

# NOTICE INVITING TENDER

FOR

**GRID CONNECTIVITY TO TFL TO SUPPLY 90 MW POWER  
THROUGH LINE IN LINE OUT (LILO) ARRANGEMENT FROM  
EXISTING 220 KV TTPS- RENGALI LINE AT  
TALCHER FERTILIZERS LTD, ODISHA**

**(OPEN DOMESTIC COMPETITIVE BIDDING)**

**(NIT NO : PNMM/PC-183/E- 4025/NCB)**



**TALCHER FERTILIZERS LIMITED**

**[A JOINT VENTURE OF M/s GAIL (INDIA) LIMITED (GAIL), M/s RASHTRIYA  
CHEMICALS & FERTILIZERS LTD. (RCF), M/s COAL INDIA LTD. (CIL),  
& M/s FERTILIZER CORPORATION OF INDIA LTD (FCIL)]**



ISSUED BY



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



**29.01.2024**





	<b>GRID CONNECTIVITY TO TFL TO SUPPLY 90 MW POWER THROUGH LINE IN LINE OUT (LILO) ARRANGEMENT FROM EXISTING 220 KV TTPS- RENGALI LINE AT TALCHER FERTILIZERS LTD, ODISHA</b>  <b>MASTER INDEX</b>	PC183/E-4025	0	
		DOC. NO.	REV.	
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**SECTION-I**

**INVITATION FOR BID (IFB)**

**SECTION-I**  
**"INVITATION FOR BID (IFB)"**

Ref No: PNMM/PC-183/E-4025/NCB

Dated: 29.01.2024

To,

**PROSPECTIVE BIDDERS**

**SUB: GRID CONNECTIVITY TO TFL TO SUPPLY 90 MW POWER THROUGH LINE IN LINE OUT (LILO) ARRANGEMENT FROM EXISTING 220 KV TTPS- RENGALI LINE AT TALCHER FERTILIZERS LTD, ODISHA**

Dear Sir/Madam,

**1.0 INTRODUCTION:**

- 1.1 GAIL ( India) Limited (GAIL), Rashtriya Chemicals & Fertilizers Limited (RCF), Coal India Limited (CIL) and Fertilizer Corporation of India Limited (FCIL) have formed a Joint Venture company in the name of Talcher Fertilizers Limited (TFL) hereinafter also referred to as "Owner", intends to carry out the work of **GRID CONNECTIVITY TO TFL TO SUPPLY 90 MW POWER THROUGH LINE IN LINE OUT (LILO) ARRANGEMENT FROM EXISTING 220 KV TTPS- RENGALI LINE** on item rate basis for its Ammonia Urea Plant, an integrated fertilizer and chemical complex comprising of Coal Gasification and Gas Purification Unit, Ammonia Synthesis Unit, Urea Plant, along with necessary offsite and utility facilities at Talcher Unit, Angul district, in the state of Odisha, India.
- 1.2 GAIL (India) Limited is a Public Sector Unit under the Ministry of Petroleum & Natural Gas and Rashtriya Chemicals & Fertilizers Limited (RCF) & Fertilizer Corporation of India Limited (FCIL) are two Public Sector Units under the Ministry of Chemicals & Fertilizers and Coal India Limited (CIL) is a Public Sector Unit under the Ministry of Coal, Govt. of India.
- 1.3 Projects and Development India Limited (PDIL), hereinafter referred to as PROJECT MANAGEMENT CONSULTANT (PMC) on behalf of M/s Talcher Fertilizers Ltd. (TFL), hereinafter referred as OWNER, has the pleasure of inviting bids from eligible domestic bidders to submit Bid ONLINE through Central Public Procurement (CPP) Portal under Single Stage Two Bid System, for the subject works.
- 1.4 "PTC India Limited" hereinafter referred to as CONSULTANT, has been retained by M/s Talcher Fertilizers Ltd. (TFL), hereinafter referred as OWNER for providing consultancy services for **"GRID CONNECTIVITY TO TFL TO SUPPLY 90 MW POWER THROUGH LINE IN LINE OUT (LILO) ARRANGEMENT FROM EXISTING 220 KV TTPS- RENGALI LINE"**.

2.0 The brief details of the tender are as under:

(A)	NAME OF WORK / BRIEF SCOPE OF SERVICE/JOB	<b>GRID CONNECTIVITY TO TFL TO SUPPLY 90 MW POWER THROUGH LINE IN LINE OUT (LILO) ARRANGEMENT FROM EXISTING 220 KV TTPS-RENGALI LINE AT TALCHER FERTILIZERS LTD</b>				
(B)	NIT NO. & DATE	PNMM/PC-183/E-4025/NCB DATED 29.01.2024				
(B1)	TYPE OF TENDER	OPEN DOMESTIC COMPETITIVE BIDDING				
(C)	TYPE OF BIDDING SYSTEM	<table border="1"> <tr> <td>SINGLE BID SYSTEM</td> <td><input type="checkbox"/></td> </tr> </table>	SINGLE BID SYSTEM	<input type="checkbox"/>		
		SINGLE BID SYSTEM	<input type="checkbox"/>			
<table border="1"> <tr> <td>TWO BID SYSTEM</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	TWO BID SYSTEM	<input checked="" type="checkbox"/>				
TWO BID SYSTEM	<input checked="" type="checkbox"/>					
(D)	TYPE OF TENDER	<table border="1"> <tr> <td>E-TENDER (CPP PORTAL)</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	E-TENDER (CPP PORTAL)	<input checked="" type="checkbox"/>		
		E-TENDER (CPP PORTAL)	<input checked="" type="checkbox"/>			
<table border="1"> <tr> <td>MANUAL</td> <td><input type="checkbox"/></td> </tr> </table>	MANUAL	<input type="checkbox"/>				
MANUAL	<input type="checkbox"/>					
(E)	COMPLETION PERIOD	Please Refer Clause 14.0 of SPECIAL CONDITIONS OF CONTRACT.				
(F)	BID SECURITY /EARNEST MONEY DEPOSIT (EMD)	<table border="1"> <tr> <td>APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td><input type="checkbox"/></td> </tr> </table>	APPLICABLE	<input checked="" type="checkbox"/>	NOT APPLICABLE	<input type="checkbox"/>
		APPLICABLE	<input checked="" type="checkbox"/>			
NOT APPLICABLE	<input type="checkbox"/>					
<p>EMD value: <b>Rs. 15 Lakh</b> (Rupees Fifteen Lakh Only )</p> <p>Exempted Bidders (i.e. Start-ups and Govt Dept./PSUs) are required to submit declaration for Bid security as per Form F-2B (Refer clause no.16 of ITB).</p>						
(G)	AVAILABILITY OF TENDER DOCUMENT ON WEBSITE(S)	(i) CPP Portal ( <a href="https://eprocure.gov.in/eprocure/app">https://eprocure.gov.in/eprocure/app</a> ) (ii) TFL Website - <a href="http://tflonline.co.in">http://tflonline.co.in</a> (iii) PDIL website - <a href="http://www.pdilin.com">www.pdilin.com</a>				
(H)	LAST DATE OF RECEIPT OF BIDDER'S PRE-BID QUERIES	05.02.2024 till 12:00 Hrs (IST)				

<b>(I)</b>	DATE, TIME OF PRE-BID MEETING (Through Video Conferencing)	05.02.2024 at 15:00 Hrs (IST) <a href="#">Click here to join the meeting</a>
<b>(J)</b>	BID SUBMISSION START DATE	14.02.2024 at 15:00 Hrs (IST)
<b>(K)</b>	BID CLOSING DATE	<b>19.02.2024 at 15:00 Hrs. (IST)</b>
<b>(L)</b>	BID OPENING DATE	<b>20.02.2024 at 15:00 Hrs. (IST)</b>
<b>(M)</b>	<b>Address for Communication</b>	
<b>(i)</b>	PDIL	M/s Projects & Development India Limited, P.D.I.L Bhawan, A-14, Sector-1, Noida, (PIN 201301) Dist. Gautam Budh Nagar (UP). (India)  Kind Attention: Mrs. Anjali Thakur, Dy. General Manager (M.M) Fax no. : +91-120-2529801 Tel no. : +91-120-2529842 E-mail : <a href="mailto:anjali@pdilin.com">anjali@pdilin.com</a> <a href="mailto:alam@pdilin.com">alam@pdilin.com</a>
<b>(ii)</b>	TFL	M/s Talcher Fertilizers Ltd. (TFL), Administrative Building, Talcher, Post: Vikrampur, Dist: Angul, Pincode-759106, Odisha  Kind Attention : Mr. Satyabrata Mishra General Manager (Projects) Tel No. : +91-9927339444 E-mail : <a href="mailto:smishra@gail.co.in">smishra@gail.co.in</a> ; <a href="mailto:vivekmishra@tflonline.co.in">vivekmishra@tflonline.co.in</a>
<b>(N)</b>	Original Documents to be submitted at	Projects & Development India Limited, (Materials Management Department) P.D.I.L Bhawan, A-14, Sector-1, Noida, (PIN 201301) Dist. Gautam Budh Nagar (UP). (India)  Kind Attention: Mrs. Anjali Thakur , Addl. General Manager (M.M) Fax no. : +91-120-2529801 Tel no. : +91-120-2529842 E-mail : <a href="mailto:anjali@pdilin.com">anjali@pdilin.com</a>

<b>(O)</b>	Contact Person for Site visit	M/s Talcher Fertilizers Ltd. (TFL), Administrative Building, Talcher, Post: Vikrampur, Dist: Angul, Pincode-759106, Odisha  Kind Attention: Mr. Satyabrata Mishra General Manager (Projects) Tel No. : +91-9927339444 E-mail : smishra@gail.co.in
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In case the days specified above happens to be a holiday in TFL/PDIL, the next working day shall be implied.

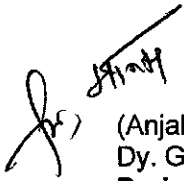
- 3.0 Bids must be submitted strictly in accordance with Clause No. 11 of ITB (Section-III of tender) depending upon Type of Tender as mentioned at Clause no. 2.0 (D) above. The IFB is an integral and inseparable part of the bidding document.
- 4.0 Bid must be submitted only on CPP Portal (<https://eprocure.gov.in/eprocure/app>). 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 (M) 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) ~~TPI Letter~~
  - v) Line of Credit (If applicable)
- 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 (G) 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 (G) 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.

**This is not an Order.**

**Thanking You,**  
For and on behalf of  
Talcher Fertilizers limited



(Anjali Thakur)  
Dy. General Manager (M.M)  
**Projects & Development India Limited**

**PHYSICAL DOCUMENTS (EMD/Declaration for Bid Security, POA, Integrity Pact & TPIA Letter)**

**Tender Document No. : PNMM/PC-183/E-4025/NCB dated 29.01.2024**

**Description : GRID CONNECTIVITY TO TFL TO SUPPLY 90 MW POWER THROUGH LINE IN LINE OUT (LILO) ARRANGEMENT FROM EXISTING 220 KV TTPS- RENGALI LINE**

**Due Date & Time : 19.02.2024 at 15:00 hrs.**

<b>From:</b> ..... ..... ..... .....	<b>To:</b> M/s Projects & Development India Limited, P.D.I.L Bhawan, A-14, Sector-1, Noida, (PIN 201301) Dist. Gautam Budh Nagar (UP). (India)  Kind Attention: Mrs. Anjali Thakur Dy. General Manager(M.M)
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**(To be pasted on the envelope containing Physical Document)**

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**SECTION-II**

**BID EVALUATION CRITERIA**

**&**

**EVALUATION METHODOLOGY**



## SECTION-II

### **1.0 BID EVALUATION CRITERIA (BEC)**

Bids are hereby invited from competent Domestic Bidders meeting the technical and financial criteria of respective BEC stated hereunder.

Evaluation of Techno-Commercial offers shall be carried out for only those Bidders who shall meet the BEC.

#### **(A) Technical Criteria:**

**A.1** The bidder must have completed at least One or Two or three “**Similar work**”, during the last Seven (07) years reckoned from the original bid opening date

(i) The bidder must have completed One “**Similar work**”, having completed length of not less than 3.5 KM.

**OR**

(ii) The bidder must have completed Two “**Similar work**”, having completed length of not less than 2.2 KM

**OR**

(iii) The bidder must have completed Three “**Similar work**”, having completed length of not less than 1.8 KM.

“**Similar work**” shall mean the following:

Physical Construction of Overhead Transmission line involving Supply\*, Installation/erection of Transmission Tower, stringing, testing and commissioning/charging, including civil works for Tower Foundations of 132 KV or higher voltage rating.

\*Supply shall mean the following i.e (i) & (ii)

(i) Supply of tower & tower parts

(ii) Supply of line material viz. Conductor or Insulator or Hardware Fittings.

**A.2** The said “**Similar Work**” referred at **A.1** as stated above must have been in operation for at least 1 (one) year as on the original bid opening date from the Date of Acceptance / Commissioning of the works.

**A.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.

**Additional Notes to Technical Criteria:**

- 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.
- IV. 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.
- V. Experience of bidder acquired as a subcontractor is acceptable against submission of certificate from End User/ Owner by such bidder along with other specified documents.
- VI. Bids from Consortium/ Joint Venture shall not be accepted.
- VII. 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.

**(B) Financial Criteria:**

- B.1** The Average Annual financial Turnover during the three (03) preceding financial years of the bidder should be minimum **INR 4.89 Crore**.
- B.2** Net Worth of the bidder should be positive as per last audited financial year.
- B.3** The Bidder should have minimum working capital equal to **INR 97.80 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 97.80 Lakh** The line of credit from bank shall be submitted strictly as per prescribed format.

**"Notes for B.1, B.2 & B.3"**

**Average 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 30<sup>th</sup> Sept. of the relevant financial year. In case the tenders having the due date for submission of bid up to 30<sup>th</sup> 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 30<sup>th</sup> September of the relevant financial year. In case the tenders having the due date for submission of bid up to 30<sup>th</sup> September 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.

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.

**(C) General Notes (for both Technical BEC and Financial BEC) wherever applicable:**

Exchange rate for conversion of currency for evaluation of documents relating to BEC (if applicable):

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>

**(D) BEC for START-UPS:**

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

**(E) Documents to be submitted for Compliance to BEC**

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

To meet the criteria of **A.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 order issuing authority 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.

To meet the criteria of **A.2**, above a certificate in respect of minimum one year successful operation of the Plant/ System from the date of acceptance/Commissioning of work issued by the Owner/End user is to be submitted by the Bidder.

In cases where bidder has executed the "Similar work" as a sub-contractor, such Completion certificate and Operation certificates (for compliance to **A.1** above) issued by the "Order issuing Authority "is also acceptable, provided that a certificate or letter from the End User/Owner is submitted that the bidder has worked as a sub-contractor for that project.

To meet the criteria **A.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.

Any other documents to establish the bidder meets BEC requirements.

**Note:** Above is indicative list of documents. Bidder shall ensure that all requisite documents are furnished in the bid to justify qualification of bidder with respect to bidder qualification requirements.

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

- (a) To meet the criteria for Sr. No. **B.1**, Bidder shall submit the Audited Financial Statements of the company for last three (03) preceding financial years.
- (b) To meet the criteria for Sr. No. **B.2**, Bidder shall submit the Audited Financial Statements of the last financial year.
- (c) To meet the criteria for Sr. No. **B.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 E (ii) above, the “Notes for B.1, B.2 & B.3 under B” (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.

**(F) Authentication of documents submitted against BEC**

**1. Technical BEC**

All documents in support of Sl. No. A.1, A.2 & A.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.

**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.

**2.0 EVALUATION METHODOLOGY:**

The subject work is indivisible and complete work shall be awarded to successful overall lowest bidder as per evaluation methodology described below.

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

**3.0 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 16<sup>th</sup>September, 2020 or as updated from time to time].

#### **4.0 Applicability of purchase preference of MSE's**

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

**Deleted**



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



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**सा.का.नि. 385(अ).**—घरेलू रूप से उत्पादित किए जाने वाले लौह एवं स्टील उत्पाद की सरकारी खरीद को प्राथमिकता दिए जाने के लिए संशोधित नीति सामान्य सूचना हेतु प्रकाशित की जाती है।

[फा. सं. 3(2)/2018-आईडीडी]

रसिका चौबे, अपर सचिव

**सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों को बरीयता देने के लिए नीति - संशोधित, 2019**

**1. भूमिका**

- 1.1 यह नीति सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों (डी एम आई एंड एस पी) को बरीयता देती है।
- 1.2 यह नीति यथा लागू निर्धारित गुणवत्ता मानदंडों के अनुपालन में उत्पादित लौह एवं इस्पात उत्पादों जिसे परिशिष्ट क में दिया गया है और परिशिष्ट ख में दिए गए लौह एवं इस्पात उत्पादों के लिए पूंजीगत माल पर लागू होती है।
- 1.3 यह नीति सरकार के प्रत्येक मंत्रालय अथवा विभाग और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों तथा सरकारी परियोजनाओं के वास्ते लौह एवं इस्पात उत्पादों की खरीद के लिए इन एजेंसियों द्वारा वित्त पोषित परियोजनाओं पर लागू है। हालांकि, यह नीति वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए वस्तुओं के उत्पादन में उपयोग करने के उद्देश्य से लौह एवं इस्पात उत्पादों की खरीद पर लागू नहीं होगी।

**2. परिभाषाएं**

- 2.1 **बोली** लगाने वाला लौह एवं इस्पात का कोई घरेलू/विदेशी निर्माता अथवा उनके बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह अथवा सरकारी एजेंसियों द्वारा वित्त पोषित निधि परियोजनाओं की बोली लगाने में कार्यरत कोई अन्य कंपनी हो सकती है।

- 2.2 **घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पाद (डी एम आई एंड एस पी)** वे लौह एवं इस्पात उत्पाद हैं जिनका निर्माण उन प्रतिष्ठानों द्वारा किया जाता है जो भारत में पंजीकृत और स्थापित हैं, जिसमें विशेष आर्थिक क्षेत्र (एम ई ज़ेड) शामिल है। इसके अलावा, इस प्रकार के उत्पाद परिशिष्ट क में किये गये उल्लेख के अनुसार घरेलू न्यूनतम मूल्यवर्धन के मानदंडों को पूरा करेंगे।
- 2.3 **घरेलू निर्माता** खंड 7 में दिशा-निर्देशों और केंद्रीय उत्पाद शुल्क अधिनियम में दी गई 'निर्माता' की परिभाषा के अनुरूप लौह एवं इस्पात उत्पादों का एक निर्माता है।
- 2.4 इस नीति के प्रयोजन से **सरकार** का तात्पर्य भारत सरकार से है।
- 2.5 **सरकारी एजेंसियों** में सरकार के सार्वजनिक क्षेत्र के उपक्रम, सरकार द्वारा स्थापित सोसायटी, ट्रस्ट और सांविधिक निकाय शामिल हैं।
- 2.6 **एम ओ एस** का आशय इस्पात मंत्रालय, भारत सरकार से है।
- 2.7 **निवल बिक्री कीमत** बीजक कीमत होगी जिसमें निवल घरेलू कर और शुल्क शामिल नहीं होंगे।
- 2.8 **अर्ध तैयार इस्पात** का तात्पर्य इनगोट्स, बिलेट, ब्लूम और स्लेब्स से है, जिसे बाद में प्रसाधित कर तैयार इस्पात बनाया जा सकता है।
- 2.9 **तैयार इस्पात** का तात्पर्य सपाट और लंबे उत्पादों से होगा जिन्हें बाद में प्रसाधित कर निर्मित मद बनाया जा सकता है।
- 2.10 **एल1** का तात्पर्य निविदा अथवा अन्य खरीद संबंधी अनुरोध के अनुसार मूल्यांकन प्रक्रिया में यथाघोषित निविदा, बोली लगाने संबंधी प्रक्रिया अथवा अन्य खरीद संबंधी अनुरोधों में प्राप्त निम्नतम निविदा अथवा निम्नतम बोली अथवा निम्नतम भाव से होगा।
- 2.11 **खरीद वरीयता के मार्जिन** का तात्पर्य उस अधिकतम सीमा से है जिस सीमा तक किसी घरेलू आपूर्तिकर्ता द्वारा लगाई गई कीमत खरीद वरीयता के प्रयोजन से एल1 से अधिक हो। डी एम आई एंड एस पी नीति के मामले में, खरीद वरीयता का मार्जिन परिशिष्ट ख में मदों के लिए 20 प्रतिशत होगा।
- 2.12 **लौह एवं इस्पात उत्पाद** का तात्पर्य ऐसे लौह एवं इस्पात उत्पादों से होगा जिनका उल्लेख परिशिष्ट क में किया गया है।
- 2.13 **घरेलू मूल्यवर्धन** निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजक कीमत) होगी जिससे प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण संयंत्र (सभी सीमा शुल्कों सहित) में आयात की गई इनपुट सामग्री की पहुंच लागत घटाई गई हो, 'घरेलू मूल्यवर्धन' परिभाषा डी पी आई आई टी (पूर्व में डी आई पी पी) के दिशानिर्देशों के अनुरूप होगी और उसमें भविष्य में डी पी आई आई टी द्वारा परिवर्तन किये जाने की स्थिति में उपयुक्त रूप से संशोधन किया जाएगा। इस नीति दस्तावेज के प्रयोजन के लिए घरेलू मूल्यवर्धन और स्थानीय विषय वस्तु का उपयोग एक दूसरे के स्थान पर किया गया है।
- 3. अपवर्जन**
- 3.1 इस्पात मंत्रालय द्वारा इस प्रकार की सभी सरकारी खरीदों के लिये निम्नलिखित शर्तों के अधीन छूट प्रदान की जाएगी।
- 3.1.1 जहां विशिष्ट शेडों के इस्पात का निर्माण इस देश में नहीं किया जाता हो, अथवा
- 3.1.2 जहां परियोजना की मांग के अनुसार इन मात्राओं को घरेलू स्रोतों के माध्यम से पूरा नहीं किया जा सकता हो।
- अपवर्जन संबंधी अनुरोधों को घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों के उपलब्ध न होने के पर्याप्त प्रमाण के साथ स्थायी समिति को प्रस्तुत किया जाएगा।
- 4. स्थायी समिति**
- इस नीति के कार्यान्वयन का पर्यवेक्षण करने के लिए इस्पात मंत्रालय (एम ओ एस) के अधीन एक स्थायी समिति का गठन किया जाएगा। जिसके अध्यक्ष सचिव इस्पात होंगे। इस समिति में उद्योग/उद्योग संघ/सरकारी संस्था अथवा निकाय/इस्पात मंत्रालय (एम ओ एस) से लिए गए विशेषज्ञ होंगे। इस्पात मंत्रालय में उक्त समिति के पास निम्नलिखित के लिए अधिदेश होगा :
- 4.1 इस नीति के कार्यान्वयन की मॉनीटरिंग करना
- 4.2 परिशिष्ट क और परिशिष्ट ख में यथा उल्लिखित लौह एवं इस्पात उत्पादों की सूची और घरेलू बिक्री वर्धन की आवश्यकता से संबंधित मानदंडों की समीक्षा करना और उसे अधिसूचित।



