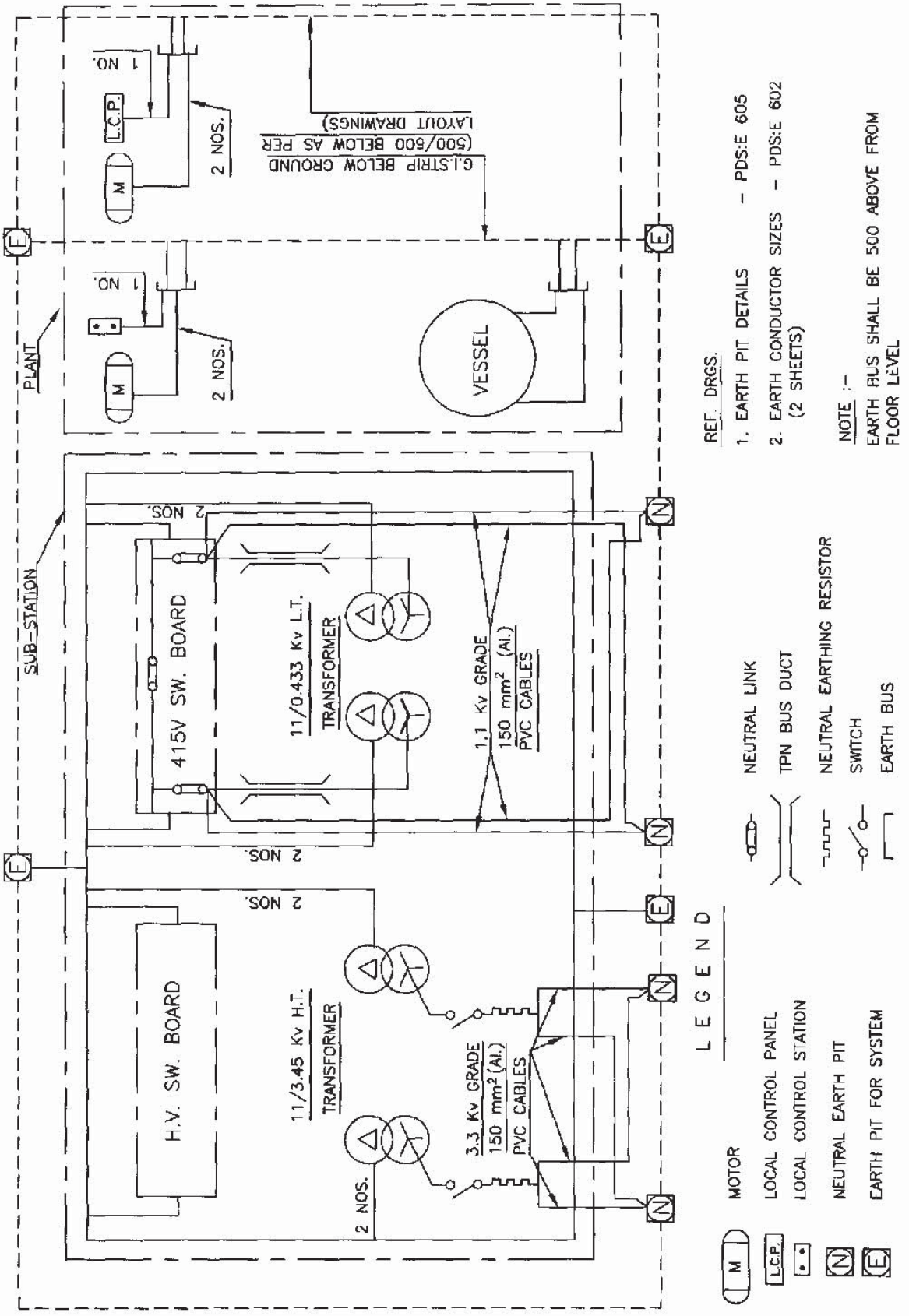
TYPE OF EARTH BUS	NO.OF EARTHING HOLES	OVERALL LENGTH x (mm)
1	8	335
2	10	390