- 4.3 खंड 3 के अनुसार खरीद एजेंसियों को अपवर्जन की स्वीकृति देने सहित इस नीति के कार्यान्वयन के लिए आवश्यक स्पष्टीकरण जारी करना।
- 4.4 शिक्कायत निवारण करने के लिए एक अलग समिति का गठन करना।
- 4.5 स्थायी समिति इस्पात मंत्रालय को अनुमोदन हेतु अपनी सिफारिशें प्रस्तुत करेगी।
- 5. सरकार द्वारा खरीदे जाने वाले लौह एवं इस्पात उत्पादों को अधिसूचित करना**
- 5.1 निम्नलिखित दिशानिर्देशों का उपयोग इस नीति के अंतर्गत उपरोक्त उत्पादों की पहचान करने और उमें अधिसूचित करने के लिए किया जा सकता है :
- 5.1.1 यह नीति परिशिष्ट क में दिए गए अनुसार लौह एवं इस्पात उत्पादों और परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल पर लागू है।
- 5.1.2 परिशिष्ट क में लौह एवं इस्पात उत्पादों की सूची दी गई है जिसका निर्माण अनन्य रूप से घरेलू स्तर पर किया जाना है और उसका आयात इस्पात मंत्रालय के अनुमोदन के बिना नहीं किया जा सकता है।
- 5.1.3 परिशिष्ट ख में पूंजीगत माल की एक सूची (जो विस्तृत नहीं है) दी गई है जिसके लिए खरीद संबंधी बरीयता घरेलू स्तर पर निर्मित पूंजीगत माल को दी जाएगी, यदि उनकी दी गई कीमत सदृश्य आयात किये गये पूंजीगत माल के लिए दी गई कीमत के 20 प्रतिशत के अंदर आती हो।
- 5.1.4 इस नीति का उद्देश्य सभी लौह एवं इस्पात उत्पादों को अधिसूचित करना है जिसकी खरीद सरकारी एजेंसियों द्वारा सरकारी परियोजनाओं के लिए की जाती है और न कि वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए उत्पादों के उत्पादन में प्रयोग करने के उद्देश्य से की गई हो।
- 5.1.5 यह नीति सरकार के मंत्रालय अथवा विभाग के द्वारा निधि प्रदत्त सभी परियोजनाओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों पर लौह एवं इस्पात उत्पादों की खरीद के लिए लागू है।
- 5.1.6 यह नीति उन परियोजनाओं पर लागू होगी जहां लौह एवं इस्पात उत्पादों का खरीद मूल्य 25 करोड़ रुपए से अधिक होता हो। यह नीति अन्य खरीद (गैर परियोजना) के लिए भी लागू होगी जहां उस सरकारी संगठन के लिए लौह एवं इस्पात उत्पादों का वार्षिक खरीद मूल्य 25 करोड़ रुपए से अधिक होता हो।
- 5.1.7 यह नीति सरकार के मंत्रालय अथवा विभाग अथवा उनके सार्वजनिक क्षेत्र के उपक्रमों की किसी अन्य आवश्यकता को पूरा करने के लिए और/अथवा ई पी सी संविदा को पूरा करने के लिए प्राइवेट एजेंसियों द्वारा लौह एवं इस्पातों की खरीद पर लागू है।
- 5.1.8 घरेलू लौह एवं इस्पात उत्पादों के विभिन्न ग्रेडों की उपलब्धता का विश्लेषण इस नीति के अंतर्गत अधिसूचित करने से पहले करना होगा। केवल उन लौह एवं इस्पात को उत्पादों को जिनके संबंध में कम से कम एक घरेलू निर्माता मौजूद हो, अधिसूचित किया जाएगा। स्थायी समिति से परामर्श किया जा सकता है।
- 5.1.9 यह नीति यथा लागू निर्धारित गुणवत्ता मानदंडों के अनुपालन में उत्पादित परिशिष्ट ख में दिए गए लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के लिए लागू है।
- 5.1.10 लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत मालों की घरेलू खरीद के लिए नीति लौह एवं इस्पात उत्पादों का निर्माण करने के लिए और न कि वाणिज्यिक पुनः बिक्री के उद्देश्य से पूंजीगत मालों की खरीद के वास्ते और सार्वजनिक क्षेत्र के इस्पात विनिर्माताओं और उनके प्रशासनिक नियंत्रणाधीन सभी एजेंसियों/प्रतिष्ठानों पर लागू है।
- 5.1.11 यह नीति ई पी सी संविदा और/अथवा सार्वजनिक क्षेत्र से इस्पात निर्माताओं और उनके प्रशासनिक नियंत्रण के अधीन सभी एजेंसियों/प्रतिष्ठानों की किसी अन्य आवश्यकता को पूरा करने के लिए निजी एजेंसियों द्वारा लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की खरीद पर लागू है।
- 5.1.12 सरकारी एजेंसियां जो लौह एवं इस्पात उत्पादों के निर्माण के लिए पूंजीगत माल और लौह एवं इस्पात उत्पादों की खरीद में उन स्थितियों में शामिल है जहां लौह एवं इस्पात उत्पादों का उल्लेख परिशिष्ट क और परिशिष्ट ख में नहीं किया गया हो, स्थायी समिति को निर्धारित मानदंडों के साथ इस उत्पाद के विवरण और तकनीकी विनिर्देशन उपलब्ध करायेगा। स्थायी समिति खंड 3 और खंड 4 में अधिदेश के अनुसार कार्य करेगी।

- 5.2 इस्पात मंत्रालय (एम ओ एम) परिशिष्ट क में दिए गए न्यूनतम निर्धारित घरेलू मूल्यवर्धन के साथ लौह एवं इस्पात उत्पादों को अधिसूचित करेगा।
- 5.3 लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के संबंध में नीतिगत दिशानिर्देश, परियोजना के आकार पर विचार किये बिना परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की सभी खरीदों के लिए सार्वजनिक क्षेत्र के इस्पात निर्माताओं पर लागू होंगे।
- 5.4 परिशिष्ट क में लौह एवं इस्पात उत्पादों के लिए तथा परिशिष्ट ख में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल के लिए सुझाव दिए गए न्यूनतम घरेलू मूल्यवर्धन आवश्यकता घरेलू आपूर्तिकर्ता का आधार, आपूर्तिकर्ताओं की संख्या और खपत की तुलना में आयात का अनुपात जैसे कारकों के आधार पर तय किया गया है।
- 5.5 घरेलू मूल्यवर्धन आवश्यकता संबंधी मानदंडों का इस प्रकार से निर्धारण किया जाएगा जिस से कि यह किमी दिए गए समय में लौह एवं इस्पात उत्पादों के लिए घरेलू उद्योग की औसत/औसत से अधिक निर्माण क्षमता दर्शाता हो। स्थायी समिति द्वारा समय समय पर उपयुक्त रूप से इसकी समीक्षा की जाएगी और आवश्यकता पड़ने पर इस्पात मंत्रालय के अनुमोदन से इसमें संशोधन किया जाएगा।
- 6. सरकार एवं सरकारी एजेंसियों द्वारा खरीद के लिए निविदा प्रक्रिया**
- 6.1 खरीद करने वाली/सरकारी एजेंसियां डी एम आई एंड एस पी का पालन करते समय वित्त मंत्रालय और सी वी सी के अनुदेशों के अनुसार मानक खरीद संबंधी प्रक्रियाओं का पालन करेगी। यह नीति सभी निविदाओं जहां कीमत बोली नहीं खोली गई है, में इसके अधिसूचना की तिथि से लागू होगी।
- 6.2 दोनों वस्तुओं की खरीद तथा ई पी सी संविदाओं के लिए निविदा दस्तावेज में लौह एवं इस्पात उत्पादों का निर्माण करने के लिए लौह एवं इस्पात उत्पादों तथा पूंजीगत माल (जैसा कि परिशिष्ट क और परिशिष्ट ख में दर्शाया गया है, के लिए बोली लगाने वाले द्वारा न्यूनतम निर्धारित घरेलू मूल्यवर्धन का पालन करने के लिए अर्हता मानदंडों का स्पष्ट उल्लेख होना चाहिए।
- 6.3 घरेलू उत्पादों के विकास का सहयोग करने में, लौह एवं इस्पात व्यापार क्रियाकलापों में घरेलू मूल्यवर्धन का लक्ष्य निर्धारित किया गया है जिसे परिशिष्ट क और परिशिष्ट ख में दिया गया है।
- 6.4 परिशिष्ट क में लौह और इस्पात उत्पादों के खरीद की प्रक्रिया केवल उन निर्माताओं/आपूर्तिकर्ताओं के लिए ही खुली रहेगी जिसमें घरेलू मूल्यवर्धन लक्ष्यों को पूरा करने/उमसे ज्यादा पूरा करने की क्षमता हो। घरेलू मूल्यवर्धन लक्ष्यों को पूरा न करने वाले निर्माता/आपूर्तिकर्ता बोली लगाने में भाग लेने के लिए पात्र नहीं हैं।
- 6.5 परिशिष्ट ख में दी गई मदों के मामलों में, यदि खरीद करने वाली कंपनी की राय में, निविदाओं (खरीदी गई मात्रा) को 50:50 के निर्धारित अनुपात में नहीं बांटा जा सकता है, तब उनके पास मात्रा जो 50 प्रतिशत से कम नहीं हो, जो कि विभाज्य हो, के लिए पात्र घरेलू निर्माता को संविदा देने का अधिकार होगा।
- 6.6 उपर्युक्त शर्त को जारी रखते हुए, परिशिष्ट ख की मदों के लिए, यदि निविदा दी गई मद विभाज्य न हो (खरीद करने वाली कंपनी द्वारा निविदा दस्तावेज में शामिल किए जाने के लिए) यह संविदा समग्र मात्रा के लिए पात्र घरेलू निर्माता को दी जा सकती है।
- 6.7 परिशिष्ट ख के मदों के मामलों में, यदि घरेलू मूल्यवर्धन की आवश्यकताओं को पूरा करने वाले पात्र निर्माताओं में से कोई भी एल1 की बोली के अनुरूप न हो, तब एल1 की बोली धारण करने वाले मूल बोली लगाने वाला खरीद के पूर्ण मूल्य के लिए आदेश प्राप्त करेंगे।
- 6.8 वे बोली लगाने वाले जो लौह एवं इस्पात उत्पादों के घरेलू निर्माताओं के बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह हैं इस नीति के अंतर्गत घरेलू निर्माताओं की ओर से बोली लगाने के लिए पात्र हैं। हालांकि, यह निम्नलिखित शर्तों के अध्वधीन होगा।
- 6.8.1 बोली लगाने वाले घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों की बिक्री करने के लिए घरेलू निर्माता द्वारा जारी किए गए अधिकार प्रमाण पत्र प्रस्तुत करेगा।



- 6.8.2 यदि खरीद को डी एम आई एंड एम पी नीति के परिशिष्ट क के अंतर्गत शामिल किया गया हो तब बोली लगाने वाला यह घोषणा करते हुए खरीद करने वाली एजेंसी को घरेलू निर्माता द्वारा जारी किया गया स्व-प्रमाणन का शपथ पत्र प्रस्तुत करेगा कि लौह और इस्पात उत्पादों का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के मामले में किया जाता है।
- 6.8.3 यदि खरीद को डी एम आई एंड एम पी नीति के परिशिष्ट ख के अंतर्गत शामिल किया गया हो तब बोली लगाने वाला यह घोषणा करते हुए घरेलू निर्माता को सांविधिक लेखा परीक्षक द्वारा जारी किया गया प्रमाणन प्रस्तुत करेगा कि लौह और इस्पात उद्योग में उपयोग किये जाने वाले पूंजीगत माल का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के मामले में किया जाता है।
- 6.8.4 बोली लगाने वाले की यह जिम्मेदारी होगी कि वह इस नीति के अनुसार खरीद करने वाली एजेंसी को घरेलू निर्माता द्वारा जारी किये जाने के लिए अपेक्षित अन्य आवश्यक दस्तावेज प्रस्तुत करे।

### 7. घरेलू मूल्यवर्धन आवश्यकता

- 7.1 घरेलू रूप में निर्मित लौह और इस्पात उत्पाद अथवा पूंजीगत माल के रूप में उत्पाद के रूप में पात्र होने के लिए न्यूनतम घरेलू मूल्यवर्धन आवश्यकता का उल्लेख परिशिष्ट क और परिशिष्ट ख में किया गया है।
- 7.2 घरेलू मूल्यवर्धन निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजक कीमत) होगी जिसमें से प्रतिशत में निवल बिक्री कीमत के एक अनुपात के रूप में भारत में निर्माण करने वाले संयंत्र में आयात की गई इनपुट सामग्री की पहुंच लागत (सभी सीमा शुल्कों को शामिल करते हुए) घटाई जाएगी।
- 7.2.1 यदि लौह और इस्पात उत्पादों को घरेलू इनपुट इस्पात (अर्ध तैयार/तैयार इस्पात) का उपयोग करके निर्माण किया जाता हो, तब खरीदी गई मात्रा और अन्य संबंधित दस्तावेजों के साथ वास्तविक घरेलू उत्पादों से खरीद का बीजक खरीद करने वाली सरकारी एजेंसी को अवश्य प्रस्तुत किया जाना चाहिए।
- 7.2.2 यदि लौह एवं इस्पात उत्पादों ने इनपुट इस्पात का आयात किया हो तब खरीदी गई मात्रा और अन्य संबंधित दस्तावेजों के साथ वास्तविक उत्पादकों से खरीदों के बीजकों को अलग से प्रस्तुत किया जाना चाहिए। घरेलू मूल्यवर्धन की सीमा निकालने के लिए, दोनों इनपुट इस्पातों (आयात किये और घरेलू) की भारित औसत पर विचार यह सुनिश्चित करने के लिए किया जाएगा कि इस नीति की न्यूनतम निर्धारित घरेलू मूल्यवर्धन आवश्यकता का पालन किया गया है।
- 7.3 यह सिफारिश की जाती है कि निविदा की प्रक्रिया में भाग लेने वाले प्रत्येक बोली लगाने वाले को नीचे दिए गए सूत्र का उपयोग करते हुए घरेलू मूल्यवर्धन की गणना करनी चाहिए ताकि यह सुनिश्चित किया जा सके कि दावा किये गये घरेलू मूल्यवर्धन इस नीति के न्यूनतम निर्धारित घरेलू मूल्यवर्धन के अनुरूप है।

### लौह एवं इस्पात उत्पादों के लिए

% घरेलू मूल्यवर्धन

$$= \frac{\text{अंतिम उत्पाद की निवल बिक्री कीमत} - \text{संयंत्र में आयात किये गये लौह अथवा इस्पात की पहुंच लागत}}{\text{अंतिम उत्पाद की निवल बिक्री कीमत}} \times 100\%$$

### पूंजीगत माल के लिए

% घरेलू मूल्यवर्धन

$$= \frac{\text{अंतिम उत्पाद की निवल बिक्री कीमत} - \text{संयंत्र में आयात किये गये इनपुट सामग्री की पहुंच लागत}}{\text{अंतिम उत्पाद की निवल बिक्री कीमत}} \times 100\%$$

### 8. प्रमाणन और लेखा परीक्षण

- 8.1 परिशिष्ट क में दिए गए उत्पादों के लिए, प्रत्येक घरेलू निर्माता यह घोषणा करते हुए खरीद करने वाली सरकारी एजेंसी को स्व-प्रमाणन का शपथ पत्र प्रस्तुत करेगा कि लौह एवं इस्पात उत्पाद का निर्धारित घरेलू मूल्यवर्धन के संबंध में घरेलू स्तर पर निर्माण किया गया है। परिशिष्ट ख के पूंजीगत माल के लिए, बोली लगाने वाला यह घोषणा करते हुए घरेलू निर्माता को सांविधिक लेखा परीक्षक द्वारा जारी किया गया प्रमाणन प्रस्तुत करेगा कि पूंजीगत माल का निर्माण घरेलू स्तर पर निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। वे बोली लगाने वाले जो लौह एवं इस्पात उत्पादों के घरेलू निर्माताओं का एकमात्र बिक्री एजेंट/अधिकृत वितरक/अधिकृत डीलर/अधिकृत आपूर्ति गृह हैं, ई पी सी के अंतर्गत घरेलू निर्माताओं की ओर से बोली लगाने के लिए पात्र हैं।

बोली लगाने वाला घरेलू निर्माताओं के द्वारा जारी किए गए स्व-प्रमाणन और सांविधिक लेखा परीक्षकों द्वारा जारी किये गये प्रमाणनों को यह घोषणा करते हुए खरीद करने वाली एजेंसी को प्रस्तुत करेगा कि लौह एवं इस्पात उत्पादों का घरेलू स्तर पर निर्माण निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। स्व-प्रमाणन का शपथ पत्र इन दिशानिर्देशों से संलग्न **प्रपत्र 1** में प्रस्तुत किया जाएगा।

- 8.2 घरेलू निर्माता की यह जिम्मेदारी होगी कि वह यह सुनिश्चित करे कि इस प्रकार से दावा किये गये उत्पादों का घरेलू स्तर पर उम उत्पाद के लिए निर्धारित घरेलू मूल्यवर्धन के संबंध में किया गया है। बोली लगाने वाले से यह भी अपेक्षित होगा कि वह घरेलू निर्माता के सांविधिक लेखा परीक्षकों द्वारा विधिवत प्रमाणित अर्धवार्षिक (मिंतंबर 30 और मार्च 31) आधार पर घरेलू मूल्यवर्धन प्रमाणपत्र उपलब्ध कराये कि पहले 6 महीनों के दौरान इस उत्पाद के लिए किये गये घरेलू मूल्यवर्धन के दावे इस नीति के अनुसार हैं। इस प्रकार के प्रमाण पत्र को संबंधित सरकारी एजेंसियों को प्रत्येक छमाही के शुरू होने के 60 दिनों के भीतर प्रस्तुत किया जाएगा और उस उत्पादों की आपूर्ति को पूरा करने तक प्रस्तुत करता रहेगा।
- 8.3 खरीद करने वाली एजेंसी बोली लगाने वाले द्वारा प्रस्तुत किये गये इस्पात उत्पाद में घरेलू मूल्यवर्धन के संबंध में स्व-प्रमाणन का शपथ पत्र स्वीकार करेगा। सामान्य तौर पर खरीद करने वाली एजेंसी की यह जिम्मेदारी होगी कि वह इस दावे की सत्यता की जांच करे। इसकी सत्यता प्रदर्शित करने की जिम्मेदारी बोली लगाने वाले की होगी जब उसे ऐसा करने के लिए कहा जाए।
- 8.4 यदि खरीद करने वाली एजेंसी अथवा संबंधित सरकारी एजेंसी द्वारा लौह एवं इस्पात उत्पादों में घरेलू मूल्यवर्धन के संबंध में बोली लगाने वाले के दावे के विरुद्ध कोई शिकायत प्राप्त होती है तब खरीद करने वाली एजेंसी के पास सभी संबंधित दस्तावेजों का निरीक्षण करने और उसकी जांच करने तथा निर्णय लेने का पूर्ण अधिकार होगा। यदि कोई स्पष्टीकरण की आवश्यकता होती है तब मामले को तकनीकी सहायता के लिए अनुरोध के साथ इस्पात मंत्रालय को भेजा जा सकता है।
- 8.5 सरकारी एजेंसी को भेजे गए किसी शिकायत का निपटारा सभी आवश्यक दस्तावेजों को प्रस्तुत करने के साथ इसे भेजे जाने के 4 सप्ताह के भीतर किया जाएगा। बोली लगाने वाले से यह अपेक्षित होगा कि वह शिकायत दायर करने के 2 सप्ताह के भीतर सरकारी एजेंसी को लौह एवं इस्पात उत्पादों में दावा किये गये घरेलू मूल्यवर्धन के समर्थन में आवश्यक दस्तावेज प्रस्तुत करे।
- 8.6 यदि इस मामले को इस्पात मंत्रालय के पास भेजा जाता है तब इस्पात मंत्रालय के अधीन गठित शिकायत निवारण समिति सरकारी एजेंसी के दृष्टिकोण पर विचार करने के बाद बोली लगाने वाले से सभी दस्तावेजों के प्राप्त होने और उसका संदर्भ भेजे जाने के 4 सप्ताह के भीतर शिकायत का निपटारा करेगी। बोली लगाने वाले से यह अपेक्षित होगा कि वे इस मामले के संदर्भ के 2 सप्ताह के भीतर इस्पात मंत्रालय के अंतर्गत शिकायत निवारण समिति को लौह एवं इस्पात उत्पादों में दावा किए गए घरेलू मूल्यवर्धन के समर्थन में आवश्यक दस्तावेज प्रस्तुत करे। यदि बोली लगाने वाले द्वारा कोई सूचना प्रस्तुत नहीं की जाती है तब शिकायत निवारण समिति दावे की प्रमाणिकता अधिक करने के लिए सरकारी एजेंसी के परामर्श से आगे आवश्यक कार्रवाई कर सकती है।
- 8.7 घरेलू मूल्यवर्धन की निर्धारित सीमा का आकलन करने की लागत का वहन खरीद करने वाली एजेंसी द्वारा किया जाएगा यदि घरेलू मूल्यवर्धन प्रमाण पत्र के अनुसार सही पाया गया हो। हालांकि, यदि ऐसा पाया गया हो कि दावा किए गए अनुसार घरेलू मूल्यवर्धन सही नहीं है तब आकलन की लागत बोली लगाने वाले द्वारा भुगतान के योग्य होगी जिन्होंने एक गलत प्रमाण पत्र प्रस्तुत किया है। इसे लागू करने के तरीके को निविदा दस्तावेज में परिभाषित किया जाएगा।