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

REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	RUNDA	AV	BB

TYPICAL ARRANGEMENT FOR NEUTRAL AND EQUIPMENT EARTHING	PDS:E 617	1
	DOCUMENT NO.	REV
	SHEET 1 OF 1	



REV	REV.DATE	EFF.DATE	PURPOSE	PREPD	REVWD	APPD
1	16.01.06	30.01.06	ISSUED FOR IMPLEMENTATION	RUNDA	AV	BB

SCHEDULE OF RATES

SECTION VII

ATTENTION

THIS IS AN ELECTRONIC TENDER BIDDER TO QUOTE AS PER PROVIDED BOQ (.XLS) IN CPP PORTAL ONLY

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

Name of the Bidder/ Bidding Firm / Company :									

SCHEDULE OF RATE (Rev. 0) (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)

NUMBER #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	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
1.00	2	4	5	12	13	20	53	54	55
1.0	**ELECTRICAL WORKS**								
2.0	**DISTRIBUTION BOARD (MPDBs / PDBs / LSDBs / SPDBs / FPB)** 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.								

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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2.01	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.	INR		0.00	0.00	0.00	INR Zero Only
2.02	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.	INR		0.00	0.00	0.00	INR Zero Only
2.03	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 4P ACB I/C and Outgoing Feeders as indicated in SLD/ feeder details with ammeter & Voltmeter as per Technical specifications.	1	No.	INR		0.00	0.00	0.00	INR Zero Only
2.04	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.	INR		0.00	0.00	0.00	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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2.05	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.	INR		0.00	0.00	0.00	INR Zero Only
2.06	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. outging 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.	INR		0.00	0.00	0.00	INR Zero Only
2.07	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.	INR		0.00	0.00	0.00	INR Zero Only
2.08	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.	INR		0.00	0.00	0.00	INR Zero Only
2.09	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.	INR		0.00	0.00	0.00	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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2.10	110 V DC, 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.	INR		0.00	0.00	0.00	INR Zero Only
2.11	230 V AC, 2 Wire, Compartmentalized steel enclosed AC Distribution Board (ACDB) . 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.	INR		0.00	0.00	0.00	INR Zero Only
3.0	**LIGHTING**								
3.01	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. **240VAC 1 phase 45W outdoor light with LED lamp (with short arm) in weatherproof & hose proof light Min IP65/55, fixture complete with driver ,cable glands and other accessories, suitable for 3 X 2.5mm2 (Cu) cable and stopping plug for outdoor area.**	24.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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3.02	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. **240VAC 1 phase 45 W Street Lighting Fixtures. with LED lamp in weatherproof & 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.**	20.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
3.03	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. **240V AC 1 phase 45W outdoor highbay light with LED lamp in weatherproof & 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.**	18.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

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Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

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3.04	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. **240VAC 1 phase Outdoor Type Bollard Light 12W LED in weatherproof & 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.**	30.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
3.05	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. High quality LED tube complete with 2X20W tube (T5) eco friendly, having ≥ 2000 lumen output, CCT-6500K, IP-20, luminous efficacy ≥ 100 lm/watt, CRI>80, life ≥ 40000 burning hours, PF>0.95 and THD<10%, no UV radiation etc. suitable for ceiling/ wall mounted	20.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

Validate Print Help

Item Rate BoQ

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3.06	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. High quality LED tube complete with 1X20W tube (T5) eco friendly, having ≥ 2000 lumen output, CCT-6500K, IP-20, luminous efficacy ≥ 100 lm/watt, CRI>80, life ≥ 40000 burning hours, PF>0.95 and THD<10%, no UV radiation etc. suitable for ceiling/wall mounted	10.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
3.07	Supply, Installation, Testing and Commissioning of prewired wall/ceiling/false ceiling mounted type following LED lighting fixtures including providing & fixing LED batten 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. High quality LED tube batten complete with 1X20W tube (T5) eco friendly, having ≥ 2000 lumen output, CCT-6500K, IP-55, luminous efficacy ≥ 100 lm/watt, CRI>80, life ≥ 40000 burning hours, PF>0.95 and THD<10%, no UV radiation etc. suitable for ceiling/wall mounted	10.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
4.0	**EARTHING AND LIGHTNING PROTECTION**								

Validate Print Help

Item Rate BoQ

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Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

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4.01	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.	INR		0.00	0.00	0.00	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

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SCHEDULE OF RATE (Rev. 0) (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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4.02	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 : **75 mm x 10 mm** **Note:** 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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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4.03	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: - **50 mm x 6 mm** **Note:** 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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Contract No: PNPM/PC-183/E/8006/NCB

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4.04	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: - **35 mm x 6 mm** **Note**: 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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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4.05	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: - **1Cx16 sq.mm Al cable Unarmoured** **Note:** 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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Contract No: PNPM/PC-183/E/8006/NCB

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4.06	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: - **1Cx185 sq.mm Al cable Unarmoured** **Note:** 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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

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Contract No: PNPM/PC-183/E/8006/NCB

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4.07	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: - **8 SWG Wire** **Note**: 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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
4.08	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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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4.09	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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.0	**CABLES (LT)**								
5.01	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. : **3.5 x 300 mm2 (Al)**	4800.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.02	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. : **3.5 x 120 mm2 (Al)**	1500.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.03	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. : **3.5 x 150 mm2 (Al)**	500.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.04	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. : **3.5 x 50 mm2 (Al)**	2000.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Contract No: PNPM/PC-183/E/8006/NCB

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5.05	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. : **3.5 x 25 mm2 (Al)**	2400.000	Mtr	INR		0.00	0.00	0.00	INR Zero Only
5.06	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. : **3 C x 6 mm2 (Cu)**	10.000	Mtr	INR		0.00	0.00	0.00	INR Zero Only
5.07	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. : **3 C x 2.5 mm2 (Cu)**	600.000	Mtr	INR		0.00	0.00	0.00	INR Zero Only
5.08	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. : **5 C x 2.5 mm2 (Cu)**	100.000	Mtr	INR		0.00	0.00	0.00	INR Zero Only
5.09	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. : **7 C x 2.5 mm2 (Cu)**	100.000	Mtr	INR		0.00	0.00	0.00	INR Zero Only

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Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	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
5.10	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. : **10 C x 2.5 mm2 (Cu)**	1500.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.11	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. : **12 C x 2.5 mm2 (Cu)**	4200.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.12	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. : **19 C x 2.5 mm2 (Cu)**	100.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.13	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. **3.5 x 300 mm2 (Al)**	4800.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

Name of the Bidder/ Bidding Firm / Company :	

SCHEDULE OF RATE (Rev. 0) **(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	Quoted Currency in INR / Other Currency	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
5.14	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, 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. **3.5 x 150 mm2 (Al)**	500.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.15	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, 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. **3.5 x 120 mm2 (Al)**	1500.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

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Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	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
5.16	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, 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. **3.5 x 70 mm2 (Al)**	500.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.17	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, 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. **3.5 x 50 mm2 (Al)**	2000.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

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Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	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
5.18	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, 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. **3.5 x 35 mm2 (Al)**	300.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.19	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, 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. **3.5 x 25 mm2 (Al)**	2400.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

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Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	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
5.20	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. **3 C x 6 mm2 (Cu)**	10.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.21	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. **3 C x 2.5 mm2 (Cu)**	600.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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5.22	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. **5 C x 2.5 mm2 (Cu)**	100.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.23	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. **7 C x 2.5 mm2 (Cu)**	100.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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5.24	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. **10 C x 2.5 mm2 (Cu)**	1500.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
5.25	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. **12 C x 2.5 mm2 (Cu)**	4200.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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5.26	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. **19 C x 2.5 mm2 (Cu)**	100.000	Mtr	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
6.0	**Double Compression Cable Glands**								
6.01	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3.5CX400 mm2 (Al)**	4.000	Nos	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
6.02	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3.5 x 300 mm2 (Al)**	40.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
6.03	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3.5 x 150 mm2 (Al)**	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
6.04	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3.5 x 120 mm2 (Al)**	8.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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Name of the Bidder/ Bidding Firm / Company :									

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6.05	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3.5 x 70 mm2 (Al)**	4.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
6.06	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3.5 x 50 mm2 (Al)**	4.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
6.07	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3.5 x 35 mm2 (Al)**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
6.08	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3.5 x 25 mm2 (Al)**	48.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
6.09	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3 C x 6 mm2 (Cu)**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
6.10	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **3 C x 2.5 mm2 (Cu)**	134.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
6.11	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **5 C x 2.5 mm2 (Cu)**	4.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

Name of the Bidder/ Bidding Firm / Company :	

SCHEDULE OF RATE (Rev. 0) (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)