## 9. प्रतिबंध

- 9.1 प्रत्येक सरकारी एजेंसी निविदा दस्तावेज में निर्धारित घरेलू मूल्यवर्धन का बोली लगाने वाले के द्वारा गलत घोषणा किए जाने की स्थिति में दण्ड को स्पष्ट रूप से परिभाषित करेगा। इस दण्ड में ऐसे निर्माता/सेवा प्रदाता की ई एम डी को जब्त करना, अन्य वित्तीय दंड लगाना और उसे काली सूची में डालना शामिल हो सकता है।
- 9.2 संबंधित बोली लगाने वाले के द्वारा इस्पात मंत्रालय को किसी प्रकार की शिकायत भेजे जाने की स्थिति में, 10 लाख रुपए अथवा खरीदी जा रही डी एम आई एंड एस पी के मूल्य का 0.2 प्रतिशत (अधिकतम 20 लाख के अध्यक्षीन) इसमें से जो भी अधिक हो, का शिकायत शुल्क होगा जिसका भुगतान शिकायतकर्ता द्वारा शिकायत के साथ इस्पात मंत्रालय के अधीन शिकायत निवारण समिति के पास जमा किए गए डिमाण्ड ड्राफ्ट के द्वारा किया जाएगा। यदि, शिकायत को सही नहीं पाया जाता है तब सरकारी एजेंसी के पास उक्त राशि को जब्त करने का अधिकार सुरक्षित है। यदि शिकायत पर्याप्त रूप से सही पाई जाती है तब शिकायतकर्ता द्वारा जमा किए गए शुल्क को बिना किसी ब्याज के वापिस किया जाएगा।



**10. इस्पात मंत्रालय द्वारा कार्यान्वयन की मॉनीटरिंग**

- 10.1 इस नीति के प्रावधान प्रकाशन की तिथि से 5 वर्षों की अवधि के लिए लागू रहेंगे। इस नीति की अवधि को इस्पात मंत्रालय के विवेक से और आगे बढ़ाया जा सकता है।
- 10.2 इस्पात मंत्रालय इस नीति के कार्यान्वयन की मानीटरिंग करने के लिए नोडल मंत्रालय होगा।
- 10.3 डी एम आई एंड एम पी नीति के अंतर्गत सभी लागू एजेंसियां इस नीति का कार्यान्वयन मुनिश्चित करेंगी और वार्षिक रूप से जून के महीने में एक घोषणा भेजेगी जिसमें इस नीति के अनुपालन की सीमा और पिछले वित्तीय वर्ष के दौरान उसके अनुपालन न किए जाने के कारणों को दर्शाया जाएगा।

**इस्पात मंत्रालय को संदर्भ**

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

**परिशिष्ट क - धरेलू स्तर पर निर्मित उत्पादों के लिए अनन्य**

क्र. सं.	लौह एवं इस्पात उत्पादों की सांकेतिक सूची	लागू एच एस कोड	न्यूनतम धरेलू मूल्यवर्धन आवश्यकता
1	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, हॉट रोलड, न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7208	50%
2	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, कोल्ड रोलड (कोल्ड - कम किया हुआ), न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7209	50%
3	600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7210	50%
4	600 मि. मी. से कम की चौड़ाई वाले लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, न ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7211	35%
5	600 मि. मी. से कम की चौड़ाई का लौह अथवा गैर एलॉय इस्पात का फ्लेट रोल उत्पाद, ढका हुआ, प्लेट लगाया हुआ अथवा कोट किया हुआ	7212	35%
6	लौह एवं गैर एलॉय इस्पात का अनियमित रूप से ऍंठा हुआ क्वाडल में बार्स और रॉड, हॉट रोलड	7213	35%
7	लौह अथवा गैर एलॉय इस्पात के अन्य बार्स और रॉड्स जिसे फोर्ज किए जाने की तुलना में आगे अधिक वर्क नहीं किया हुआ, हॉट रोलड, हॉट ड्रॉन अथवा हॉट एक्सट्रूडेड परंतु रोलिंग के बाद उसे टिबिस्ट किये जाने सहित	7214	35%
8	लौह अथवा गैर एलॉय इस्पात का अन्य बार्स एंड रोड्स	7215	35%
9	लौह अथवा गैर एलॉय इस्पात का एंगल, शेप और सेक्शनस	7216	35%
10	लौह अथवा गैर एलॉय इस्पात का तार	7217	50%
11	600 मि. मी. अथवा उससे अधिक की चौड़ाई का स्टेनलैस इस्पात का फ्लेट रोलड इस्पात	7219	50%
12	600 मि. मी. से कम की चौड़ाई का स्टेनलैस इस्पात का फ्लेट रोलड इस्पात	7220	50%
13	स्टेनलैस स्टील का अन्य बार्स और रोड्स; स्टेनलैस स्टील का एंगल शेप और सेक्शनस	7222	50%
14	अन्य एलॉय इस्पात का तार	7229	35%
15	लौह अथवा इस्पात को रेल, रेलवे अथवा ट्रामवे ट्रेक निर्माण सामग्री	7302	50%



16	कास्ट लौह का ढूब, पाइप और होलो पाइप	7303	35%
17	लौह (कास्ट आयरन को छोड़कर) अथवा इस्पात का ढूब पाइप और होलो प्रोफाइल, मीमलैस	7304	35%
18	लौह अथवा इस्पात का सर्कुलर क्रॉस सेक्शन वाले अन्य ढूब और पाइप (उदाहरण के लिए, वेल्ड किया हुआ, रिबेट किया हुआ अथवा समान रूप से बंद किया गया हुआ), जिमकी बाहरी त्रिज्या 406.4 मि. मी. से अधिक हो	7305	35%
19	लौह अथवा इस्पात के अन्य ढूब, पाइप और होलो प्रोफाइल (उदाहरण के लिए ओपन मीन अथवा वेल्ड किया हुआ, रिबेट किया हुआ अथवा समान रूप से बंद किया गया हुआ)	7306	35%
20	लौह अथवा इस्पात का ढूब अथवा पाइप फिटिंग (उदाहरण के लिए, कनेक्टर/कप्लिंग, एल्बो स्लीव्स)	7307	35%
21	स्टेनलैस स्टील का अनियमित रूप से ँंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोल्ड	7221	35%
22	स्टेनलैस स्टील का वायर	7223	35%
23	इलेक्ट्रिकल स्टील सहित 600 मि. मी. अथवा उससे अधिक की चौड़ाई वाले अन्य एलॉय स्टील का फ्लेट रोल्ड इस्पात	7225	35%
24	इलेक्ट्रिकल स्टील सहित 600 मि. मी. से कम की चौड़ाई वाले अन्य एलॉय स्टील का फ्लेट रोल्ड इस्पात	7226	35%
25	अन्य एलॉय स्टील का अनियमित रूप से ँंठा हुआ क्वाइल में बार्स और रोड, हॉट रोल्ड	7227	15%
26	अन्य एलॉय स्टील का अन्य बार्स और रोड्स; अन्य एलॉय स्टील का एंगल, शेप्स और सेक्शन्स; एलॉय अथवा नॉन एलॉय स्टील का होलो ड्रिल बार्स और रोड्स	7228	35%
27	लौह अथवा इस्पात की शीट पाइलिंग, चाहे ड्रिल किया हुआ हो अथवा नहीं, चाहे पंच किया हुआ हो अथवा नहीं, चाहे असेम्बल किये हुए तत्वों से बना हुआ हो अथवा नहीं; लौह अथवा इस्पात का वेल्ड किया हुआ एंगल, शेप और सेक्शन्स	7301	15%
28	स्ट्रक्चर्स (9406 के शीर्ष का प्रीफेब्रिकेटेड भवनों को छोड़कर) और स्ट्रक्चर्स का हिस्सा	7308	15%
29	300 लीटर से अधिक क्षमता का लौह अथवा इस्पात का किसी सामग्री (कम्प्रेस किए हुए अथवा सरलीकृत गैस को छोड़कर) के लिए भंडार, टैंक, वैट और समान कन्टेनर चाहे उसे लाइन किया गया हो अथवा नहीं या उसे हीट से इन्सुलेट किया गया हो अथवा नहीं लेकिन यांत्रिक अथवा तापीय उपक्रम से युक्त न हो	7309	15%
30	अधिकतम 300 लीटर की क्षमता का लौह अथवा इस्पात का किसी सामग्री (कम्प्रेस किए हुए अथवा सरलीकृत गैस को छोड़कर) के लिए टैंक, कास्ट, ड्रम, केन, बॉक्स और समान कन्टेनर चाहे उसे लाइन किया गया हो अथवा नहीं या उसे हीट से इन्सुलेट किया गया हो अथवा नहीं लेकिन यांत्रिक अथवा तापीय उपक्रम से युक्त न हो	7310	15%
31	लौह अथवा इस्पात का कम्प्रेस किया हुआ अथवा सरलीकृत गैस के लिए कन्टेनर	7311	15%
32	लौह अथवा इस्पात का स्टेंडिड वायर, रोप, केबल, प्लेटिड बैंड, स्लिंग और उसके समान वस्तु जिसे त्रिचूतीय रूप से इन्सुलेट न किया गया	7312	15%
33	लौह अथवा इस्पात का फेनसिंग के लिए उपयोग किये जाने वाला बार किया हुआ वायर; ट्रिवस्ट किया हुआ हूप अथवा सिंगल प्लेट वायर, बार्स किया हुआ अथवा नहीं और लूज तरीके से ट्रिवस्ट किया हुआ डबल वायर	7313	15%
34	लौह अथवा इस्पात तार का ड्रिल, नेटिंग और फेनसिंग; लौह अथवा इस्पात का विस्तार किया हुआ धातु	7314	15%

35	लौह अथवा इस्पात का चैन और उसका हिस्सा	7315	15%
36	लौह अथवा इस्पात का टैंकर, ग्रेपनेल्म और उसका हिस्सा	7316	15%
37	लौह एवं इस्पात की वस्तुएं	7317	15%
38	लौह एवं इस्पात की वस्तुएं	7318	15%
39	लौह एवं इस्पात की वस्तुएं	7319	15%
40	लौह अथवा इस्पात का स्प्रिंग और स्प्रिंग के लिए लीन्स	7320	15%
41	लौह अथवा इस्पात का स्टोव्स, रेंज, ग्रेड, कूकर (केंद्रीय हिटिंग के लिए सहायक बायलरों के साथ उन वस्तुओं सहित), वारवेक्यूज, ब्रेजियर्स, गैस रिंग, प्लेट वामर्स और समान गैर-विद्युतीय घरेलू उपकरण और उसका हिस्सा	7321	15%
42	लौह अथवा इस्पात का केंद्रीय हिटिंग के लिए रेडियेटर जिसे विद्युतीय रूप से हीट न किया गया हो और उसका हिस्सा; लौह अथवा इस्पात का हेयर हीटर और हॉट एयर वितरक जिसे विद्युतीय रूप से हीट न किया गया हो, फेन अथवा ब्लोअर जो मोटर से चलती हो और उसके हिस्से को शामिल करते हुए	7322	15%
43	लौह अथवा इस्पात का टेबल और समान घरेलू वस्तुएं और उसका हिस्सा	7323	15%
44	लौह अथवा इस्पात का सेनेटरी वेयर और उसको पार्ट्स	7324	15%
45	लौह अथवा इस्पात का अन्य कास्ट सामान	7325	15%
46	लौह अथवा इस्पात का विद्युतीय इस्पात और अन्य वस्तु	7326	15%
47	रेलवे अथवा ट्रामवे पेसेंजर कोच जो स्वयं आगे नहीं बढ़ता हो	8605	50%
48	रेलवे अथवा ट्रामवे माल वेन और वेगेन जो स्वयं आगे नहीं बढ़ता हो	8606	50%
49	रेलवे अथवा ट्रामवे लोकोमोटिव का हिस्सा अथवा रोलिंग स्टॉक जैसे बोगिज, बिसल बोगिज, एक्सेल और फोज्ड किया हुआ पहिया और उसका हिस्सा	8607	50%

विवरणों में शामिल किए गए उत्पाद सांकेतिक हैं, विनिर्दिष्ट एच एम कोड के अंतर्गत सभी उत्पादों को परिशिष्ट के भाग के रूप में शामिल किया गया है।

## परिशिष्ट ख

## लौह और इस्पात उत्पादों का निर्माण करने के लिए पूंजीगत माल की सांकेतिक सूची (जो विस्तृत नहीं है)

क्र. सं.	संयंत्र शॉप	पूंजीगत माल	न्यूनतम घरेलू मूल्यवर्धन आवश्यकता
1	कच्चा माल संभाल प्रणाली	चूर्ण की हुई सामग्री के लिए एप्रोन फीडर, बेरल कप्लिंग, हैवी ड्यूटी वियेरिंग, हाइड्रोलिक डिक्स ब्रेक्स, टैंकर एंड कंटेनर, पाइप कंवेयर के लिए कंवेयर बेल्ट, हार्ड एंगल कंवेयर प्रणाली, क्रशर्स, क्रेन रेल लुब्रिकेशन, चार गरडर ग्राइडर ई ओ टी क्रेन, क्रेन वेइंग प्रणाली, क्रेन एयर कंडीशनिंग, फ्यूड कप्लिंग, 4 लिफ्ट ट्रक्स, हाइड्रोलिक मोटर्स, हाइड्रोलिक सिस्टम, लॉकिंग एसेम्बली (फ्रिक्शन ग्रिप), लोड सेल्स, लेवल सेन्सर्स, पाइप कंवेयर प्रणाली, प्लग/पाडेल फीडर, न्यूमेटिक हुलाई - धना एवं लिन फेस, रिक्लेमर्स, रेडियो रिमोट कंट्रोल, रेल फिक्सिंग व्यवस्था (विशेष), रेपिड/फ्लेड लोडिंग प्रणाली, स्टेर्स, स्पेशल स्क्रीन, स्लिव रिंग वियेरिंग, ट्रिप्लर्स, ट्रांसफर कार, टॉर्स (स्पेशल), वाइब्रेशन, आइसोलेशन प्रणाली (स्प्रिंग डम्पर) वेगन टिप्लर्स, वेगन लोडर	50%
2	मिनिरल बेनिफिकेशन (लौह अयस्क और कोयला) उपकरण	इंडस्ट्रीयल क्रशर्स, ग्राइनिंग मिल, परम्परागत स्क्रीन, स्लूरी पम्पस, हिरेट थिकनर्स, फिल्टर्स, हाइड्रोक्लोन्स	50%



3	कोक अवेन	कोक ओवन मिलिका रिफेक्टरी, एन्क्रेज सिस्टम, ब्रंच तरडन के साथ वेस्ट गैस वाल, फ्लेस प्लेट, डोर फ्रेम, डोर बॉडी, माइनर कास्टिंग: गुजनेक, बाल बॉक्स, ए पी लिड, चार्जिंग और इन्स्पेक्शन होल लिड एंड फ्रेम रिचर्सिंग मंकेनिजम, केंद्रीकृत लूत्रिकेशन प्रणाली हाइड्रोजेट डोर क्लीनिंग तंत्र, कोड कंवेयर सिस्टम, स्क्रिप होइस्ट, डोर लोवरिंग रैक, आइसोलेशन/रिचर्सिंग कॉक्स, II ऑटोमेशन, अवेन मशीन	50%
4	उप-उत्पाद संयंत्र	प्राथमिक गैस कूलर, इलेक्ट्रोस्टैटिक तार प्रेसिपिटेटर, H <sub>2</sub> S, NH <sub>3</sub> और नपथलिन स्कूब्वर, कोम्बी स्ट्रीप्पर, फ्लेशिंग लिक्व पम्प, क्लास किन, क्लाक रियेक्टर, वेस्ट हीट बायलर, डिक्लेटर्स	50%
5	सिंटर संयंत्र उपकरण	पेलेट कार, ड्राइव/डिस्चार्ज इंड स्पोकेट एंसेम्बली कब्ड रेल, स्लाइड रेल, हॉट सिंटर ब्रेकर और गिजली, डिप रेल एंड रनिंग रेल, प्रोसेस फेन के लिए इम्पेलर एंसेम्बली, सिंटर मशीन का ड्राइव एंसेम्बली, उच्च तीव्रता वाला मिक्सर और नोडूलाइजर	50%
6	पेलेट संयंत्र उपकरण	पेलेट कार, ड्राइव/डिस्चार्ज इंड स्पोकेट एंसेम्बली कब्ड रेल, स्लाइड रेल, रनिंग रेल बरटिकल रोलर मिल, प्रोसेस फेन के लिए इम्पेलर एंसेम्बली, इनडूरेटिंग मशीन का ड्राइव एंसेम्बली, उच्च तीव्रता वाला मिक्सर, बालिंग डिक्स, सिंगल डेक्स रोलर स्क्रीन एंड डबल डेक्स रोलर स्क्रीन	50%
7	ब्लास्ट फरनेस उपकरण	ब्लेडर बाल के साथ बेल रहित टॉप प्रणाली, एस जी आयरन स्टेव कूलर, कोपर स्टेव कूलर, स्टॉक लेवल इंडिकेटर (रडार टाइप), मड गन, ड्रिलिंग मशीन एंड मेनिपुलेटर, गैस किल्लिंग प्लांट प्रणाली, इसके बाइस-पास वाल सहित टॉप रिक्वरी टूबाइन सिस्टम, डि-ब्रिकिंग मशीन, रि-रेलिंग उपकरण, पी सी आई प्रणाली, पी सी आई के लिए ग्राइंडिंग मिल, स्टॉक लेवल इंडिकेटर, टूयेरे स्टाक एंसेम्बली, वेस्ट हीट रिक्वरी प्रणाली, बी एफ एवं हॉट ब्लास्ट स्टोव प्रौद्योगिकीय वाल, एन्व ब्रंडन प्रोब्स, स्लग ग्रेन्यूलेशन यूनिट, टूयेरे एंड टूयेरे कूलर, टोरपेडो लेडल कार, बी एफ हरथ रिफेक्ट्री	50%
8	डायरेक्ट रिडक्शन प्लांट उपकरण	चार्ज डिस्ट्रीब्यूटर, अपर एंड लोअर सील लेग, रिफोमर एंड रि-क्यूरेटर सिस्टम, बर्डन फिडर्स, टूबो-एक्सपेंडर, प्रोसेस गैस कम्प्रेसर, सील गैस कम्प्रेसर एवं बोटम सील गैस कम्प्रेसर, सील गैस जेनरेटर एवं डायर्स, प्रोसेस गैस हीटर, CO <sub>2</sub> रिमूवल प्लांट	50%
9	वेमिक ऑक्सीजन फर्नेस उपकरण	मुख्य और अनुरक्षण उपकरण जिसमें कंवेटर, गनिंग मशीन, रिफेक्ट्री/स्लग मॉनीटरिंग उपकरण, कंवेटर वेसेल, ट्रनिअन रिंग एंड सम्पेशन प्रणाली, ट्रनिअन बियरिंग और हाउसिंग, कंवेटर बुल गियर यूनिट और टिल्ट ड्राइव सिस्टम, कंवेटर के रोटेरी ज्वाइंट, बोटम स्ट्रिंग सिस्टम, क्लपिंग के साथ लांस बाडी, लांस कोपर टिप्स, ऑक्सीजन ब्लोविंग/बोटम स्टीरिंग के लिए बाल स्टेशन, सब-लान सिस्टम, प्रोसेस मॉड्यूल अर्थात् प्रोसेस साफ्टवेयर/हार्डवेयर के साथ ऑफ गैस एनेलाइजर, कंटेनर लैब मेजरमेंट प्रोब, स्विच ओवर स्टेशन, प्राइमरी गैस के लिए आई डी फेन, हॉट मेटल और स्टील लेडल, लेडल ट्रांसफर कार, लेडल अनुरक्षण उपकरण, स्लेग पोट, स्लग पोट ट्रांसफर कार, स्क्रैप बॉक्स क्रेप ट्रांसफर कार, लांस करेज, लांस गाइड, क्रेन एंड हाइस्ट, लांस होइस्ट एंड ट्राली, लांस टिल्टिंग उपकरण, लांस को लिफ्ट करने के लिए ट्रेवस, विभिन्न आकर के बंकर, बिन बाइब्रेटर, वेइंग हूपर, अनुरक्षण स्टेण्ड, डी इस्टिंग सक्शन हूड, टीमिंग/एच एम, लेडल रिलाइनिंग स्टैंड, स्टैंड कूलिंग स्टेक इन्स्पेक्शन उपकरण, हूड ट्रेवर्स करेज, रिफेक्ट्री, बाइपास एवं आइसोलेशन वाल्व, फ्लेयर स्टेक एवं इगनिशन सिस्टम, स्क्रबिंग टोवर सेल - चेट गैस क्लीनिंग सिस्टम, डॉंग हाउस लेडल डायर, लेडल	50%