NUMBER #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	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
6.12	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **10 C x 2.5 mm2 (Cu)**	12.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
6.13	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **12 C x 2.5 mm2 (Cu)**	4.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
6.14	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables. **19 C x 2.5 mm2 (Cu)**	4.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
7.0	**TERMINATION OF CABLES**								
7.01	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 **3.5 x 300 mm2 (Al)**	42.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 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	Quoted Currency in INR / Other Currency	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
7.02	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. **3.5 x 150 mm2 (Al)**	8.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
7.03	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 **3.5 x 120 mm2 (Al)**	16.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 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	Quoted Currency in INR / Other Currency	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
7.04	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 **3.5 x 70 mm2 (Al)**	16.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
7.05	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. **3.5 x 50 mm2 (Al)**	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

Name of the Bidder/ Bidding Firm / Company :	

SCHEDULE OF RATE (Rev. 0) **(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	Quoted Currency in INR / Other Currency	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
7.06	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 **3.5 x 35 mm2 (Al)**	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
7.07	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 **3.5 x 25 mm2 (Al)**	40.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 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	Quoted Currency in INR / Other Currency	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
7.08	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. **3 C x 6 mm2 (Cu)**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
7.09	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 **3 C x 2.5 mm2 (Cu)**	120.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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Name of the Bidder/ Bidding Firm / Company :	

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Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	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
7.10	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 **5 C x 2.5 mm2 (Cu)**	4.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
7.11	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. **10 C x 2.5 mm2 (Cu)**	4.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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7.12	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. **12 C x 2.5 mm2 (Cu)**	6.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
7.13	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. **19 C x 2.5 mm2 (Cu)**	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
8.0	**CABLE ROUTE MARKER**								

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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8.01	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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
9.0	**Hume Pipe**								
9.01	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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
10.0	**GI Pipe / HDPE Pipe**								
10.01	Supply, laying, installation of medium class GI pipe as per IS:1239 (part-1) of size **50 mm NB**	100.000	Mtr.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
10.02	Supply, laying, installation of medium class GI pipe as per IS:1239 (part-1) of size **100 mm NB**	320.000	Mtr.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
10.03	Supply, laying, installation of HDPE Pipe of size **: 90/75mm, Wall thickness 3.0 +/- 0.2mm, 90mm OD, Homogenous**	100.000	Mtrs.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
11.0	**EXCAVATION AND BACK FILLING**								

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Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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11.01	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. **Soft soil**	1700.000	CuM	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
11.02	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. **Back filling with excavated earth in trench including consolidating each deposited layer by ramming, dressing etc.**	1485.000	CuM	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
12.0	**FINE RIVER SAND**								
12.01	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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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13.01	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.	INR		0.00	0.00	0.00	INR Zero Only
14.0	**SAFETY EQUIPMENT**								
14.01	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. **CO2 type fire extinguishers (4.5 Lt capacity) with horn type (with handle) outlet. Make: Ceasefire**	20.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
14.02	Vitreous enamel caution boards (HINDI/ ENGLISH/ODIYA) as per IS 2551 including fixing on the wall with all required hardware etc. complete. **11 V**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
14.03	Vitreous enamel caution boards (HINDI/ ENGLISH/ODIYA) as per IS 2551 including fixing on the wall with all required hardware etc. complete. **440 V**	4.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only