		प्री-हीटर, लेडल कूलर, फ्यूम कोलेक्शन हूड्स, क्लीन गैस स्टेक, डस्ट सिलो, वेग ब्रिज, म्लग रिट्रैनिंग उपकरण	
10	इलेक्ट्रिक आर्क फर्नेस	फर्नेस प्रोपर (जिसमें फर्नेस लोवर सेल, अपर सेल और रूफ, टिल्टिंग प्लेटफार्म, फर्नेस गेन्ट्री शामिल है) और ट्रांसफार्मर, इलेक्ट्रोड रेगुलेशन प्रणाली, हाइड्रोलिक सिस्टम, रिफैक्ट्री, लेवल I एंड II आटोमेशन सिस्टम के पार्ट्स। एल एफ - वाटर कूल्ड लेडल रूफ, इलेक्ट्रोड मास्ट एंड आमर्स, इलेक्ट्रोड रेगुलेशन सिस्टम, वायर फिडिंग सिस्टम, बोटम इनडरट गैस स्टिरिंग बाल सिस्टम पोरुस प्लग और टॉप लांस के लिए, इमरजेंसी लांसतंत्र, ड्राइव यूनिट के साथ लांस केरेजि सिस्टम, स्वचालित तापक्रम, सेम्पलिंग और बाथ लेबल/ओ2 मेजरमेंट, तापक्रम और आक्सीजन इम्मजन लांस, ड्राइव यूनिट के साथ लांस केरेज सिस्टम, हाइड्रोलिक सिस्टम, रिफैक्ट्री, लेडल रूफ डेल्टा पोरशन, आर एच प्रोपर (जिसमें लेडल ट्रांसफर कार, बेक्यूम वेमेल, वेमेल लिफ्टिंग और लोवरिंग सिस्टम शामिल है, हाइड्रोलिंग सिस्टम, मल्टी फंक्शन लांस, वाल्व रेक्स/स्टेशन, इलेक्ट्रोड क्लेप यूनिट, इलेक्ट्रोड आमर्स का कंडक्टर, वाटर कूल्ड केबल, ए आर स्टेरिंग वाल्व रेक, लांस ट्रांसपोर्ट कार, रिफैक्ट्री लांस, हाइड्रोलिक सिलेंडर, लेडल रूफ लिफ्टिंग सिलेंडर, लूत्रिकेशन प्रणाली, सक्शन हूड, डम्पर, वाइब्रो फीडर, वेडंग होपर, वायर फिडिंग प्रणाली, इलेक्ट्रोड निपिलिंग स्टेड, क्रेन, होइस्ट, तापमान और सेम्पलिंग टिप्स, लेडल स्टैंड, ई एस पी, डिडिक्टिंग हूड, रिफैक्ट्री, वेग फिल्टर, क्रेन इत्यादि।	50%
11	सतत कास्टिंग उपकरण	लाइले टरेट, लेडल कवर मेनिपुलेटर, लेडल शारउड मेनिपुलेटर, टनडिस कार, कंटिन्यूअस टनडिस टेम्पेचर मेजरमेंट सिस्टम, टनडिस स्टोपर रूड मेकेनिजम, इमरजेंसी कट-आफ गेट, मोल्ड एसेम्बली, नोजल क्लिक चेंज डिवाइस, मोल्ड ओसीलेटर एंड ई एम एस सिस्टम, इलेक्ट्रो-मेगेनेटिक ब्रेकिंग सिस्टम, स्ट्रेड गाइड सेगमेंट, विदड्रावल एंड स्ट्रेघटेनिंग यूनिट (डब्ल्यू एस यू), रोल गेप चेकर इमरजेंसी टार्च कटर, टार्च कटिंग मशीन, डेबरर, मार्किंग मशीन, टेकेनोलोजी कंट्रोल सिस्टम एंड प्रोसेस मोडल, ब्लेक रिफैक्ट्रीज, स्ट्रेड गन्डे सेगमेंट, टनडिश, लाइले कवर, रोलर टेबल एंड आक्सीलिरीज, माल्ड एंड सेगमेंट मेनटेनेस इक्यूपमेंट टनडिस मेनटेनेस इक्यूपमेंट, ई एम बी आर सिस्टम	50%
12	फ्लेट मिल	लार्ज कास्टिंग एंड फाजिग लाइक मिल हाउसिंग, बेड प्लेट्स वर्क्स रोल, बेकअप रोल, इंड स्पिडल्स; रोलर टेबल, बेकअप रोल एंड वर्क रोल चक्स क्वाडलर/टेशन रिल/अनक्वाइलर, ए जी सी सिलेंडर, शेयर्स, लेवेलेर्स, लाजेर वेल्डर, पेकेजिंग मशीन, नॉन कान्टेक्ट, गेज/प्रोफाइल गेज, एंटी-फ्रिक्शन रोल नेक बियेरिंग, आयल फिल्म बियेरिंग, गियर बॉक्स, मिल मोटर्स	50%
13	लॉग मिल	मिलम हाउसिंग, बेड प्लेट, वर्क रोल, बेकअप रोल, स्पिनडेल्स; रोलर टेबल, कॉयलर /टेशन रिल /अनकॉयलर, शेयर्स, बिल्डट वेल्डर, पेकेजिंग मशीन, नान-कान्टेक्ट गॉज/प्रोफाइल गॉज, एंटी-फ्रिक्शन रोल नेक बियेरिंग, आयल फिल्म बियेरिंग, फिनिशिंग ब्लाक्स, गियर बॉक्स, मिल मोटर	50%

\* परिशिष्ट ख में मर्दाने निर्माण करने वाले इस्पात के लिए पूंजीगत सामानों की एक सांकेतिक सूची है। यह सूची विस्तृत नहीं है। इस्पात के निर्माण के लिए सभी पूंजीगत मालों पर 50% की न्यूनतम घरेलू मूल्यवर्धन आवश्यकता के साथ इस नीति के अंतर्गत खरीद बरीयता के लिए विचार किया जाएगा।



**फार्म - 1**

100/- रुपए के स्टाम्प पेपर पर दिए जाने के लिए लौह एवं इस्पात उत्पादों/पूँजीगत मालों में घरेलू मूल्यवर्धन के संबंध में स्व-प्रमाणन शपथ के लिए प्रपत्र :

मैं \_\_\_\_\_ सुपुत्र, सुपुत्री, पत्नी, \_\_\_\_\_ का निवासी \_\_\_\_\_  
एतद् द्वारा निष्ठापूर्वक नीचे दिए गए अनुसार वचन देता हूँ और घोषण करता हूँ :

कि मैं अधिसूचना सं. : \_\_\_\_\_ के माध्यम से जारी किए गए भारत सरकार की नीति के नियम और शर्तों का पालन करने के लिए सहमत होऊंगा।

कि यहां नीचे दी गई सूचना मेरे सर्वोत्तम ज्ञान और विश्वास के अनुसार सही है और मैं घरेलू मूल्यवर्धन का आकलन करने के प्रयोजन से खरीद करने वाली एजेंसी के समक्ष संगत रिकार्ड प्रस्तुत करने का वचन देता हूँ।

कि सभी इनपुट्स के लिए घरेलू मूल्यवर्धन जिसमें उक्त लौह एवं इस्पात उत्पाद शामिल हैं का सत्यापन मेरे द्वारा कर लिया गया है और मैं उसमें किये गये दावों की सत्यता के लिए जिम्मेदार हूँ।

कि इसमें उल्लिखित उत्पाद घरेलू मूल्यवर्धन सही नहीं पाये जाने और मूल्यवर्धन के लिए निर्धारित मानदंडों को पूरा नहीं किये जाने की स्थिति में, घरेलू मूल्यवर्धन का आकलन करने के उद्देश्य से खरीद करने वाली एजेंसी के आकलन के आधार पर मैं 36 महीनों की अवधि के लिए किसी सरकारी निविदा से अयोग्य ठहराया जाऊंगा। इसके अलावा मैं इस प्रकार के आकलन की सभी लागतों का वहन करूंगा।

कि मैंने अधिसूचना संख्या \_\_\_\_\_ जिसमें सरकारी खरीद में घरेलू स्तर पर निर्मित लौह एवं इस्पात उत्पादों को बरीयता दी गई है, में संदर्भित सभी शर्तों का पालन किया है और यह कि खरीद करने वाली एजेंसी को एतद् द्वारा अधिकार दिया जाता है कि वह मेरे ई एम डी को जप्त करे। मैं यह भी वचन देता हूँ कि आकलन की लागत का भुगतान करूंगा और निविदा दस्तावेज में यथा उल्लिखित सभी दण्ड राशि का भुगतान करूंगा।

मैं 8 वर्षों की अवधि के लिए कम्पनी के रिकॉर्ड में निम्नलिखित सूचना रखने के लिए सहमत हूँ और किसी सांविधिक प्राधिकारी को सत्यापन के लिए इसे उपलब्ध कराऊंगा।

- i. बोली लगाने वाले का नाम और ब्यौरा (पंजीकृत कार्यालय, विनिर्माण इकाई का स्थान, कानूनी प्रतिष्ठान की प्रकृति)
- ii. वह तिथि जब यह प्रमाण पत्र जारी किया गया है।
- iii. लौह एवं इस्पात उत्पाद जिसके लिए इस प्रमाण पत्र को प्रस्तुत किया जाता है।
- iv. खरीद करने वाली एजेंसी जिसे यह प्रमाण पत्र प्रस्तुत किया जाता है।
- v. दावा की गई घरेलू मूल्यवर्धन की प्रतिशतता और क्या यह निर्धारित घरेलू मूल्यवर्धन के आरंभिक मूल्य को पूरा करता है।
- vi. विनिर्माता की इकाई का नाम और संपर्क विवरण
- vii. लौह और इस्पात उत्पादों की निवल बिक्री कीमत
- viii. संयंत्र तक भाड़ा, बीमा और रखरखाव
- ix. लौह एवं इस्पात उत्पादों का निर्माण करने के लिए उपयोग की जाने वाली इनपुट इस्पात (आयात किया गया) की सूची और कुल लागत मूल्य।
- x. इनपुट इस्पात जिसकी आपूर्ति घरेलू स्तर पर की जाती है की सूची और कुल लागत
- xi. कृपया यदि इनपुट इन हाऊस नहीं हो तब आपूर्तिकर्ताओं से प्राप्त घरेलू मूल्यवर्धन प्रमाणपत्र संलग्न करें।
- xii. आयात किये गये इनपुट इस्पात के लिए, सी आई एफ मूल्य, शुल्क और करों, पोर्ट पर उतारने से संबंधित प्रभारों और अंतर्देशीय भाड़े की लागत के ब्यौरे के साथ भारतीय पोर्ट पर पहुंच कीमत।

(प्रतिष्ठान/कंपनी का नाम) के लिए और उसकी ओर से

अधिकृत हस्ताक्षरकर्ता (निदेशक बोर्ड द्वारा विधिवत अधिकृत किये जाने के लिए)

<नाम, पदनाम और संपर्क सं. की प्रविष्टि करें>

## MINISTRY OF STEEL

## NOTIFICATION

New Delhi, the 29th May, 2019

**G.S.R. 385(E).**—The revised Policy for providing preference to domestically manufactured Iron & Steel Products in Government procurement is hereby published for general information.

[F. No.3(2)/2018-IDD]

RASIKA CHAUBE, Addl. Secy.

**POLICY FOR PROVIDING PREFERENCE TO DOMESTICALLY MANUFACTURED IRON & STEEL PRODUCTS IN GOVERNMENT PROCUREMENT- REVISED, 2019**

**1 Background**

- 1.1 This policy provides preference to Domestically Manufactured Iron and Steel Products (DMI&SP) in Government procurement.
- 1.2 The policy is applicable to iron & steel products as provided in Appendix A and capital goods for manufacturing iron & steel products in Appendix B, produced in compliance to prescribed quality standards, as applicable.
- 1.3 The policy is applicable to every Ministry or Department of Government and all agencies/entities under their administrative control and to projects funded by these agencies for purchase of iron & steel products for government projects. However, this policy shall not apply for purchase of iron & steel products with a view to commercial resale or with a view to use in the production of goods for commercial sale.

**2 Definitions**

- 2.1 **Bidder** may be a domestic/ foreign manufacturer of iron & steel or their selling agents/ authorized distributors/ authorized dealers/ authorized supply houses or any other company engaged in the bidding of projects funded by Government agencies.
- 2.2 **Domestically Manufactured Iron & Steel Products (DMI&SP)** are those iron and steel products which are manufactured by entities that are registered and established in India, including in Special Economic Zones (SEZs). In addition, such products shall meet the criteria of domestic minimum value-addition as mentioned in Appendix A.
- 2.3 **Domestic Manufacturer** is a manufacturer of iron & steel products conforming to guidelines in section 7 and confirming to the definition of 'manufacturer' as per Central Excise Act.
- 2.4 **Government** for the purpose of the Policy means Government of India.
- 2.5 **Government agencies** include Government PSUs, Societies, Trusts and Statutory bodies set up by the Government.
- 2.6 **MoS** shall mean Ministry of Steel, Government of India.
- 2.7 **Net Selling Price** shall be the invoiced price excluding net domestic taxes and duties
- 2.8 **Semi-Finished Steel** shall mean Ingots, billet, blooms and slabs, which can be subsequently processed to finished steel.
- 2.9 **Finished Steel** shall mean Flat and Long products, which can be subsequently processed into manufactured items.
- 2.10 **L1** means the lowest tender or the lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.
- 2.11 **Margin of purchase preference** means the maximum extent to which the price quoted by a domestic supplier may be above L1 for the purpose of purchase preference. In case of DMI&SP policy, the margin of purchase preference shall be 20% for items in Appendix B.
- 2.12 **Iron & Steel Product(s)** shall mean such iron and steel product(s) which are mentioned in Appendix A.
- 2.13 **Domestic value addition** shall be the net selling price (invoiced price excluding net domestic taxes and duties) minus the landed cost of imported input materials at the manufacturing plant in India (including all customs duties) as a proportion of the net selling price, in percent. The 'domestic value addition' definition shall be in line with the DPIIT (formerly DIPP) guidelines, and shall be suitably amended in case of any changes by DPIIT in the future. For the purpose of this policy document, domestic value addition and local content have been used interchangeably.



### 3 Exclusions

3.1 Waivers shall be granted by the Ministry of Steel to all such Government procurements subject to the below conditions.

3.1.1 Where specific grades of steel are not manufactured in the country, or

3.1.2 Where the quantities as per the demand of the project cannot be met through domestic sources

The exclusion requests shall be submitted to the Standing Committee along with sufficient proof of unavailability of domestically manufactured iron & steel products

### 4 Standing Committee

A Standing Committee under the Ministry of Steel (MoS) to be chaired by the Secretary (Steel), shall be constituted to oversee the implementation of the policy. The Committee shall comprise of experts drawn from Industry / Industry Association / Government Institution or Body / Ministry of Steel (MoS). The said Committee in MoS shall have the mandate for the following:

4.1 Monitoring the implementation of the policy

4.2 Review and notify the list of Iron & Steel products and the domestic value addition requirement criteria as mentioned at Appendix A and Appendix B.

4.3 Issue necessary clarifications for implementation of the policy including grant of exclusions to procuring agencies as per section 3

4.4 Constitute a separate committee to carry out grievance redressal

4.5 The Standing Committee shall submit its recommendations for approval to Ministry of Steel.

### 5 Notifying Iron & Steel Products Procured by Government

5.1 The following guidelines may be used for identifying and notifying the aforementioned products under the policy:

5.1.1 The policy is applicable to iron & steel products as provided in Appendix A and to capital goods for manufacturing iron & steel products in Appendix B.

5.1.2 Appendix A contains list of iron & steel products which are to be exclusively domestically manufactured and cannot be imported without the approval of the Ministry of Steel

5.1.3 Appendix B contains a list (non-exhaustive) of capital goods for which purchase preference shall be provided to domestically manufactured capital goods, if their quoted price falls within 20% of the price quoted for corresponding imported capital good.

5.1.4 The objective of the policy is to notify all iron & steel products which are procured by Government Agencies for government projects and not with a view to commercial resale or with a view to use in the production of products for commercial sale.

5.1.5 The policy is applicable to all projects funded by Ministry or Department of Government and all agencies/entities under their administrative control for purchase of iron & steel products.

5.1.6 The policy shall be applicable to projects where the procurement value of iron and steel products is greater than Rs. 25 crores. The policy shall also be applicable for other procurement (non-project), where annual procurement value of iron and steel products for that Government organization is greater than Rs. 25 crores.

5.1.7 The policy is applicable to purchase of iron & steel products by private agencies for fulfilling an EPC contract and/or any other requirement of Ministry or Department of Government or their PSUs.

5.1.8 Analysis of the availability of various grades of domestic iron and steel products needs to precede for notification under the policy. Only those iron & steel products, in respect of which at least one domestic manufacturer exists, shall be notified. Consultation may be carried out by the Standing Committee.

5.1.9 The policy is applicable to capital goods for manufacturing iron & steel products in Appendix B produced in compliance to prescribed quality standards, as applicable.

5.1.10 Policy for domestic procurement of capital goods for manufacturing iron and steel products is applicable to all public sector steel manufacturers and all agencies/entities under their administrative control for purchase of capital goods for manufacturing iron & steel products, not with a view to commercial resale.

5.1.11 The policy is applicable to purchase of capital goods for manufacturing iron & steel products by private agencies for fulfilling an EPC contract and/or any other requirement of public sector steel manufacturers and all agencies/entities under their administrative control

- 5.1.12 Government agencies which are involved in procurement of iron and steel products, and capital goods for manufacturing of iron and steel products, in cases where the iron and steel products are not mentioned in Appendix A and Appendix B, shall provide description and technical specifications of the product along with prescribed standards to the Standing Committee. The Standing Committee will act as per mandate in section 3 and section 4.
- 5.2 The Ministry of Steel (MoS) would notify iron & steel products along with the minimum prescribed domestic value addition, furnished at Appendix A.
- 5.3 The policy guidelines on capital goods for manufacturing iron & steel products shall be applicable to public sector steel manufacturers for all purchases of capital goods for manufacturing iron & steel products in Appendix B, irrespective of the project size.
- 5.4 Minimum domestic value addition requirement suggested for iron and steel products in Appendix A, and for capital goods for manufacturing iron and steel products in Appendix B have been decided on the basis of factors such as domestic supplier base, number of suppliers and import to consumption ratio.
- 5.5 The domestic value addition requirement norm shall be so calibrated that it reflects the average/above average manufacturing capability of the domestic industry for the iron & steel products at a point of time. This shall be suitably reviewed by the Standing Committee from time to time and amended, if required with the approval of Ministry of Steel.

#### **6 Tender procedure for procurement by government and government agencies**

- 6.1 The procuring/ Government agencies shall follow standard procurement procedures, in accordance with instructions of Ministry of Finance and CVC while adhering to DMI&SP. The policy shall come into effect from the date of its notification in all tenders where price bid have not been opened.
- 6.2 The tender document, for procurement of both Goods as well as for EPC contracts, should explicitly outline the qualification criteria for adherence to minimum prescribed domestic value addition by the bidder for iron and steel products and capital goods for manufacturing iron & steel products(as indicated in Appendix A and Appendix B)
- 6.3 In supporting the growth of domestic products, the target of domestic value addition in iron and steel business activities has been set as contained in **Appendix A and Appendix B**.
- 6.4 For iron and steel products in Appendix A, the procurement process shall be open only to the manufacturers / suppliers having the capability of meeting / exceeding the domestic value addition targets. Manufacturers / suppliers not meeting the domestic value addition targets are not eligible to participate in the bidding.
- 6.5 In case of Appendix B items, if in the opinion of the procuring company, the tenders (procured quantity) cannot be divided in the prescribed ratio of 50:50, then they shall have the right to award contract to the eligible domestic manufacturer for quantity not less than 50%, as may be divisible.
- 6.6 In continuation to the above clause, for Appendix B items, if the tendered item is non divisible, (to be included in the tender document by procuring company) the contract can be awarded to the eligible domestic manufacturer for the entire quantity.
- 6.7 In case of Appendix B items, if none of the eligible manufacturers meeting domestic value addition requirements match the L1 bid, the original bidder holding L1 bid shall secure the order for full value of procurement.
- 6.8 The bidders who are selling agents/ authorized distributors/ authorized dealers/ authorized supply houses of the domestic manufacturers of iron & steel products are eligible to bid on behalf of the domestic manufacturers under the policy. However, this shall be subject to the following conditions:
- 6.8.1 The bidder shall furnish the authorization certificate issued by the domestic manufacturer for selling domestically manufactured iron & steel products.
- 6.8.2 In case the procurement is covered under Appendix A of the DMI&SP policy, the bidder shall furnish the Affidavit of self-certification issued by the domestic manufacturer to the procuring agency declaring that the iron & steel products is domestically manufactured in terms of the domestic value addition prescribed.
- 6.8.3 In case the procurement is covered under Appendix B of the DMI&SP policy, the bidder shall furnish the certification issued by the statutory auditor to domestic manufacturer declaring that the capital goods to be used in Iron & Steel industry are domestically manufactured in terms of the domestic value addition prescribed.
- 6.8.4 It shall be the responsibility of the bidder to furnish other requisite documents required to be issued by the domestic manufacturer to the procuring agency as per the policy.



**7 Domestic value addition requirement**

- 7.1 Minimum domestic value addition requirement to qualify the product as a domestically manufactured iron & steel product or a Capital good are mentioned in Appendix A and B.
- 7.2 Domestic value addition shall be the net selling price (invoiced price excluding net domestic taxes and duties) minus the landed cost of imported input materials at the manufacturing plant in India (including all customs duties) as a proportion of the net selling price, in per cent.
- 7.2.1 In case the iron & steel products are made using domestic input steel (semi-finished/ finished steel), invoices of purchases from the actual domestic producers along with quantities purchased and the other related documents must be furnished to the procuring Government agency.
- 7.2.2 In case the iron & steel products have imported input steel, the invoices of purchases from the actual producers along with quantities purchased and the other related documents must be furnished separately. To derive the extent of domestic value addition, the weighted average of both (imported & domestic) input steel shall be considered to ensure that the minimum stipulated domestic value addition requirement of the policy is complied with.
- 7.3 It is recommended that each bidder participating in the tender process should calculate the domestic value addition using the below formula below so as to ensure the domestic value addition claimed is consistent with the minimum stipulated domestic value addition requirement of the policy.