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14.04	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. **11KV Voltage grade having nominal thickness of 2.5mm ± 10%**	4.000	Mtrs.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
14.05	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. **Up to 3.3KV Voltage grade having nominal thickness of 2.0mm ± 10%**	40.000	Mtrs.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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14.06	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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
14.07	First aid boxes with necessary medicine on suitable wall mounting stands.	3.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
14.08	Shock treatment chart conforming to Indian Electricity Rules in Aluminum frame with glass.	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
14.09	Do & Don't chart as per Indian Electricity Rules in Aluminum frame with glass.	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
14.10	Exit Route / Emergency Exit Route Signage with inbuilt battery backup	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
15.0	**STRUCTURAL STEEL**								
15.01	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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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16.0	**SPARE: Item wise unit prices of following spares for two years operation and maintenance:**								
16.01	**11 V ICOG Breaker Panel :BREAKER 11 kV - Trip bar spring and any other spring used in the circuit breaker mechanism**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.02	11 V ICOG Breaker Panel :BREAKER 11 kV - **Shunt trip coil**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.03	11 V ICOG Breaker Panel :BREAKER 11 kV - **Closing coil**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.04	11 V ICOG Breaker Panel :BREAKER 11 kV - **Secondary Isolating contact blocks**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.05	11 V ICOG Breaker Panel :BREAKER 11 kV - **Micro Switch for Spring Charging**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.06	11 V ICOG Breaker Panel :BREAKER 11 kV - **Micro Switch for Service/Test position**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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16.07	11 V ICOG Breaker Panel :BREAKER 11 kV - **Rack in/Rack out handle**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.08	11 V ICOG Breaker Panel :BREAKER 11 kV - **Spring Charging handle**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.09	11 V ICOG Breaker Panel :BREAKER 11 kV - **Door panel key**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.10	**11 V ICOG Breaker Panel : CONTROL SWITCHES- Trip-Neutral-Close Control Switch**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.11	11 V ICOG Breaker Panel : CONTROL SWITCHES- **Local-Remote or Auto-Manual Selector Switch**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.12	11 V ICOG Breaker Panel : CONTROL SWITCHES- **Ammeter Selector Switch**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.13	11 V ICOG Breaker Panel : CONTROL SWITCHES- **Voltmeter Selector Switch**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.14	**11 V ICOG Breaker Panel : Push Buttons-Push Button Element of each type**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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16.15	11 V ICOG Breaker Panel : Push Buttons- **Push Button Actuator of each type**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.16	Indication Lamps (1 no. of each type)	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.17	Thermostat	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.18	MINIATURE CIRCUIT BREAKER (OF EACH RATING)	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.19	**METERS:** Ammeter	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.20	**METERS:** Voltmeter	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.21	**LV Switchboards :BREAKERS (3200 A) -Trip bar spring and any other spring used in the circuit breaker mechanism**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.22	LV Switchboards :BREAKERS (3200 A) - **Cluster Contacts**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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16.23	LV Switchboards :BREAKERS (3200 A) - **Arc Chute Assembly**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.24	LV Switchboards :BREAKERS (3200 A) - **Shunt trip Coil**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.25	LV Switchboards :BREAKERS (3200 A) - **Closing Coil**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.26	LV Switchboards :BREAKERS (3200 A) - **Motors for MWS operated breakers**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.27	LV Switchboards :BREAKERS (3200 A) - **Secondary Isolating Contact Blocks**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.28	LV Switchboards :BREAKERS (3200 A) -**Shutter Assembly**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.29	**LV Switchboards :BREAKERS (800 A)- Trip bar spring and any other spring used in the circuit breaker mechanism**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.30	LV Switchboards :BREAKERS (800 A)- **Cluster Contacts**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/NCB

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16.31	LV Switchboards :BREAKERS (800 A)- **Arc Chute Assembly**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.32	LV Switchboards :BREAKERS (800 A)- **Shunt trip Coil**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.33	LV Switchboards :BREAKERS (800 A)- **Closing Coil**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.34	LV Switchboards :BREAKERS (800 A)- **Motors for MWS operated breakers**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.35	LV Switchboards :BREAKERS (800 A)- **Secondary Isolating Contact Blocks**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.36	LV Switchboards :BREAKERS (800 A)- **Shutter Assembly**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.37	**LV Switchboards :SWITCHES - Trip-Neutral-Close Control Switch**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.38	LV Switchboards :SWITCHES - **Local-Remote or Auto-Manual Selector Switch**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Contract No: PNPM/PC-183/E/8006/NCB

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16.39	LV Switchboards :SWITCHES - **Thermostat**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.40	LV Switchboards :SWITCHES - **Ammeter Selector Switch**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.41	LV Switchboards :SWITCHES - **Voltmeter Selector Switch**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.42	**LV Switchboards : INDICATION LAMPS- Indicating Lamp Globes of each colour**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.43	LV Switchboards : INDICATION LAMPS- **Indication Lamp Fittings**	2.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.44	LV Switchboards : INDICATION LAMPS- **Indicating Lamp Bulbs**	2.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.45	**LV Switchboards : METERS - Ammeter (0-3200 A)**	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.46	LV Switchboards : METERS - **Ammeter (0-800 A)**	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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16.47	LV Switchboards : METERS - **Ammeter (0-250 to 600 A)**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
16.48	LV Switchboards : METERS - **Voltmeter**	1.000	No.	INR		0.00	0.00	0.00	INR Zero Only
16.49	**LV Switchboards : CURRENT TRANSFORMERS - Current Transformer 3200/1 A**	1.000	No.	INR		0.00	0.00	0.00	INR Zero Only
16.50	LV Switchboards : CURRENT TRANSFORMERS **- Current Transformer 800/1 A**	1.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
16.51	LV Switchboards : CURRENT TRANSFORMERS - **Current Transformer 250-600/1 A**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
16.52	**LV Switchboards :MCCB / RCCB/ MCB - 4 P MCCB 250 A**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
16.53	LV Switchboards :MCCB / RCCB/ MCB - **4 P MCCB 125 A**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only
16.54	LV Switchboards :MCCB / RCCB/ MCB - **4 P MCCB 63 A**	2.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only