**For Iron and Steel products**

*% Domestic value addition*

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

**For Capital Goods**

*% Domestic value addition*

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

**8 Certification and audit**

- 8.1 For products in Appendix A, each domestic manufacturer shall furnish the Affidavit of self-certification to the procuring Government agency declaring that the iron & steel products are domestically manufactured in terms of the domestic value addition prescribed. For capital goods in Appendix B, the bidder shall furnish the certification issued by the statutory auditor to the domestic manufacturer declaring that the capital goods are domestically manufactured in terms of the domestic value addition prescribed. The bidders who are sole selling agents / authorized distributors / authorized dealers / authorized supply houses of the domestic manufacturers of iron & steel products are eligible to bid on behalf of domestic manufacturers under the policy. The bidder shall furnish the Affidavits of self-certification issued by the domestic manufacturers and the certifications issued by the statutory auditors, to the procuring agency declaring that the iron & steel products are domestically manufactured in terms of the domestic value addition prescribed. The Affidavit of self-certification shall be furnished in **Form I** attached to these guidelines.
- 8.2 It shall be the responsibility of the domestic manufacturer to ensure that the products so claimed are domestically manufactured in terms of the domestic value addition prescribed for the product. The bidder shall also be required to provide a domestic value addition certificate on half-yearly basis (Sep 30 and Mar 31), duly certified by the Statutory Auditors of the domestic manufacturer, that the claims of domestic value addition made for the product during the preceding 6 months are in accordance with the Policy. Such certificate shall be filed within 60 days of commencement of each half year, to the concerned Government agencies and shall continue to be filed till the completion of supply of the said products.
- 8.3 The procuring agency shall accept the Affidavit of self-certification regarding domestic value addition in a steel product submitted by a bidder. It shall not normally be the responsibility of procuring agency to verify the correctness of the claim. The onus of demonstrating the correctness of the same shall be on the bidder when asked to do so.
- 8.4 In case a complaint is received by the procuring agency or the concerned Government Agency against the claim

of a bidder regarding domestic value addition in iron & steel products, the procuring agency shall have full rights to inspect and examine all the related documents and take a decision. In case any clarification is needed, matter may be referred to MoS with a request for technical assistance.

- 8.5 Any complaint referred to the Government Agency shall be disposed off within 4 weeks of the reference along with submission of all necessary documents. The bidder shall be required to furnish the necessary documentation in support of the domestic value addition claimed in iron & steel products to the Government Agency within 2 weeks of filing the complaint.
- 8.6 In case, the matter is referred to the Ministry of Steel, the grievance redressal committee setup under the MoS shall dispose of the complaint within 4 weeks of its reference and receipt of all documents from the bidder after taking in consideration, the view of the Government Agency. The bidder shall be required to furnish the necessary documentation in support of domestic value addition claimed in iron & steel products to the grievance redressal committee under MoS within 2 weeks of the reference of the matter. If no information is furnished by the bidder, the grievance redressal committee may take further necessary action, in consultation with Government Agency to establish bonafides of claim.
- 8.7 The cost of assessing the prescribed extent of domestic value addition shall be borne by the procuring agency if the domestic value addition is found to be correct as per the certificate. However, if it is found that the domestic value addition as claimed is incorrect, the cost of assessment will be payable by the bidder who has furnished an incorrect certificate. The manner of enforcing the same shall be defined in the tender document.

#### 9 Sanctions

- 9.1 Each Government Agency shall clearly define the penalties, in case of wrong declaration by the bidder of the prescribed domestic value addition, in the tender document. The penalties may include forfeiting of the EMD, other financial penalties and blacklisting of such manufacturer/ service provider.
- 9.2 In case of reference of any complaint to MoS by the concerned bidder, there would be a complaint fee of Rs. 10 Lakh or 0.2 % of the value of the DMI&SP being procured (subject to a maximum of Rs. 20 Lakh), whichever is higher, to be paid by Demand Draft deposited with the grievance redressal committee under MoS along with the complaint by the complainant. In case, the complaint is found to be incorrect, the Government Agency reserves the right to forfeit the said amount. In case, the complaint is found to be substantially correct, deposited fee of the complainant would be refunded without any interest.

#### 10 Implementation monitoring by Ministry of Steel

- 10.1 The policy provisions shall be applicable for a period of 5 years from the date of publication. The policy period may further be extended at the discretion of Ministry of Steel.
- 10.2 MoS shall be the nodal ministry to monitor the implementation of the policy.
- 10.3 All applicable agencies under DMI&SP policy shall ensure implementation of the policy and shall annually, in the month of June, send a declaration indicating the extent of compliance to the policy and reasons for noncompliance thereof, during the preceding financial year.

#### Reference to Ministry of Steel

In case of a question whether an item being procured is a DMI&SP to be covered under the policy, the matter would be referred to the Ministry of Steel for clarification.

#### Appendix A - Exclusive for domestically manufactured products

Sl. No.	Indicative list of Iron & Steel Products	Applicable HS code	Minimum domestic value addition requirement
1	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, hot rolled, not clad, plated or coated	7208	50%
2	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, cold rolled (cold-reduced), not clad, plated or coated	7209	50%
3	Flat-rolled products of iron or non alloy steel, of a width of 600 mm or more, clad, plated or coated	7210	50%



4	Flat-rolled products of iron or non alloy steel, of a width of less than 600 mm, not clad, plated or coated	7211	35%
5	Flat-rolled products of iron or non alloy steel, of a width of less than 600 mm, clad, plated or coated	7212	35%
6	Bars and rods, hot-rolled, in irregularly wound coils, of iron or non-alloy steel	7213	35%
7	Other bars and rods of iron or non alloy steel, not further worked than forged, hot rolled, hot-drawn or hot-extruded, but including those twisted after rolling	7214	35%
8	Other bars and rods of iron or non alloy steel	7215	35%
9	Angles, shapes and sections of iron or non-alloy steel	7216	35%
10	Wire of iron or non-alloy steel	7217	50%
11	Flat-rolled products of stainless steel, of a width of 600 mm or more	7219	50%
12	Flat-rolled products of stainless steel, of a width of less than 600 mm	7220	50%
13	Other bars and rods of stainless steel; angles, shapes and sections of stainless steel	7222	50%
14	Wire of other alloy steel	7229	35%
15	Rails, railway or tramway track construction material of iron or steel	7302	50%
16	Tubes, pipes and hollow profiles, of cast iron	7303	35%
17	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	7304	35%
18	Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406.4 mm, of iron or steel	7305	35%
19	Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel	7306	35%
20	Tube or pipe fittings (for example, connectors/couplings, elbow sleeves), of iron or steel	7307	35%
21	Bars and rods, hot-rolled, in irregularly wound coils, of stainless steel	7221	35%
22	Wire of stainless steel	7223	35%
23	Flat-rolled products of other alloy steel, of a width of 600 mm or more, including electrical steel	7225	35%
24	Flat-rolled products of other alloy steel, of a width of less than 600 mm, including electrical steel	7226	35%
25	Bars and rods, hot-rolled, in irregularly wound coils, of other alloy steel	7227	15%
26	Other bars and rods of other alloy steel; angles, shapes and sections, of other alloy steel; hollow drill bars and rods, of alloy or nonalloy steel	7228	35%
27	Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel	7301	15%
28	Structures (excluding prefabricated buildings of heading 9406) and parts of structures	7308	15%
29	Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 whether or not lined or heatinsulated, but not fitted with mechanical or Thermal equipment	7309	15%

30	Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 L, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	7310	15%
31	Containers for compressed or liquefied gas, of iron or steel	7311	15%
32	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel, not electrically insulated	7312	15%
33	Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not, and loosely twisted double wire, of a kind used for fencing, of iron or steel	7313	15%
34	Grill, netting and fencing, of iron or steel wire; expanded metal of iron or steel	7314	15%
35	Chain and parts thereof, of iron or steel	7315	15%
36	Anchors, grapnels and parts thereof, of iron or steel	7316	15%
37	Articles of iron and steel	7317	15%
38	Articles of iron and steel	7318	15%
39	Articles of iron and steel	7319	15%
40	Springs and leaves for springs, of iron or steel	7320	15%
41	Stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel	7321	15%
42	Radiators for central heating, not electrically heated, and parts thereof, of iron or steel; air heaters and hot air distributors, not electrically heated, incorporating a motor-driven fan or blower, and parts thereof, of iron or steel	7322	15%
43	Tables and similar household articles and parts thereof, of iron or steel	7323	15%
44	Sanitary ware and parts thereof, of iron or steel	7324	15%
45	Other cast articles of iron or steel	7325	15%
46	Electrical steel and other articles of iron or steel	7326	15%
47	Railway or tramway passenger coaches, not self-propelled	8605	50%
48	Railway or tramway goods vans and wagons, not self-propelled	8606	50%
49	Parts of railway or tramway locomotives or rolling-stock; such as bogies, bissel-bogies, axles and forged wheels, and parts thereof	8607	50%

Products included in descriptions are indicative; all products under the specified HS codes are included as part of the appendix

#### Appendix B

#### Indicative list of capital goods(non-exhaustive) for manufacturing iron & steel products

Sl. No.	Plant shop	Capital goods	Minimum domestic value addition requirement
1	Raw material handling system	Apron feeder, barrel couplings, heavy duty bearings, hydraulic disc brakes, tanker & container for powdered materials, conveyor belt for pipe conveyors, high angle conveyor system, crushers, crane rail lubrication system, four girder EOT Crane, crane weighing system, crane air conditioning, fluid couplings, fork lift trucks, hydraulic motors, hydraulic system, locking assembly (friction grip), load cells, level sensors, pipe	50%



		conveyor system, plough/ paddle feeder, pneumatic transportation - dense & lean phase, reclaimers, radio remote control, rail fixing arrangements (special), rapid/ flood loading system, stackers, special screen, slew ring bearings, tippers, transfer cars, tongs (special), vibration, isolation system (spring damper), wagon tippers, wagon loaders	
2	Mineral beneficiation (iron ore and coal) equipment	Industrial crushers, grinding mills, conventional screens, slurry pumps, hydrate thickeners, filters, hydroclones	50%
3	Coke oven	Coke Oven Silica Refractory, Anchorage System, Waste gas valve with branch pipe, Flash Plate, Door Frame, door body, Minor Casting: Gooseneck, Valve box, AP Lid, Charging & inspection hole lid and frame Reversing mechanism, Centralised lubrication system, Hydrojet Door Cleaning Mechanism, Spillage code conveyor system, skip hoist, Door Lowering Rack, Isolation/ Reversing Cocks, Level II automation, Oven machines	50%
4	By-product plant	Primary Gas Cooler, Electrostatic Tar Precipitator, H <sub>2</sub> S, NH <sub>3</sub> & Naphthalene Scrubber, Combi Stripper, Flushing Liquor Pump, Claus Kiln, Claus reactors, Waste Heat Boilers, Decanters	50%
5	Sinter plant equipment	Pallet car, Drive/discharge end Sprocket assembly, Curved rail, Slide rails, Hot sinter breaker and Grizzly, Dip rail & running rail, Impeller assembly for Process fan, Drive assembly of Sinter machine, Hi-intensity Mixer & Noduliser	50%
6	Pellet plant equipment	Pallet car, Drive/discharge end Sprocket assembly, Curved rail, Slide rails, running rail, Vertical roller mill, Impeller assembly for Process fan, Drive assembly of Indurating machine, Hi-intensity Mixer, Balling disc, Single deck roller screen and Double deck roller screen	50%
7	Blast furnace equipment	Bell less top system with Bleeder valve, SG Iron stove coolers, Copper stove coolers, Stock level indicator (Radar Type), Mud gun, Drilling machine and Manipulator, Gas Cleaning Plant system, Top Recovery Turbine system including its by-pass valve, De-bricking Machine, Re-railing equipment, PCI system, Grinding mill for PCI, Stock level indicator, Tuyere Stock assembly, Waste Heat Recovery system, BF & Hot Blast Stoves Technological Valves, Above Burden probes, Slag granulation unit, Tuyere & Tuyere cooler, Torpedo Ladle Car, BF hearth refractory	50%
8	Direct reduction plant equipment	Charge distributor, Upper & lower seal leg, Reformer & Re-cuperator system, Burden feeders, Turbo-expander, Process Gas Compressor, Seal gas compressors & bottom seal gas compressors, Seal gas generators & driers, Process Gas Heater, CO <sub>2</sub> removal plant	50%
9	Basic oxygen furnace equipment	Main and Maintenance equipment comprising of converter, gunning machine, Refractory/ slag monitoring device, converter vessel, trunnion ring and suspension system, trunnion bearings and housing, Converter bull gear unit and tilt drive system, Rotary joint for converter, bottom stirring system, Lance body with clamping, Lance copper tips, Valve stations for oxygen blowing/ bottom stirring, Sub-lance system, Off gas analyzer with process module i.e. Process software/ hardware, container lab Measurement probes, Switch over station, ID fan for primary gas, Hot metal and steel ladle, Ladle Transfer car, Ladle maintenance equipment, Slag pot, Slag pot transfer car, Scrap boxes, Scrap Transfer car, Lance carriage, Lance guide, Crane & hoist, Lance hoist & trolley, Lance tilting device, Traverse for lifting lances, Bunker of various sizes, Bin Vibrator, Weighing Hopper, Maintenance stands, De dusting suction hood, Teeming/HM, ladle relining stands, Stand Cooling stack inspection device, Hood traverse carriage, Refractories, Bypass & isolation valves, Flare stack & ignition system, Scrubbing tower	50%

		shell - Wet gas cleaning system, Dog house, Ladle drier, ladle pre-heater, ladle cooler, Fume collection hoods, Clean gas stack, Dust silo, Weigh Bridge, Slag retaining device	
10	Electric arc furnace	Furnace proper (includes furnace lower shell, upper shell and roof, Tilting platform, Furnace Gantry) and transformer, Electrode regulation system, Hydraulic system, Refractories, Parts of Level I & Level II Automation system. LF - water cooled ladle roof, electrode mast and arms, electrode regulating system, wire feeding system, Bottom inert gas stirring Valve stand for porous plug and top lance, Emergency lance mechanism, Lance carriage system with drive unit, Automatic temperature, sampling & bath level / O <sub>2</sub> 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 nipping stand, Cranes, hoist, Temperature & sampling tips, ladle stands, ESP, Deducing hoods, Refractories, bag filter, Cranes etc.	50%
11	Continuous casting equipment	Ladle turret, ladle cover manipulator, Ladle Shroud manipulator, tundish car, Continuous tundish temperature measurement system, Tundish stopper rod mechanism, emergency cut-off gate, mould assembly, Nozzle quick change device, mould oscillator and EMS system. Electro-Magnetic braking system, Strand guide segment, Withdrawal & Straightening unit (WSU), Roll gap checker, Emergency torch cutter, Torch cutting machine, Deburrer, Marking machine, Technological control system & process models, Black Refractories, strand gunde segment, tundish, ladle cover, roller tables & auxiliaries, mould& segment maintenance equipments, tundish maintenance equipments, EMBR system	50%
12	Flat product mills	Large castings and forgings like mill housing, bed plates, work rolls, backup rolls, end spindles; roller tables, backup roll and work roll chucks, coilers / tension reels / uncoilers, AGC cylinders, shears, levelers, lazer welders, packaging machines, non-contact gauges / profile gauges, anti-friction roll neck bearings, oil film bearings, gear boxes, mill motors	50%
13	Long product mills	Mill housing, bed plates, work rolls, backup rolls, spindles; roller tables, coilers / tension reels / uncoilers, shears, billet welder, packaging machines, non-contact gauges / profile gauges, anti-friction roll neck bearings, oil film bearings, finishing blocks, gear boxes, mill motors	50%

*\*Items in appendix B are an indicative list of capital goods for manufacturing steel, the list is not exhaustive. All capital goods for steel manufacturing shall be considered for purchase preference under the policy with a minimum domestic value addition requirement of 50%*

#### Form-1

**Format for Affidavit of Self Certification regarding Domestic Value Addition in Iron & Steel Products/capital goods to be provided on Rs.100/- Stamp Paper Date:**

I \_\_\_\_\_ S/o, D/o, W/o, \_\_\_\_\_ Resident of \_\_\_\_\_ hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the policy of Government of India issued vide Notification No: \_\_\_\_\_.

That the information furnished hereinafter is correct to the best of my knowledge and belief and I undertake to produce relevant records before the procuring agency (ies) for the purpose of assessing the domestic value addition.

That the domestic value addition for all inputs which constitute the said iron & steel products has been verified by me and I am responsible for the correctness of the claims made therein.



That in the event of the domestic value addition of the product mentioned herein is found to be incorrect and not meeting the prescribed value-addition criteria, based on the assessment of procuring agency (ies) for the purpose of assessing the domestic value-addition, I will be disqualified from any Government tender for a period of 36 months. In addition, I will bear all costs of such an assessment.

That I have complied with all conditions referred to in the Notification No. \_\_\_\_\_ wherein preference to domestically manufactured iron & steel products in Government procurement is provided and that the procuring agency (ies) is hereby authorized to forfeit and my EMD. I also undertake to pay the assessment cost and pay all penalties as specified in the tender document.

I agree to maintain the following information in the Company's record for a period of 8 years and shall make this available for verification to any statutory authority.

- i. Name and details of the Bidder (Registered Office, Manufacturing unit location, nature of legal entity)
- ii. Date on which this certificate is issued
- iii. Iron & Steel Products for which the certificate is produced
- iv. Procuring agency to whom the certificate is furnished
- v. Percentage of domestic value addition claimed and whether it meets the threshold value of domestic value addition prescribed
- vi. Name and contact details of the unit of the manufacturer (s)
- vii. Net Selling Price of the iron & steel products
- viii. Freight, insurance and handling till plant
- ix. List and total cost value of input steel (imported) used to manufacture the iron & steel products
- x. List and total cost of input steel which are domestically sourced.
- xi. Please attach domestic value addition certificates from suppliers, if the input is not in house.
- xii. For imported input steel, landed cost at Indian port with break-up of CIF value, duties & taxes, port handling charges and inland freight cost.

**For and on behalf of (Name of firm / entity)**

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>



सत्यमेव जयते

# भारत का राजपत्र

## The Gazette of India

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असाधारण  
EXTRAORDINARY

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

प्राधिकार से प्रकाशित  
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नई दिल्ली, शुक्रवार, जनवरी 1, 2021/पौष 11, 1942  
NEW DELHI, FRIDAY, JANUARY 1, 2021/PAUSHA 11, 1942

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

आईडीडी प्रभाग

उद्योग भवन,

नई दिल्ली 31 दिसंबर, 2020

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

सरकारी खरीदमें स्वदेशी निर्मित लोहा 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 अधिवाचन इस अधिसूचना के जारी होने से पूर्व जारी हुआ है।

1 - संशोधन:तालिका 1

क्रम सं.	डीएमआईएंडएसपी परिशोधित 2019 ,में मौजूदा खंड	डीएमआईएंडएसपी परिशोधित 2019 ,में संशोधित खंड
1	<p><b>खंड 1.3:</b></p> <p>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 पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए वस्तुओं के उत्पादन में उपयोग करने के उद्देश्य से लौह एवं इस्पात उत्पादों की खरीद पर लागू नहीं होगी।</p>	<p><b>खंड 1.3:</b></p> <p>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/ अंशतः वित्तपोषित किया जाता है।</p> <p>हालांकि, यह नीति वाणिज्यिक पुनः बिक्री के उद्देश्य से अथवा वाणिज्यिक बिक्री के लिए वस्तुओं के उत्पादन में उपयोग करने के उद्देश्य से लौह एवं इस्पात उत्पादों की खरीद पर लागू नहीं होगी।</p>
2	<p><b>खंड 2.13:</b></p> <p>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।</p>	<p><b>खंड 2.13:</b></p> <p>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 छोड़कर)- 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।</p>

<p><b>3 खंड 5.1.5</b></p> <p>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।</p>	<p><b>खंड 5.1.5</b></p> <p>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/अंशतः वित्तपोषित किया जाता है</p>
<p><b>4 खंड 5.1.6</b></p> <p>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।</p>	<p><b>खंड 5.1.6</b></p> <p>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।</p>
<p><b>5 खंड 7.2</b></p> <p>घरेलू मूल्यवर्धन निवल बिक्री कीमत (निवल घरेलू करों और शुल्कों को छोड़कर बीजककीमत) 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 जायेगी।</p>	<p><b>खंड 7.2</b></p> <p>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 छोड़कर)- 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)।</p>
<p><b>6 खंड 7.3</b></p> <p>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।</p> <p>लौह एवं इस्पात उत्पादों के लिए % घरेलू मूल्यवर्धन</p> <p>अंतिम उत्पाद की निवल बिक्री कीमत- संयंत्र में आयात किये गये लौह अथवा इस्पात की पहुंच लागत----- X100%</p>	<p><b>खंड 7.3</b></p> <p>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।</p> <p>लौह एवं इस्पात उत्पादों तथा पूंजीगत माल के लिए % घरेलू मूल्यवर्धन</p> <p>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%</p>

अंतिम उत्पाद की निवल ब्रिकी कीमत पूँजीगत 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
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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	<p><b>खण्ड 5.1.13 को खण्ड 5.1.12 के नीचे निम्नवत जोड़ा जाता है:</b></p> <p>खण्ड 5.1.13: लोहे और इस्पात उत्पादों की खरीद से संबंधित निविदाओं के लिए कोई वैश्विक निविदा इन्कायरी (जीटीई) आमंत्रित नहीं की जाएगी (डीएमआई और एसपी नीति 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 पूँजीगत सामानों की खरीद से संबंधित निविदाओं के लिए कोई वैश्विक निविदा इन्कायरी (जीटीई) व्यय विभाग द्वारा यथा नाम-निर्दिष्ट सक्षम प्राधिकारी के अनुमोदन के अलावा आमंत्रित नहीं की जाएगी,</p>
2	<p><b>खंड 6.9 को खंड 6.8 के नीचे निम्नवत जोड़ा जाता है:</b></p> <p><b>खंड 6.9: निविदाओं और अन्य खरीद अधियाचनों में विनिर्देशन:</b></p> <p><b>6.9.1</b> 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।</p> <p><b>6.9.2</b> क्रय इकाईयाँ यह देखने का प्रयास करेंगी कि पात्रता की शर्तों, 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।</p> <p><b>6.9.3</b> क्रय इकाईयाँ, 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।</p> <p><b>6.9.4</b> 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।</p> <p><b>6.9.5</b> 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) उसकी शेयरधारिता या इकाई का प्रभावी 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।</p>

3	<p>खंड 6.10 को खंड 6.9 के नीचे निम्नवत जोड़ा जाता है:</p> <p><b>खंड 6.10:</b> 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। तत्पश्चात्, 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।</p>
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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 कोट किया हुआ	7212	35%
6	लौह एवं गैर एलॉय इस्पात का अनियमित रूप से ऎंठा 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 टिबिस्ट किये जाने सहित	7214	35%
8	लौह अथवा गैर एलॉय इस्पात का अन्य बार्स एंड रोड्स	7215	35%
9	लौह अथवा गैर एलॉय इस्पात का एंगल, शेष 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 शेष 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, रिबेट 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, रिबेट 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 ऎंठा 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 ऎंठा हुआ क्वाइल में बार्स और रॉड, हॉट रोल्ड	7227	20%
26	अन्य एलॉय स्टील का अन्य बार्स और रॉड्स; अन्य एलॉय स्टील का एंगल, शेप्स और सेक्शन्स; एलॉय अथवा नॉन एलॉय स्टील का होलो ड्रिल बार्स और रॉड्स	7228	35%
27	लौह अथवा इस्पात की शीट पाइलिंग, चाहे ड्रिल किया हुआ हो अथवा नहीं, चाहे पंच किया हुआ हो अथवा नहीं, चाहे असेम्बल किये हुए तत्वों से बना हुआ हो अथवा नहीं; लौह अथवा इस्पात का वेल्ड किया हुआ एंगल, शेप और सेक्शन्स	7301	20%
28	स्ट्रक्चर्स (9406 के शीर्ष का प्रीफेब्रिकेटिड 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	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	20%
31	लौह अथवा इस्पात का कम्प्रेस किया हुआ अथवा सरलीकृत गैस के लिए कन्टेनर	7311	20%

32	लौह अथवा इस्पात का स्टैंडिड 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 उसकेपार्ट्स	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 31<sup>st</sup> 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	<p><b><u>Clause 1.3:</u></b> 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 &amp; steel products for government projects. However, this policy shall not apply for purchase of iron &amp; steel products with a view to commercial resale or with a view to use in the production of goods for commercial sale.</p>	<p><b><u>Clause 1.3:</u></b> 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 &amp; steel products for government projects. <u>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.</u> However, this policy shall not apply for purchase of iron &amp; steel products with a view to commercial resale or with a view to use in the production of goods for commercial sale.</p>
2	<p><b><u>Clause 2.13:</u></b> 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.</p>	<p><b><u>Clause 2.13:</u></b> Domestic value addition means - <u>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.</u> 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.</p>

3	<p><b>Clause 5.1.5</b> 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 &amp; steel products.</p>	<p><b>Clause 5.1.5:</b> 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 &amp; steel products. <u>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.</u></p>
4	<p><b>Clause 5.1.6:</b> 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.</p>	<p><b>Clause 5.1.6</b> The policy shall be applicable to projects where the procurement value of iron and steel products (Appendix - A of the DMI&amp;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.</p>
5	<p><b>Clause 7.2:</b> 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.</p>	<p><b>Clause 7.2:</b> 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.</p>
6	<p><b>Clause 7.3:</b> 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.</p> <p><b>For iron and steel products</b></p> <p><b><u>% domestic value addition</u></b></p> <p><i>Net selling price of final product - landed cost of imported iron or steel at the plant-----</i> <i>----- X 100 %</i></p> <p><i>Net selling price of final product</i></p> <p><b>For capital goods</b></p> <p><b><u>% domestic value addition</u></b></p> <p><i>Net selling price of final product - landed cost of imported iron or steel at the plant</i> <i>----- X 100 %</i></p> <p><i>Net selling price of final product</i></p>	<p><b>Clause 7.3:</b> 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.</p> <p><b>For iron and steel products &amp; capital goods</b></p> <p><b><u>% domestic value addition</u></b></p> <p><i>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)</i> <i>----- X 100 %</i></p> <p><i>Total value of the item to be procured / sold</i></p>

**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	<p>Clause 5.1.13 is inserted below Clause 5.1.12 as:</p> <p><b>Clause 5.1.13:</b> No Global Tender Enquiry (GTE) shall be invited for tenders related to procurement of iron and steel products (Appendix-A of the DMI&amp;SP Policy). No Global Tender Enquiry (GTE) shall be invited for tenders related to procurement of Capital Goods for manufacturing iron &amp; steel products (Appendix- B of the DMI&amp;SP Policy) having estimated value upto Rs. 200 Crore except with the approval of competent authority as designated by Department of Expenditure.</p>
2	<p>Clause 6.9 is inserted below Clause 6.8 as:</p> <p><b>Clause 6.9: Specifications in Tenders and other procurement solicitations:</b></p> <p><b>6.9.1</b> 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.</p> <p><b>6.9.2</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 local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.</p> <p><b>6.9.3</b> 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.</p> <p><b>6.9.4</b> 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.</p> <p><b>6.9.5</b> 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.</p>
3	<p>Clause 6.10 is inserted below Clause 6.9 as:</p> <p><b>Clause 6.10:</b> 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&amp;SP Policy.</p>

**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.

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

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To,  
M/s Talcher Fertilizers Limited

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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

**SECTION-III**

**INSTRUCTION TO BIDDERS**

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

## **SECTION-III**

### **INSTRUCTION TO BIDDERS**

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**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.
- 1.2 SCOPE OF BID: The scope of work/ Services shall be as defined in Section-VI of the Tender documents.
- 1.3 The successful bidder will be expected to complete the scope of Bid within the period stated in Special Conditions of Contract.
- 1.4 Throughout the 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"/"JOINT VENTURES"**

Applicable for this tender.

### **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.

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.

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## **[B] –BIDDING DOCUMENTS**

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

- 7.1 The contents of Bidding Documents /Tender documents are those stated below, and should be read in conjunction with any 'Addendum / Corrigendum 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 of tender.

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

## **8 CLARIFICATION OF 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".

## **9 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 (G) 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.
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## **[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 of tender), 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 Rates (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 / Declaration for Bid Security in original as per Clause 16 of ITB (Original to be submitted physically)
- (k) Undertaking as per Form-I 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-II to Annexure-V to Section-III (Applicable for all 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 'Form F-14'
- (o) 'Indemnity Bond' as per 'Form F-15'

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

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 "TECHNO-COMMERCIAL/UN-PRICED BID" comprising all the above documents mentioned at 11.1.1 along with copy of EMD/Bid Security, copy of Power of Attorney and copy of integrity pact should be uploaded in the CPP 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. The prices quoted by the Bidders will be inclusive of all taxes except **GST (CGST & SGST/UTGST or IGST)**. Applicable rate of **GST (CGST & SGST/ UTGST or IGST)** on the contract value shall be indicated in SOR under column for GST.
- 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 be 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 Bidder shall also mention the **Service Accounting Codes (SAC) / Harmonized System of Nomenclature (HSN)** at the designated place in Techno-Commercial / Un-Priced bid.

### **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 Quoted prices should be inclusive of all taxes and duties, except **GST (CGST & SGST or IGST or UTGST)**. Please note that the responsibility of payment of **GST (CGST & SGST or IGST or UTGST)** lies with the 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 filed 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. **13.0 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 actuals 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.

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](http://www.gst.gov.in)). Further, Vendors should also download the GST TDS certificate from GST common portal (reference path: Services>User Services> View/Download Certificates option).

13.15 **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 final Due date of submission of bid'. 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".
- 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. MSEs (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.**
16. A **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 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) Mutually Agreed Damages
- 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'.

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## **[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 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 **Priced Bid Opening:**

26.2.1 TFL will open the price bids of those bidders who meet the qualification requirement and whose bids is determined to be technically and commercially responsive. Bidders selected for opening of their price bids shall be informed about the date of price bid opening.

Bidders may depute their authorized representative to attend the bid opening. The bidders' representatives, who are present shall sign a register evidencing their attendance and may be required to be present 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.

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

## 26.3 **Reverse Auction- Not Applicable**

## 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 in case 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-**

Not Applicable.

**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).

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

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 Domestically Manufactured Telecom Products (DMTP) 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 is enclosed as Annexure V to ITB herewith.

Bidders are required to select the applicable purchase preference (i.e. preference category) option while submitting the bid on GePNIC portal. However, evaluation and applicability of purchase preference policy will be based on the confirmations & documents submitted by the bidder in the their bid irrespective of selection made on GePNIC portal.

**[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 Mutually Agreed Damages 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 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)" 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(CPS/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 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 contract value as specified in Notification of Award is less than INR 5 Lakh (exclusive of GST).
- 38.2 The CONTRACT PERFORMANCE SECURITY shall be for an amount equal 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 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 Forfeiture 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) 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 details 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.



38.12 In case, TFL allows additional time for submission of CPBG/SD beyond 30 days, 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.

38.13 ~~In addition to submission of the Security cum Performance Bank Guarantee (CS cum PBG) for 10% of the TOTAL CONTRACT PRICE as stipulated above, the successful bidder is required to submit a Additional Bank Guarantee as specified in Clause 52.0 of SCC~~

### **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 of tender), 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 Deleted

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 and in Works Contract.

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 It may be noted that Government of India has implemented Trade Receivable Discounting System (TReDS) to address challenges faced by MSMEs in delayed payments (after receipt/acceptance of Material/Services) from Government buyers leading to shortfall of Working Capital. TReDS is an online electronic institutional mechanism for facilitating the financing of trade receivables of MSMEs through multiple financiers. TFL is already registered on the following TReDS platform:

- M/s Receivable Exchange of India (RXIL), Mumbai
- M/s Mynd Solutions Private Limited (Mynd), New Delhi
- M/s A. TREDIS (Invoicemart), Mumbai

MSME Bidders are required to register on the TReDS platform. The MSME vendors can avail the TReDS facility, if they want to.

40.7 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.
- II. Rate of the item, which shall be derived as follows:
  - a. Based on rates of Machine and labour as available from the contract (which includes contractor’s supervision, profit, overheads and other expenses).
  - b. In case rates are not available in the contract, rates will be calculated based on prevailing market rates of machine, material and labour plus 15% to cover contractor’s supervision profit, overhead & other expenses..

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

Shall be as stipulated Annexure II to ITB herewith.

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

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

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

#### **43.3 TDS**

(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 file 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 contractor 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 fulfilment 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 cooperate 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 GAZETTE NOTIFICATION NO. D.L-33004/99 DATED 18.02.2016 AND 23.05.2017 OF MINISTRY OF COMMERCE AND INDUSTRY AND AS AMENDED FROM TIME TO TIME) [FOR APPLICABILITY REFER BDS]**

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 applicable).

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 MAD**

MAD 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 MAD) clause. If service provider has raised the invoice for full value, then service provider should issue Credit Note towards the applicable MAD 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 MAD 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. PROVISION FOR PROCUREMENT FROM A BIDDER WHICH SHARES A LANDBORDER WITH INDIA.**

The clause regarding provision for procurement from a bidder which shares a land with India is enclosed as Annexure-VII to ITB herewith.

**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.

A.2 “Fraudulent Practice” means and include any act or omission committed by a agency or with his connivance or by his agent by misrepresenting/ submitting false documents and/ or false information or concealment of facts or to deceive in order to influence a selection process or during execution of contract/ order.

A.3 “Collusive Practice amongst bidders (prior to or after bid submission)” means a scheme or arrangement designed to establish bid prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.

A.4 “Coercive practice” means impairing or harming or threatening to impair or harm directly or indirectly, any agency or its property to influence the improperly actions of an agency, obstruction of any investigation or auditing of a procurement process.

A.5 “Vendor/Supplier/Contractor/Consultant/Bidder” is herein after referred as “Agency”

A.6 “Appellate Authority” shall mean Committee of Directors consisting of Director (Finance) and Director (BD) for works centers under Director (Projects). For all other cases committee of Directors shall consist of Director (Finance) & Director (Projects).

A.7 “Competent Authority” shall mean the authority, who is competent to take final decision for Suspension of business dealing with an Agency/ (ies) and Banning of business dealings with Agency/ (ies) and shall be the “Director” concerned.

A.8 “Allied Agency” shall mean all 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	06 months

	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.	
2	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	2 years (in addition to the period already served)
2.1		
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-1D.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.

**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 valued 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 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 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. 34.2.3 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 subsequent 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	<b>POOR</b>	Seek explanation for Poor performance
2.	<b>FAIR</b>	Seek explanation for Fair performance
3	<b>GOOD</b>	Letter to the concerned for improving performance in future.
4	<b>VERY GOOD</b>	No further action

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

- A) Where performance rating is "POOR" (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. 34.2.3 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 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 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.

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. If errant party emerges as the lowest (L1), then such tender shall also be cancelled and re-invited.

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.

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

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

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

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	Signature of Authorised Signatory:
1	60 & below	POOR	Name:  Designation:
2	61-75	FAIR	
3	76-90	GOOD	
4	More than 90	VERY GOOD	

**Instructions for allocation of marks**

1. Marks are to be allocated as under :

<b>1.1</b>	<b>DELIVERY/ COMPLETION PERFORMANCE</b>	<b>40 Marks</b>
	<div style="width: 45%;"><b>Delivery Period/ Completion Schedule</b></div> <div style="width: 45%;"><b>Delay in Weeks</b></div>	<b>Marks</b>

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 - Moderate nature - low severe nature	0 marks 5 marks 10-25 marks
iii) Number of deviations	1. No deviation 2. No. of deviations $\leq 2$ 3. No. of deviations $> 2$	5 marks 2 marks 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	4 marks

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

**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**

**Marks**

<b>Delivery Period/ Completion Schedule</b>	<b>Delay in Weeks</b>
---	-----------------------

a) Upto 3 months	Before CDD		
	Delay upto 4 weeks	35	40

" 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 - Moderate nature - low severe nature	0 marks 5 marks 10-25 marks
iii) Number of deviations	1. No deviation 2. No. of deviations $\leq 2$ 3. No. of deviations $> 2$	5 marks 2 marks 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>B.</b>	<b>FOR SUPPLIES</b>	
i)	Submission of order acceptance, PBG, Drawings and other documents within time	5 marks
ii)	Attending complaints and requests for after sales service/ warranty repairs and/ or query/ advice (upto the evaluation period).	5 marks
iii)	Response to various correspondence and conformance to standards like ISO	5 marks
iv)	Submission of all required documents including Test Certificates at the time of supply	5 marks



**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 EMD / Declaration for Bid security (as applicable) 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

- i. 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.
- ii. 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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## 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				
1.2	The name of the Works/Services to be performed is: <b>“GRID CONNECTIVITY TO TFL TO SUPPLY 90 MW POWER THROUGH LINE IN LINE OUT (LILO) ARRANGEMENT FROM EXISTING 220 KV TTPS- RENGALI LINE AT TALCHER FERTILIZERS LTD, ODISHA)”</b> .				
3	BIDS FROM CONSORTIUM/ JOINT VENTURE: <table border="1"> <tr> <td>APPLICABLE</td> <td><b>x</b></td> </tr> <tr> <td>NOT APPLICABLE</td> <td>✓</td> </tr> </table>	APPLICABLE	<b>x</b>	NOT APPLICABLE	✓
APPLICABLE	<b>x</b>				
NOT APPLICABLE	✓				
B. BIDDING DOCUMENT					
ITB clause	Description				
8.1	For <b>clarification purposes</b> only, the communication address is: M/s Projects & Development India Limited, P.D.I.L Bhawan, A-14, Sector-1, Noida, (PIN 201301) Dist. GautamBudh Nagar (UP). (India)  Kind Attention: Ms. Anjali Thakur, Dy. General Manager (M.M) Fax no. : +91-120-2529801 Tel no. : +91-120-2529842 E-mail : anjali@pdilin.com alam@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.				
13	Details of Buyer: <table border="1"> <tr> <td>Services to be rendered at</td> <td>M/s Talcher Fertilizers Ltd. (TFL), Administrative Building, Talcher, Post: Vikrampur, Dist: Angul, Pincode-759106, Odisha</td> </tr> </table>	Services to be rendered at	M/s Talcher Fertilizers Ltd. (TFL), Administrative Building, Talcher, Post: Vikrampur, Dist: Angul, Pincode-759106, Odisha		
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	
<b>14</b>	The currency of the Bid shall be INR		
<b>15</b>	The bid validity period shall be 90 days from final 'Bid Due Date'.		
<b>16.1, 16.10 and 38.6</b>	<p>In case '<b>Earnest Money / Bid Security</b>' or "<b>Contract Performance Security</b>" is in the form of '<b>Demand Draft</b>' or '<b>Banker's Cheque</b>', the same should be favour of "Talcher Fertilizers Limited", payable at New Delhi.</p> <p>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:</p> <p>Account Holder's Name: Talcher Fertilizers Limited  Bank Name: State Bank of India  Branch: CAG II, New Delhi  Account number: 41256023769  Type (Current/Saving): Current  Branch Code-17313  Bidder to mention reference no. "EMD/....." in narration while remitting the EMD / Bid Security amount and to mention reference no. "CPS/....." in narration while remitting the CPS amount in TFL's Bank Account</p>		
<b>D. SUBMISSION AND OPENING OF BIDS</b>			
<b>ITB clause</b>	<b>Description</b>		
<b>18</b>	In addition to the original of the Bid, the number of copies required is one. Not applicable in case of e-tendering.		
<b>4.0 of IFB</b>	<p>The submission of physical document as per clause no. 4.0 of IFB shall at following address:</p> <p>M/s Projects &amp; Development India Limited,  P.D.I.L Bhawan, A-14, Sector-1,  Noida, (PIN 201301)  Dist. Gautam Budh Nagar (UP). (India)</p> <p>Kind Attention:  Ms. Anjali Thakur, Dy. General Manager (M.M)  Fax no. : +91-120-2529801  Tel no. : +91-120-2544063</p>		
<b>E. EVALUATION, AND COMPARISON OF BIDS</b>			
<b>ITB clause</b>	<b>Description</b>		
<b>32</b>	Evaluation Methodology is mentioned in Section-II of tender.		

33	Compensation for Extended Stay: APPLICABLE	<input checked="" type="checkbox"/>
	NOT APPLICABLE	<input checked="" type="checkbox"/>

**F. AWARD OF CONTRACT**

ITB clause	Description
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37	State of India of which stamp paper is required for Contract Agreement: <b>Odisha State where Bidder's Registered or Corporate Office is located.</b>
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38	Contract Performance Security/ Security Deposit			
	<table border="1"> <tr> <td>APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> </table> <p><u>The value/ amount of Contract Performance Security/ Security Deposit:</u></p> <p>SD/ CPS @10% of Total order/ contract value within 30 days of FOA/ notification of award.</p> <p>Or,</p> <p>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.)</p>	APPLICABLE	<input checked="" type="checkbox"/>	NOT APPLICABLE
APPLICABLE	<input checked="" type="checkbox"/>			
NOT APPLICABLE	<input checked="" type="checkbox"/>			

41	Provision of AHR Item :			
	<table border="1"> <tr> <td>APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	APPLICABLE	<input checked="" type="checkbox"/>	NOT APPLICABLE
APPLICABLE	<input checked="" type="checkbox"/>			
NOT APPLICABLE	<input checked="" type="checkbox"/>			

44.1	Quarterly Closure of Contract:			
	<table border="1"> <tr> <td>APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	APPLICABLE	<input checked="" type="checkbox"/>	NOT APPLICABLE
APPLICABLE	<input checked="" type="checkbox"/>			
NOT APPLICABLE	<input checked="" type="checkbox"/>			

49	Applicability of BEC relaxation relating to Startups:			
	<table border="1"> <tr> <td>APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>NOT APPLICABLE</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	APPLICABLE	<input checked="" type="checkbox"/>	NOT APPLICABLE
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**PUBLIC PROCUREMENT  
(PREFERENCE TO MAKE IN INDIA), ORDER 2017**



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

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

To

All Central Ministries/Departments/CPSUs/All concerned

**ORDER**

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

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

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

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

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

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

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

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

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

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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.



- 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.



**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:

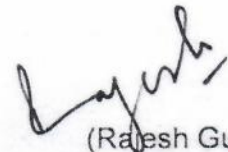
- Secretary, Department for Promotion of Industry and Internal Trade—Chairman
- Secretary, Commerce—Member
- Secretary, Ministry of Electronics and Information Technology—Member
- Joint Secretary (Public Procurement), Department of Expenditure—Member
- Joint Secretary (DPIIT)—Member-Convenor

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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 1<sup>st</sup> January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order.
20. **Transitional provision:** This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.