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16.55	LV Switchboards :MCCB / RCCB/ MCB - **DP RCBO 63 A**	3.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.56	LV Switchboards :MCCB / RCCB/ MCB - **DP MCB, 16 A**	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.57	LV Switchboards :MCCB / RCCB/ MCB - **DP MCB, 32 A**	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.58	**Transformer : Complete set of Gaskets**	1.000	Set	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.59	Transformer : **Oil level gauge**	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.60	Transformer : **Complete charge of silica gel with breather**	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.61	Transformer : **Buchhloz relay**	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.62	Transformer : **Analog type OTI**	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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16.63	Transformer : **Analog type WTI**	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.64	Transformer : **CT for WTI**	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.65	Transformer : **Magnetic oil level gauge**	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.7	**UPS system**								
16.71	Power card of each type	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.72	Control card of each type	1.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
16.73	Indication Lamps of each type and color	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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17.00	**TRANSFORMER -** 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.Transformer efficiency class shall be 2 as per IS 1180.	2.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
17.01	**TRANSFORMER OIL - S**upply, 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	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
18.0	**11 kV PANEL :** 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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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19.0	**PUSH BUTTON :** 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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
20.0	**CABLES (HT)**								
20.01	Supply of 11 KV (UE) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification. **3C x 400 sq. mm (Al)**	4000.000	Mtrs	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
20.02	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, Al clamps with all labour, consumable materials and necessary hardware to make installation complete in all respect as per direction of engineer-in-charge. **3 x400 mm2 (Al)**	4000.000	Mtrs.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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20.03	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. **3C x 400 sq. mm (Al)**	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
20.04	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. 3**C x 400sq. mm (Al, 11 KV)**	2.000	No.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
21.0	**PLANT LIGHTING POLES**								
21.01	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. **5M high ground mounted poles** **Job shall also inlclude the make of civil foundation for lighting poles.**	16.000	Nos	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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22.0	**CABLE TRAYS (PREFABRICATED LADDER TYPE GI CABLE TRAYS) & ACCESSORIES** (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)								
22.01	Straight Run Cable Trays **-600mm wide**	50.000	Mtrs.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
22.02	Straight Run Cable Trays **-300 mm wide**	50.000	Mtrs.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
22.03	Horizontal Bends- **600mm wide**	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
22.04	Horizontal Bends- **300 mm wide**	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
22.05	Vertical Inside Bends - 6**00 mm wide**	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
22.06	Vertical Inside Bends - **300 mm wide**	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only

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Item Rate BoQ

Tender Inviting Authority: Projects & Development India Limited, Noida

Name of Work: TENDER FOR SUPPLY CUM ERECTION OF ELECTRICAL WORKS AT CISF BARRACK, QUARTER GUARD AND OTHER ALLIED BUILDINGS FOR OSBL FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED, TALCHER, ODISHA

Contract No: PNPM/PC-183/E/8006/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 appliable @ 18% on the quoted rates (being Works Contract)

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SCHEDULE OF RATE (Rev. 0) (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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23.0	**LT CABLE STRAIGHT THROUGH JOINT (1.1 KV):** 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.								
23.01	3.5 x 150 mm2 (Al)	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
23.02	3.5 x 120 mm2 (Al)	8.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
23.03	3.5 x 70 mm2 (Al)	4.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
23.04	10C x 2.5 sq. mm (Cu)	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
23.05	12C x 2.5 sq. mm (Cu)	2.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
24.0	**HIGH MAST**								

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Contract No: PNPM/PC-183/E/8006/NCB

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24.01	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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
24.02	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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
24.03	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.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
25.00	**ETHERNET SWITCH and associated Cables**								
25.01	**Supply, installation, layig, terminataion,Testing and Commissioning of Following Items to be installed at different Substations**								