(Rajesh Gupta)  
Director

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

<b>Sr. No.</b>	<b>Description</b>	<b>Parameter / Document</b>
<b>1</b>	<b>Minimum Local Content (LC) for Availing Preference under this Policy</b>	50%
<b>2</b>	<b>Margin of Purchase Preference</b>	20%
<b>3</b>	<b>Local Content (LC) % declared by bidder</b> (Documents to be submitted as per Sr. No. 4 below)	[Tick (✓) whichever is applicable] a) LC Equal to or more than 50% <input type="checkbox"/> b) LC More than 20% but less than 50% <input type="checkbox"/>
<b>4</b>	<b>Documents to be submitted by bidder under this Policy</b>	Certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant as per <u>Form-I</u> to be submitted by bidder.
<b>5</b>	<b>Whether tender is divisible or not divisible</b>	Not Divisible; Clause No. 3A (c) of revised Policy dated 16.09.2020 shall be applicable

**PREAMBLE TO SCHEDULE OF RATES**

1. The “Schedule of Rates (SOR)” 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 SOR 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 SOR template must not be modified / replaced by the bidder; else the bid submitted shall be rejected.
3. Bidder shall quote for all the items in INR only.
4. 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.
5. Goods & Services Tax (GST) is applicable @ 18% on the quoted rates (being Works Contract)
6. It is mandatory to quote prices in SOR. It will be the responsibility of the contractor to quote for all items as per scope of work and terms and conditions defined in NIT.
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 unpriced bid, as a confirmation of price/data quoted against each head.

**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]

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

**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: [Signature of Authorized Signatory of Bidder]

Date: Name:

Designation:

Seal:

## **Schedule I**

### **List of Category-I Sensitive sectors:**

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

## **Schedule II**

### **List of Category-II Sensitive sectors:**

<b>Sr.No.</b>	<b>Sector</b>
(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:

<b>Sr.No.</b>	<b>Sensitive Technologies</b>
(i)	Additive Manufacturing (e.g. 3D 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(A)	CHECKLIST
F-8(B)	CHECKLIST FOR BID EVALUATION CRITERIA (BEC) QUALIFYING DOCUMENTS
F-9	FORMAT FOR CERTIFICATE FROM BANKIF 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
F-12	BIDDER'S QUERIES FOR PRE BID MEETING
F-13	E-BANKING FORMAT
F-14	INTEGRITY PACT
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F-16	FREQUENTLY ASKED QUESTIONS (FAQS)
F-17	PROFORMA OF BANK GUARANTEE FOR MOBILISATIONS ADVANCE PAYMENT
F-17 (a)	MATTER TO BE MENTIONED IN COVERING LETTER TO BE SUBMITTED BY VENDOR ALONG WITH BANK GUARANTEE (BG)
F-18	PROFORMA OF BANK GUARANTEE FOR PAYMENTS TOWARDS PLACEMENT OF ALL PURCHASE ORDERS OF MAJOR TAGGED ITEMS
F-19	FORMAT OF 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

**F-1**

**BIDDER'S GENERAL INFORMATION**

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

TENDER NO:

1	Bidder Name:	M/s.....
2	Status of Firm	Proprietorship Firm/Partnership firm/ Public Limited/ Pvt. Limited/ Govt. Dept. / PSU/ Others If Others Specify: _____  [Enclose relevant certificates / partnership deed/certificate of Registration, as applicable]
3	Name of Proprietor/ Partners/ Directors of the firm/company	1. 2. 3.
4	Name of Power of Attorney holders of bidder	
5	Number of Years in Operation	
6	Address of Registered Office	_____ City: _____ District: _____  State: _____  PIN/ZIP : _____
7	Bidder's address where order/contract is to be placed	_____ City: _____ District: _____  State: _____  PIN/ZIP : _____
8	Office responsible for executing the contract with GST no.(In case supply of works are from multiple locations, addresses and GST no. of all such locations are to be provided)	City: District:  State: PIN/ZIP:  GST No.:
9	Telephone Number & Contact Information of address where order is to be placed	_____ (Country Code) (Area Code) (Telephone Number) FAX No. : ..... e-mail ID: .....
10	E-mail Address	

11	ISO Certification, if any {If yes, please furnish details}	
12	PAN No	[Enclose copy of relevant document]
13	GST No. (refer sl. no. 8 above)	[Enclose copy of relevant document]
14	EPF Registration No.	[Enclose copy of relevant document]
15	ESI code No.	[Enclose copy of relevant document]
16	Whether Micro or Small Enterprise	Yes / No (If Yes, Bidder to submit requisite documents as specified in ITB: Clause No. 40)
	Whether MSE is owned by SC/ST Entrepreneur(s)	Yes / No (If Yes, Bidder to submit requisite documents as specified in ITB: Clause No. 40)
	Whether MSE is owned by Women	Yes / No (If Yes, Bidder to submit requisite documents as specified in ITB: Clause No. 40)
17	Whether Bidder is Startups or not	Yes / No (If Yes, Bidder to submit requisite documents as specified in ITB: Clause No. 49)
18	In case of Start-up confirm the following: (i) Date of its incorporation/ registration (ii) Whether turnover for any financial years since incorporation/ registration has exceeded Rs.100 Crores.	

Note: \* TFL intent to place the contract directly on the address from where Works are to be supplied. In case, bidder wants contract at some other address or Works are to be supplied from multiple locations, bidder is required to provide in their bid, the address on which contract is to be placed.

Place:

[Signature of Authorized Signatory of Bidder]

Date:

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) _____	<b>Bank Guarantee No.</b>	
	<b>Date of BG</b>	
	<b>BG Valid up to (Expiry date)</b>	
	<b>Claim period up to (indicate date of expiry of claim period which includes minimum three months from the expiry date)</b>	
	<b>Stamp Sl. No./e-Stamp Certificate No.</b>	

**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 \_\_\_\_\_.

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.

**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 policies of TALCHER FERTILIZERS LIMITED in this regard), if we are in breach of our obligation(s) as per following:

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

Place:  
Date:

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

Seal

**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,**

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

**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:

11.

- 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.

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)**

<b>1. Bank Guarantee No.</b>				
<b>2. Vendor Name/ VENDOR CODE</b>	NAME			
	VENDOR CODE			
<b>BANK GUARANTEE AMOUNT</b>				
<b>PURCHASE ORDER/LOA</b>				
<b>1. Nature of Bank Guarantee [Please Tick ( <input type="checkbox"/> ) whichever is applicable]</b>	Performance Security (CPS)	SECURITY DEPOSIT	ADVANCE	EMD
<b>2. BG ISSUING Bank DETAILS:</b>				
<b>(A) E-MAIL ID</b>				
<b>(B) ADDRESS</b>				
<b>(C) Phone No. / Mobile No.</b>				

**F-5**

**AGREED TERMS & CONDITIONS**

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

SUB:  
TENDER NO:

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

SI.	DESCRIPTION	BIDDER'S CONFIRMATION
1.	Bidder's name, Vendor Code of TFL (If any) and address	Bidder's Name:  TFL's Vendor Code:  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 <b>GST (CGST &amp; SGST/ UTGST or IGST)</b> 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 <b>GST (CGST &amp; SGST/UTGST or IGST)</b>  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): <hr/>
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. _____
4.5	Whether bidder is liable to raise E-Invoice as per GST Act.  If yes, bidder will raise E-Invoice and confirm compliance to provision of tender in this regard.	
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	

SI.	DESCRIPTION	BIDDER'S CONFIRMATION				
	successful bidder.					
7.	Bidder confirms that Contract Performance Security shall be from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve bank of India as scheduled foreign bank. However, in case of bank guarantees from banks other than the 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 Mutually Agreed Damages 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 MAD 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 EMD/Bid Security details as under: a) EMD/ Bid Security No. & date b) Value c) Validity d) Bank Address/e-mail ID/Mobile no. [in case of BG] <b>OR</b> Bidder furnishes bid security declaration [applicable for MSEs, Start-Ups and CPSEs (to whom exemption is allowed as per extant guidelines in vogue)]					
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.	<table border="1"> <tr> <td>Confirmed</td> <td></td> </tr> <tr> <td>Not confirmed</td> <td></td> </tr> </table>	Confirmed		Not confirmed	
Confirmed						
Not confirmed						
15.	All correspondence must be in ENGLISH language only					

SI.	DESCRIPTION	BIDDER'S CONFIRMATION
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.	<p><u>No Deviation Confirmation:</u> 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 may be rejected.</p>	
19.	<p>If Bidder becomes a successful Bidder pursuant to the provisions of the Tender Document, the following Confirmation shall be automatically become enforceable:</p> <p>"We agree and acknowledge that the Employer is entering into the Contract/Agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood &amp; agreed that the Government of India is not a party to the Contract/Agreement and has no liabilities, obligations or rights 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."</p>	
20.	Bidder to ensure all documents as per tender including clause 11 of Section III of tender 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	

SI.	DESCRIPTION	BIDDER'S CONFIRMATION
	<p>practices”) or banned by Government department/ Public Sector on due date of submission of bid.</p> <p>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.</p> <p>Bidder also confirms that they are not under any liquidation, court receivership or similar proceedings or 'bankruptcy'.</p> <p>In case it comes to the notice of TFL/PDIL that the bidder has given wrong declaration in this regard, the same shall be dealt as 'fraudulent practices' and action shall be initiated as per the Procedure for action in case of Corrupt/Fraudulent/Collusive/Coercive Practices.</p> <p>Further, Bidder also confirms that in case there is any change in status of the declaration prior to award of contract, the same will be promptly informed to TFL/PDIL by them.</p>	
23	<p>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 &amp; 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 of tender.</p>	
24	<p>Bidders confirm to submit signed copy of Integrity Pact (wherever included in tender).</p> <p>If Bidder is a partnership concern or a consortium, this agreement must be signed by all partners or consortium members.</p>	
25.	<p>Bidder confirms that, in case of contradiction between the confirmations provided in this format and to the terms &amp; conditions mentioned elsewhere in the offer, the confirmations given in this format shall prevail.</p>	
26.	<p>Bidder's offer No. &amp; Date</p>	
27	<p>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.</p>	

Place:  
Date:

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

**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  
NOIDA**

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  
NOIDA**

SUB:  
TENDER NO:

Sl. No	Detailed Description of Job	LOA/WO No. and date	Full Postal Address & phone nos. of Client. <i>Name, designation and address of Engineer/ Officer-in-Charge</i>	Capacity	Value of Contract/ Order ( <i>Specify Currency Amount</i> )	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:

**Note:**As per Note III of Clause No. A.1 of Section-II, only documents (Work Order, Completion certificate, Execution Certificate etc.) which have been referred/ specified in the bid shall be considered in reply to queries during evaluation of Bids.



**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 (as applicable)	
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 unpriced bid as per bid requirement (including cl.no.11.1.1 of Section-III of tender).	
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 <i>Form-I to Annexure-V to Section-III of tender</i> 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 <i>Form-II to Annexure-V of Section-II of tender</i> are submitted.	
6.0	Confirm that Undertaking as per Form-1to 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:

[Signature of Authorized Signatory of Bidder]

Date:

Name:

Designation:

**F-8(B)**  
**CHECKLIST FOR BID EVALUATION CRITERIA (BEC) QUALIFYING DOCUMENTS**  
**(refer Section II of Tender document)**

Sl. 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
<b>Technical BEC</b>					
1.	<b>Experience</b>	<p>(a) 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 order issuing authority/ Owner/End user.</p> <p>(b) 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</p> <p>(c) Certificate in respect of minimum one year successful operation of the Plant/System from the date of acceptance/Commissioning of work issued by the Owner/End user shall be submitted.</p> <p>(d) Any other documents as per BEC requirement.</p>		Yes/No	
2.	<b>Experience of bidder acquired as a subcontractor</b>	certificate from end user		Yes/No	
3.	<b>Job executed for Subsidiary / Fellow subsidiary/ Holding</b>	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	

	<b>company.</b>				
4.	<b>Any other technical criteria in BEC</b>	Bidder shall submit affidavit from the domestic manufacturers of such 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. Any other documents as per BEC requirement		Yes/No	
<b>Financial BEC</b>					
1.	<b>Annual Turn Over</b>	Audited Financial Statements [including Auditor's Report, Balance sheet, Profit & Loss Accounts statements, Notes & schedules etc.] for last Audited Financial Year. [In case the Annual Turnover criteria is not met in last Audited Financial Year, then the Audited Financial Statements for previous two years of last Audited Financial Year is to be submitted]	Submitted  <i>(Mention specific year..... ... )</i>	Yes/No	
2.	<b>Net Worth</b>	Audited Financial Statements [including Auditor's Report, Balance sheet, Profit & Loss Accounts statements, Notes & schedules etc.] for last Audited Financial Year.	Submitted <i>(Mention specific year .....)</i>	Yes/No	
3.	<b>Working Capital</b>	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 <i>(Mention specific year..... ... )</i>  Submitted/ Not Applicable <i>(Bidder to tick appropriate option)</i>	Yes/No	

4.	<b>Format for Details of financial capability of Bidder</b>	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  
NOIDA**

Dear Sir,

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

The Customer has informed that they wish to bid for TFL's Tender / NIT no.  
..... dated ..... for .....(Name of the  
supply/work/services/consultancy) and as per the terms of the said Tender/NIT Document 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 :

Email Id :

Contact No. :

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 (Year1+Year 2+Year 3)	
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.



(Page 2 of 2)

**F-11**

DELETED

**F-12**

**BIDDER'S QUERIES FOR PRE BID MEETING**

To,

M/s TALCHER FERTILIZERS LIMITED  
NOIDA

SUB:

TENDER NO:

SI. 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:** \_\_\_\_\_

**F-13**  
**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)

**F-14**

**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

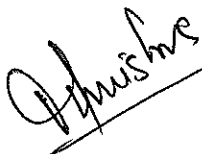

Bidder is required to sign the Integrity Pact with TFL as per format & terms and conditions enclosed with tender. In case a bidder does not sign the Integrity Pact, his bid shall be liable for rejection.

### 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](mailto:spns108@gmail.com))
- ii) Shri Anil Kumar Sharma (Email ID: [aksharma1512@gmail.com](mailto: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](mailto:spns108@gmail.com)) & Shri Anil Kumar Sharma (Email ID: [aksharma1512@gmail.com](mailto:aksharma1512@gmail.com)) or with CC to them through their Nodal Officer - Sh. Vivek Mishra, Sr. Mgr. (C&P) – Email: [vivekmishra@tflonline.co.in](mailto: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."

*Vivek Mishra*



**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").

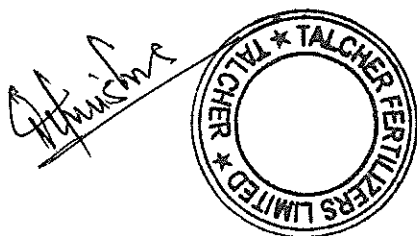
**PREAMBLE**

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**

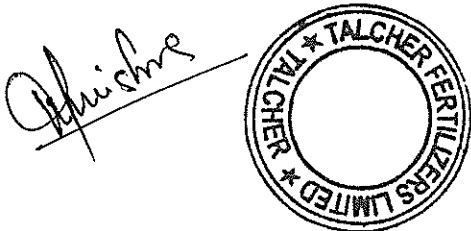
1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following Principles:-
  - i) No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for 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.



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

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

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



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

vi) Bidder(s) / Contractor(s) who have signed the Integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.

2. The Bidder(s)/ Contractor(s) shall not instigate third person to commit offences outlined above or be an accessory to such offences.

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

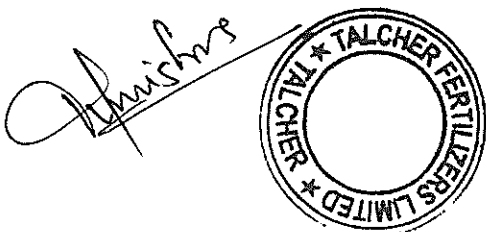
If the Bidder (s) / Contractor (s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put their reliability or credibility in question, the Principal is entitled to disqualify the Bidder (s) / Contractor (s) from the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

### **Section 4 – Compensation for Damages**

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

### **Section 5 – Previous transgression**

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



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

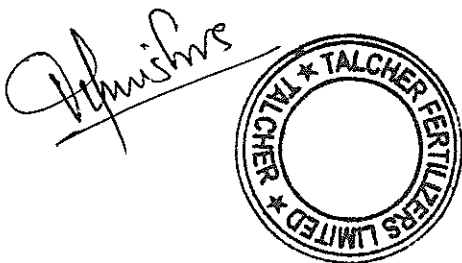
1. In case of sub-contracting, the Principal contractor shall take the responsibility of the adoption of IP by the sub-contractor. It is to be ensured by him that all sub-contractors also sign the IP.
2. The Principal will enter into agreements with identical conditions as this one with all Bidders and 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



impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

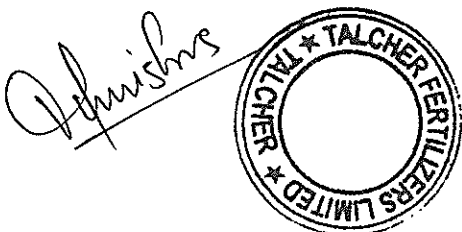
5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he/she will so inform the Management of the Principal and request the Management to discontinue or to take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. 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, only 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**

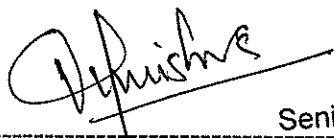
This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract, and for all other Bidders 6 months after the contract has been awarded. Any violation to the same would entail disqualification of the bidders and exclusion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




1. This agreement is subject to Indian Law. Place of performance and exclusive jurisdiction is the Registered Office of the Principal, i.e. New Delhi.
2. Changes and supplements as well as termination notices, if any, need to be made in writing. Side agreements have not been made.
3. If the Contractor/Bidder is a 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)  
  
 (Office Seal)

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

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

**INDEMNITY BOND**

WHEREAS TALCHER FERTILIZERS LIMITED (hereinafter referred to as “**TFL**”) which expression shall, unless repugnant to the context include its successors and assigns, having its registered office at Plot 2/H, Kalpana Area, BJB Nagar, Khorda, Bhubaneswar – 751014 has entered into a contract with M/s\*..... (hereinafter referred to as the “**Contractor**”) which expression shall unless repugnant to the context include its representatives, successors and assigns, having its registered office at \*..... and on the terms and conditions as set out, inter-alia in the ..... **[mention the work order/FOA/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



**F-16**

**FREQUENTLY ASKED QUESTIONS (FAQs)**

<b>SL.NO.</b>	<b>QUESTION</b>	<b>ANSWER</b>
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)**

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

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

**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)**  
**(NOT APPLICABLE)**  
**MATTER TO BE MENTIONED IN COVERING LETTER TO BE SUBMITTED BY**  
**VENDOR ALONG WITH BANK GUARANTEE (BG)**

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

**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 : PNMM/PC-183/E-4013/NCB DATED 10.03.2022)**

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: [Signature of Authorized Signatory of Bidder]

Date: 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 behalf of EMPLOYER

TALCHER FERTILIZERS LIMITED

Signed and Delivered for and on behalf of the CONTRACTOR.

NAME OF CONTRACTOR

\_\_\_\_\_

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

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

**IN PRESENCE OF TWO WITNESSES**

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

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

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

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

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

\_\_\_\_\_

\_\_\_\_\_

**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:





PROJECTS & DEVELOPMENT INDIA LIMITED

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## GENERAL CONDITIONS OF CONTRACT



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Employer



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**GENERAL CONDITIONS OF CONTRACT**

**General Conditions of Contract**

**Section- I. Definitions**

**1. Definition of Terms:**

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



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





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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



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suiting 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



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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



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above 100 HP slipping 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.



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- 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



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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:

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

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

4.5 Signature of Tenderer:

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

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

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

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

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





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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:**  
(Clause not applicable for this Tender) 6.1 The bidder must pay Earnest Money as given in the letter /notice inviting tenders and attach the official receipt with the tender failing which the tender is liable to be rejected and representatives of such tenderers will not be allowed to attend the tender opening. Earnest Money can be paid in Demand Drafts or Bank Guarantee or Banker's Cheque or Letter of Credit from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve Bank of India as scheduled foreign bank. However, other than the Nationalized Indian Banks, the banks whose BGs are furnished, must be commercial banks having net worth in excess of Rs. 100 crores and a declaration to this effect should be made by such commercial bank either in the bank guarantee itself or separately on a letter head.
- The bid guarantee shall be submitted in the prescribed format.
- Note: The Bank Guarantee so furnished by the tenderer shall be in the proforma prescribed by the EMPLOYER. No interest shall be paid by the EMPLOYER on the Earnest Money deposited by the tenderer. The Bank Guarantee furnished in lieu of Earnest Money shall be kept valid for a period of "SIX MONTHS" from the date of opening of tender.(TWO MONTHS beyond the bid due date).
- The Earnest Money deposited by successful tenderer shall be forfeited if the Contractor fails to furnish the requisite Contract Performance Security as per clause 24 hereof and /or fails to start work within a period of 15 days or fails to execute the AGREEMENT within 15 days of the receipt by him of the Notification of Acceptance of Tender.
- Note: The Earnest Money of the unsuccessful bidder will be returned by EMPLOYER/CONSULTANT, directly to the tenderer(s), within a reasonable period of time but not later than 30 days after the expiration of the period of bid validity prescribed by EMPLOYER.
- 7 Validity:** 7.1 Tender submitted by tenderers shall remain valid for acceptance for a period of "90 days" from the date of opening of the tender. The tenderers shall not be entitled during the said period of 90 days, 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



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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





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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



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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;



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- 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.



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

Any neglect or omission or failure on the part of the CONTRACTOR in obtaining necessary and reliable information upon the foregoing or any other matters affecting the CONTRACT shall not relieve him from any risks or liabilities or the entire responsibility from completion of the works at the scheduled rates and times in strict accordance with the CONTRACT.

It is, therefore, expected that should the CONTRACTOR have any doubt as to the meaning of any portion of the CONTRACT DOCUMENT he shall set forth the particulars thereof in writing to EMPLOYER in duplicate, before submission of tender. The EMPLOYER may provide such clarification as may be necessary in writing to CONTRACT, such clarifications as provided by EMPLOYER shall form part of CONTRACT DOCUMENTS.

No verbal agreement or inference from conversation with any effect or employee of the EMPLOYER either before, during or after the execution of the CONTRACT agreement shall in any way affect or modify and of the terms or obligations herein contained.