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25.02	Cyber scured, KEMA certified, IEC 61850Managed Ethernet Switch having 24 Ethernet Ports and 4 Ports for Fiber optic with LIU and Patchcord having 1 GBPS speed(Make Harshman/Etherwan/Rockewell/eq). Job shall also include installation of these ethernet switch in different Substation Panel and I/O Rack cabinets and its connection to I/O Rack via fiber/Cat 6 cable connectionn with required termination in LIU/Patchcord.Necessary Hardware for Installation and coneection shall be considered by the bidder.	30.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only	
25.03	Multipair 23 AWG Individually and Overall screened armoured , Fire Resisitance CAT6 Cable	1000.000	Mtr	INR		0.00	0.00	0.00	INR Zero Only	
25.04	6 Fiber , Loose Tube, Armoured , Fire Resisitance Single mode Fiber Optic Cable	3000.000	Mtr	INR		0.00	0.00	0.00	INR Zero Only	
25.05	2 Pair 1.5 sqmm Amoured , Fire Resisitance RS485 Modbus Cable	500.000	Mtr	INR		0.00	0.00	0.00	INR Zero Only	
26.00	**UPS system**									
26.01	Supply, Storage, Installation, Testing and comissioing of Combined Full wave fully contrlolled IGBT 10 KVA AC-DC UPS having dual output of Both AC 230V and DC 110V with ACDB and DCDB. 20 % Spare feeder shall be considered in ACDB and DCDB This shall also comprise of required SMF/VRLA battery bank and other accessories with battery backup of 1 Hourr.This UPS shall be installed at Vikrampur Guest House substation.For detail, Please refer Techncal Specification & SLD.	1.000	Nos.	INR		0.00	0.00	0.00	INR Zero Only	

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Contract No: PNPM/PC-183/E/8006/NCB

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26.02	Supply, Storage, Installation, Testing and comissioing of Combined Full wave fully contrlolled IGBT 10 KVA AC-DC UPS having dual output of Both AC 230V and DC 110V with ACDB and DCDB. 20 % Spare feeder shall be considered in ACDB and DCDB This shall also comprise of required SMF/VRLA battery bank and other accessories with battery backup of 1 Hour.This UPS shall be installe at Trainee hoster MCC room.For detail, Please refer Techncal Specification & SLD.	1.000	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
26.03	Supply, Storage, Installation, Testing and comissioing of heavy duty 1.5 Ton 5 Star dual inveter Split AC with stablizer . AC shall be installed at VGH and trainee hoster for cooling of UPS.Necessary cabling MCB box etc. shall be considered (Make: Hitachi, Daikin, O General, Carrier, Voltas)	2	Nos.	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
27.00	**415 V MV BUS DUCT**								
27.01	**Supply, Installation, Testing & Commissioning of 415 V Bus Duct as perspecified in data sheets, Technical Specification - Electrical, Technical Specification Doc. No. PC183-TS-0807, etc. attached with the NIT.** 3200 A, 415 V, 50 Hz, 50kA for 1 second, Non-Segregated High Conductivity Aluminium TP+N (100%) Bus Duct of 12.5 Mtr. length (From Transformer Flange Centre Line to Panel Flange Centre Line) including 2 nos. horizontal bends and 3 nos. vertical bends between 11 kV / 0.433 kV, 2 MVA Transformers and PCC(Main MPDB) with associated equipments and all other accessories as per enclosed Main Substation Equipment Layout requirement, Technical Specification - Electrical, Technical Specification Doc. No. PC183-TS-0807, etc. attached with the NIT. Length is minium and shall be as per actual requirement at site	2.000	Sets	**INR**		**0.00**	**0.00**	**0.00**	INR Zero Only
28.00	**PA system Exchange**								

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28.01	Supply Installation, Testing & Commissioning of Digital PA system Central Exchange having required nos. of racks and cards suitable for 45 Nos of Field Call ststaion (FCS), Redundant ampliphier card(Min 250 W), Redundant Power supply(N+N) , Rectifier (N+1),Cyber secured KEMA certified ethernet switch (Min 24 Port+4 nos FO Port), 1 No IP based 16 Keys Master call station(MCS) with redundant supply . Complete system shall be considered with required hardware and software. Exchange shall be floor mounted. Min 6 nOs. PF contacts shall be considered. Input supply shall be 230 V UPS.PA system shall be suitable for hookup and integration with existing system.	1.000	Lot	INR		0.00	0.00	0.00	INR Zero Only
Total in Figures							0.00	0.00	INR Zero Only

Quoted Rate in Words	INR Zero Only