Any change in layout due to site conditions or technological requirement shall be binding on the CONTRACTOR and no extra claim on this account shall be entertained.

**24 Contract Performance  
Security:**

- 24.1 The CONTRACTOR shall furnish to the EMPLOYER, within 30 days from the date of notification of award, a security in the sum of 10% 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



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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





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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



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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 (\*)**

If the Contractor achieves completion of Works in all respect prior to the time schedule stipulated in the SCC, the Employer shall pay to the Contractor the relevant sum, if mentioned specifically in SCC, as bonus for early completion. The bonus for early completion, if provided specifically in SCC, shall be payable to the maximum ceiling of 2 ½ % of the total contract price.

**(Clause not applicable for this  
Tender)**

(\*) Partial earlier completion may not always produce net benefits to the Employer, for example where utilization of the completed Works requires (a) the fulfillment of all parts of the Contract (e.g. the training of personnel); or (b) the completion of all Sections (e.g. in pipeline laying, where early completion of the laying of pipeline would not be useful if the compressor is still under installation); or (c) certain seasonal effects to take place (e.g. onset of the rainy season, for impounding a reservoir); or (d) other circumstances. Also a more rapid drawdown of budgeted funds may be required. All such factors should be considered prior to the inclusion of a bonus clause in the Contract.

**28 Rights of the employer to  
forfeit contract performance  
security:**

28.1 Whenever any claim against the CONTRACTOR for the payment of a sum of money arises out or under the CONTRACT, the EMPLOYER shall be entitled to recover such sum by appropriating in part or whole the Contract Performance Security of the CONTRACTOR. In the event of the security being insufficient or if no security has been taken from the CONTRACTOR, then the balance or the total sum recoverable, as the case may be shall be deducted from any sum then due or which at any time thereafter may become due to the CONTRACTOR. The CONTRACTOR shall pay to the EMPLOYER on demand any balance remaining due.

28.2 In .case of forfeiture of Contract Performance Security/ Security Deposit, the forfeited amount will be considered inclusive of tax and tax invoice will be issued by TFL. The forfeiture amount will be subject to final decision of TFL based on other terms and conditions of order/ contract.

**29 Failure by the contractor to  
comply with the provisions**

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



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**of the contract:**

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) TO DETERMINE THE CONTRACT in which event the CONTRACT shall stand terminated and shall cease to be in force and effect on and from the date appointed by the EMPLOYER on that behalf, whereupon the CONTRACTOR shall stop forthwith any of the CONTRACTOR's work then in progress, except such WORK as the EMPLOYER may, in writing, require to be done to safeguard any property or WORK, or installations from damage, and the EMPLOYER, for its part, may take over the work remaining unfinished by the CONTRACTOR and complete the same through a fresh contractor or by other means, at the risk and cost of the CONTRACTOR, and any of his sureties if any, shall be liable to the EMPLOYER for any excess cost occasioned by such work having to be so taken over and completed by the EMPLOYER over and above the cost at the rates specified in the schedule of quantities and rate/prices.

b) WITHOUT DETERMINING THE CONTRACT to take over the work of the CONTRACTOR or any part thereof and complete the same through a fresh contractor or by other means at the risk and cost of the CONTRACTOR. The CONTRACTOR and any of his sureties are liable to the EMPLOYER for any excess cost over and above the cost at the rates specified in the Schedule of Quantities/ rates, occasioned by such works having been taken over and completed by the EMPLOYER.

29.2 In such events of Clause 29.1(a) or (b) above.

a) The whole or part of the Contract Performance Security furnished by the CONTRACTOR is liable to be forfeited without prejudice to the right of the EMPLOYER to recover from the CONTRACTOR the excess cost referred to in the sub-clause aforesaid, the EMPLOYER shall also have the right of taking possession and utilizing in completing the works or any part thereof, such as materials equipment and plants available at work site belonging to the CONTRACTOR as may be necessary and the CONTRACTOR shall not be entitled for any compensation for use or damage to such materials, equipment and plant.

b) The amount that may have become due to the CONTRACTOR on account of work already executed by him shall not be payable to him until after the expiry of Six (6) calendar months reckoned from the date of termination of CONTRACT or from the taking over of the WORK or part thereof by the EMPLOYER as the case may be, during which period the responsibility for faulty materials or workmanship in respect of such work shall, under the CONTRACT, rest exclusively with the CONTRACTOR. This amount shall be subject to deduction of any amounts due from the CONTRACT to the EMPLOYER under the terms of the CONTRACT authorized or required to be reserved or retained by the EMPLOYER.

29.3 Before determining the CONTRACT as per Clause 29.1(a) or (b) provided in the judgment of the EMPLOYER, the default or defaults committed by the CONTRACTOR is/are curable and can be cured by the CONTRACTOR if an opportunity given to him, then the EMPLOYER may issue Notice in writing calling the CONTRACTOR to cure the default within such time specified in the





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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 ensue as provided in the said clause.
- 32 Termination of contract**
- 32(A) **TERMINATION OF CONTRACT FOR DEATH:**  
If the CONTRACTOR is an individual or a proprietary concern and the individual or the proprietor dies or if the CONTRACTOR is a partnership concern and one of the partner dies then unless, the EMPLOYER is satisfied that the legal representative of the individual or the proprietary concern or the surviving partners are capable of carrying out and completing CONTRACT, he



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(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 deceased CONTRACTOR and/or to the surviving partners of the CONTRACTOR'S firm on account of the cancellation of CONTRACT. The decision of the EMPLOYER in such assessment shall be final and binding on the parties. In the event of such cancellation, the EMPLOYER shall not hold the estate of the deceased CONTRACTOR and/or the surviving partners of the CONTRACTOR'S firm liable for any damages for non-completion of CONTRACT.

**32(B) TERMINATION OF CONTRACT IN CASE OF LIQUIDATION / BANKRUPTCY ETC.**

If the Contractor shall dissolve or become bankrupt or insolvent or cause or suffer any receiver to be appointed of his business or any assets thereof compound with his Creditors, or being a corporation commence to be wound up, not being a member's voluntary winding up for the purpose of amalgamation or reconstruction, or carry on its business under a Receiver for the benefits of its Creditors any of them, EMPLOYER shall be at liberty :-

To terminate the contract forthwith upon coming to know of the happening of any such event as aforesaid by notice in writing to the Contractor or to give the Receiver or liquidator or other person, the option of carrying out the contract subject to his providing a guarantee up to an amount to be agreed upon by EMPLOYER for due and faithful performance of the contract.

**32 (C) In case of termination of CONTRACT herein set forth (under clause 29.0) except under conditions of Force Majeure and termination after expiry of contract, the CONTRACTOR shall be put under holiday [i.e. neither any enquiry will be issued to the party by Talcher Fertilizers Ltd. against any type of tender nor their offer will be considered by TFL against any ongoing tender (s) where contract between TFL and that particular CONTRACTOR (as a bidder) has not been finalized] for three years from the date of termination by Talcher Fertilizers Ltd. to such CONTRACTOR.**

- 33 Members of the employer not individually liable :** 33.1 No Director, or official or employee of the EMPLOYER/ CONSULTANT shall in any way be personally bound or liable for the acts or obligations of the EMPLOYER under the CONTRACT or answerable for any default or omission in the observance or performance of any of the acts, matters or things which are herein contained.
- 34 Employer not bound by personal representations:** 34.1 The CONTRACTOR shall not be entitled to any increase on the scheduled rates or any other right or claim whatsoever by reason of any representation, explanation statement or alleged representation, promise or guarantees given or alleged to have been given to him by any person.
- 35 Contractor's office at site:** 35.1 The CONTRACTOR shall provide and maintain an office at the site for the accommodation of his agent and staff and such office shall be open at all reasonable hours to receive instructions, notice or other communications. The CONTRACTOR at all time shall maintain a site instruction book and compliance of these shall be communicated to the ENGINEER-IN CHARGE from time to time and the whole document to be preserved and handed over after completion of works.
- 36 Contractor's subordinate staff and their conduct** 36.1 The CONTRACTOR, on or after award of the WORK shall name and depute a qualified engineer having sufficient experience in carrying out work of similar



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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.



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**37 Sub-letting of works:**

37.1 No part of the CONTRACT nor any share or interest therein shall in any manner or degree be transferred, assigned or sublet by the CONTRACTOR directly or indirectly to any person, firm or corporation whatsoever without the consent in writing, of the ENGINEER/ EMPLOYER except as provided for in the succeeding sub-clause.

i) **SUB-CONTRACTS FOR TEMPORARY WORKS ETC.:**

The EMPLOYER may give written consent to Sub- contract for the execution of any part of the WORK at the site, being entered in to by CONTRACTOR provided each individual Sub- contract is submitted to the ENGINEER-IN-CHARGE before being entered into and is approved by him.

ii) **LIST OF SUB-CONTRACTORS TO BE SUPPLIED:**

At the commencement of every month the CONTRACTOR shall furnish to the ENGINEER-IN- CHARGE list of all SUB-CONTRACTORS or other persons or firms engaged by the CONTRACTOR and working at the SITE during the previous month with particulars of the general nature of the Subcontract or works done by them.

iii) **CONTRACTOR'S LIABILITY NOT LIMITED BY SUB-CONTRACTORS:**

Notwithstanding any sub-letting with such approval as aforesaid and notwithstanding that the ENGINEER-IN-CHARGE shall have received copies of any Subcontracts, the contractor shall be and shall remain solely responsible for the quality, proper and expeditious execution of the Contract in all respects as if such sub-letting or Subcontracting had not taken place, and as if such work had been done directly by the CONTRACTOR. The CONTRACTOR shall bear all responsibility for any act or omission on the part of sub-contractors in regard to work to be performed under the CONTRACT.

iv) **EMPLOYER MAY TERMINATE SUB-CONTRACTS:**

If any SUB-CONTRACTOR engaged upon the works at the site executes any works which in the opinion of the ENGINEER-IN-CHARGE is not in accordance with the CONTRACT documents, the EMPLOYER may by written notice to the CONTRACTOR request him to terminate such subcontract and the CONTRACTOR upon the receipt of such notice shall terminate such Subcontract and dismiss the SUB-CONTRACTOR(S) and the later shall forthwith leave the works, failing which the EMPLOYER shall have the right to remove such SUB- CONTRACTOR(S) from the site.

v) **NO REMEDY FOR ACTION TAKEN UNDER THIS CLAUSE:**

No action taken by the EMPLOYER under the clause shall relieve the CONTRACTOR of any of his liabilities under the CONTRACT or give rise to any right or compensation, extension of time or otherwise failing which the EMPLOYER shall have the right to remove such SUB-CONTRACTOR(S) from the site.



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**38 Power of entry:**

38.1 If the CONTRACTOR shall not commence the WORK in the manner previously described in the CONTRACT documents or if he shall at any time in the opinion of the ENGINEER-IN-CHARGE.

- i) fail to carry out the WORK in conformity with the CONTRACT documents, or
- ii) fail to carry out the WORK in accordance with the Time Schedule, or
- iii) substantially suspend work or the WORK for a period of fourteen days without authority from the ENGINEER-IN-CHARGE, or
- iv) fail to carry out and execute the WORK to the satisfaction of the ENGINEER-IN-CHARGE, or
- v) fail to supply sufficient or suitable construction plant, temporary works, labour, materials or things, or
- vi) Commit, suffer, or permit any other breach of any of the provisions of the CONTRACT on his part to be performed or observed or persist in any of the above mentioned breaches of the CONTRACT for fourteen days, after notice in writing shall have been given to the CONTRACTOR by the ENGINEER-IN-CHARGE requiring such breach to be remedied, or
- vii) if the CONTRACTOR shall abandon the WORK or
- viii) If the CONTRACTOR during the continuance of the CONTRACT shall become bankrupt, make any arrangement or composition with his creditors, or permit any execution to be levied or go into liquidation whether compulsory or voluntary not being merely a voluntary liquidation for the purpose of amalgamation or reconstruction

then in any such case, the EMPLOYER shall have the power to enter upon the WORK and take possession thereof and of the materials, temporary WORK, construction plant, and stock thereon, and to revoke the CONTRACTOR's license to use the same, and to complete the WORK by his agents, other CONTRACTORS or workmen or to relate the same upon any terms and to such other person, firm or corporation as the EMPLOYER in his absolute discretion may think proper to employ and for the purpose aforesaid to use or authorize the use of any materials, temporary work, CONSTRUCTION PLANT, and stock as aforesaid, without making payment or allowance to the CONTRACTOR for the said materials other than such as may be certified in writing by the ENGINEER-IN-CHARGE to be reasonable, and without making any payment or allowance to the CONTRACTOR for the use of the temporary said works, construction plant and stock or being liable for any loss or damage thereto, and if the EMPLOYER shall by reason of his taking possession of the WORK or of the WORK being completed by other CONTRACTOR (due account being taken of any such extra work or works which may or be omitted) then the amount of such excess as certified by the ENGINEER-IN-CHARGE shall be deducted from any money which may be due for work done by the CONTRACTOR under the CONTRACT and not paid for. Any deficiency shall forthwith be made good and paid to the EMPLOYER by the CONTRACTOR and the EMPLOYER shall have





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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

**TO THE CONTRACTOR:**

Any notice hereunder may be served on the CONTRACTOR or his duly authorized representative at the job site or may be served by registered mail direct to the address furnished by the CONTRACTOR. Proof of issue of any such notice could be conclusive of the CONTRACTOR having been duly informed of all contents therein.

41.2

**TO THE EMPLOYER:**

Any notice to be given to the EMPLOYER under the terms of the CONTRACTOR shall be served by sending the same by Registered mail to or delivering the same at the respective site offices of M/s Talcher Fertilizers Ltd. addressed to the HEAD/SITE-IN-CHARGE.

**42 Right of various interests:**

i)

The EMPLOYER reserves the right to distribute the work between more than one agency(ies). The CONTRACTOR shall cooperate and afford other agency(ies) reasonable opportunity for access to the WORK for the carriage and storage of materials and



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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



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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





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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



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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** 57.1 Unless otherwise specified elsewhere in the tender, the execution of the WORK



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**dewatering:**

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 on 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



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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. For Item Rate Contract**

- a) If the rates for the additional, altered or substituted WORK are specified in the CONTRACT for the WORK, the CONTRACTOR is bound to carry on the additional, altered or substituted WORK at the same rates as are specified in the CONTRACT.
- b) If the rates for the additional, altered or substituted WORK are not specifically provided in the CONTRACT for the WORK, the rates will be derived from the rates for similar class of WORK as are specified in the CONTRACT for the WORK. The opinion of the ENGINEER-IN- CHARGE, as to whether or not the rates can be reasonably so derived from the items in this CONTRACT will be final and binding on the CONTRACTOR.
- c) If the rates for the altered, additional or substituted WORK cannot be determined in the manner specified in sub-clause(s) (a) and (b) above, then the CONTRACTOR shall, within 7 days of the date of receipt of order to carry out the WORK, inform the ENGINEER-IN-CHARGE of the rates which it is his intention to charge for such class of WORK, supported by analysis of the rate or rates claimed, and the ENGINEER-IN-CHARGE shall determine the rate or rates on the basis of the prevailing market rates, labour cost at schedule of labour rates plus 10% to cover contractor's supervision, overheads and profit and pay the CONTRACTOR accordingly. The opinion of the ENGINEER- IN-CHARGE as to current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on the CONTRACTOR.
- d) Where the item of work will be executed through nominated specialist agency as approved by the ENGINEER-IN-CHARGE, then the actual amount paid to such nominated agency supported by documentary evidence and as certified by ENGINEER-IN-CHARGE shall be considered plus 10% (ten percent) to cover all contingencies, overhead, profits to arrive at the rates.
- e) Provisions contained in the Sub-clause (a) & (d) above shall, however, not apply for the following:-

Where the value of additions of new items together with the



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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. For Lumpsum Contracts**

CONTRACTOR shall, within 7 days of the date of receipt of order to carry out the WORK, inform the ENGINEER-IN- CHARGE of the rates which it is his intention to charge for such class of WORK, supported by analysis of the rate or rates claimed, and the ENGINEER-IN-CHARGE shall determine the rate or rates on the basis of the prevailing market rates, labour cost at schedule of labour rates plus 10% to cover contractor's supervision, overheads and profit and pay the CONTRACTOR accordingly. The opinion of the ENGINEER-IN-CHARGE as to current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on the CONTRACTOR.

**61 Drawings to be supplied by the employer**

- 61.1 The drawings attached with tender are only for the general guidance to the CONTRACTOR to enable him to visualize the type of work contemplated and scope of work involved. The CONTRACTOR will be deemed to have studied the DRAWINGS and formed an idea about the WORK involved.
- 61.2 Detailed working drawings on the basis of which actual execution of the WORK is to proceed, will be furnished from time to time during the progress of the work. The CONTRACTOR shall be deemed to have gone through the DRAWINGS supplied to him thoroughly and carefully and in conjunction with all other connected drawings and bring to the notice of the ENGINEER-IN-CHARGE discrepancies, if any, therein before actually carrying out the Work.
- 61.3 Copies of all detailed working drawings relating to the WORK shall be kept at the





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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



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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 Tender)
- 66.1 If the SPECIFICATION of the WORK provides for the use of any material of special description to be supplied from the EMPLOYER's stores or it is required that the CONTRACTOR shall use certain stores to be provided by the ENGINEER-IN-CHARGE, such materials and stores, and price to be charged there for as hereinafter mentioned being so far as practicable for the convenience of the CONTRACTOR, but not so as in any way to control the meaning or effect of the CONTRACT, the CONTRACTOR shall be bound to purchase and shall be supplied such materials and stores as are from time to time required to be used by him for the purpose of the CONTRACT only. The sums due from the CONTRACTOR for the value of materials supplied by the EMPLOYER will be recovered from the running account bill on the basis of the actual consumption of materials in the works covered and for which the running account bill has been prepared. After the completion of the WORK, however, the CONTRACTOR has to account for the full quantity of materials supplied to him as per relevant clauses in this document.



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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 from his stores. It shall be responsibility of the CONTRACTOR to take delivery of the materials and arrange for its loading, transport and unloading at the SITE of WORK at his own cost. The materials shall be issued between the working hours and as per the rules of the EMPLOYER as framed from time to time.
- ii) The CONTRACTOR shall bear all incidental charges for the storage and safe custody of materials at site after these have been issued to him.
- iii) Materials specified as to be issued by the EMPLOYER shall be issued in standard sizes as obtained from the manufacturers.
- iv) The CONTRACTOR shall construct suitable Godowns at the SITE of WORK for storing the materials safe against damage by rain, dampness, fire, theft etc. He shall also employ necessary watch and ward establishment for the purpose.
- v) It shall be duty of the CONTRACTOR to inspect the materials supplied to him at the time of taking delivery and satisfy himself that they are in good condition. After the materials have been delivered by the EMPLOYER, it shall be the responsibility of the CONTRACTOR to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and/or replaced by him at his own cost according to the instructions of the ENGINEER-IN-CHARGE.
- vi) The EMPLOYER shall not be liable for delay in supply or non-supply of any materials which the EMPLOYER has undertaken to supply where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstances beyond the control of the EMPLOYER. In no case, the CONTRACTOR shall be entitled to claim any compensation or loss suffered by him on this account.
- vii) It shall be responsibility of the CONTRACTOR to arrange in time all materials required for the WORK other than those to be supplied by the EMPLOYER. If, however, in the opinion of the ENGINEER-IN-CHARGE the execution of the WORK is likely to be delayed due to the CONTRACTOR's inability to make arrangements for supply of materials which normally he has to arrange for, the ENGINEER-IN-CHARGE shall have the right at his own discretion to issue such materials, if available with the EMPLOYER or procure the materials from the market or as elsewhere and the CONTRACTOR will





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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.



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- 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.



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- 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



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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/



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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, notwithstanding date of grant of Completion Certificate for group/ section/ part.





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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:**

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.

(Clause not applicable)

**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



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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) CONTRACTOR'S REMUNERATION:

The price to be paid by the EMPLOYER to CONTRACTOR for the whole of the WORK to be done and for the performance of all the obligations undertaken by the CONTRACTOR under the CONTRACT DOCUMENTS shall be ascertained by the application of the respective Schedule of Rates (the inclusive nature of which is more particularly defined by way of application but not of limitation, with the succeeding sub-clause of this clause) and payment to be made accordingly for the WORK actually executed and approved by the ENGINEER-IN-CHARGE. The sum so ascertained shall (excepting only as and to the extent expressly provided herein) constitute the sole and inclusive remuneration of the CONTRACTOR under the CONTRACT and no



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further or other payment whatsoever shall be or become due or payable to the CONTRACTOR under the CONTRACT.

ii) SCHEDULE OF RATES TO BE INCLUSIVE:

The prices/rates quoted by the CONTRACTOR shall remain firm till the issue of FINAL CERTIFICATE and shall not be subject to escalation. Schedule of Rates shall be deemed to include and cover all costs, expenses and liabilities of every description and all risks of every kind to be taken in executing, completing and handing over the WORK to the EMPLOYER by the CONTRACTOR. The CONTRACTOR shall be deemed to have known the nature, scope, magnitude and the extent of the WORK and materials required though the CONTRACT DOCUMENT may not fully and precisely furnish them. Tenderer's shall make such provision in the Schedule of Rates as he may consider necessary to cover the cost of such items of WORK and materials as may be reasonable and necessary to complete the WORK. The opinion of the ENGINEER-IN-CHARGE as to the items of WORK which are necessary and reasonable for COMPLETION OF WORK shall be final and binding on the CONTRACTOR, although the same may not be shown on or described specifically in CONTRACT DOCUMENTS.

Generality of this present provision shall not be deemed to cut down or limit in any way because in certain cases it may and in other cases it may not be expressly stated that the CONTRACTOR shall do or perform a work or supply articles or perform services at his own cost or without addition of payment or without extra charge or words to the same effect or that it may be stated or not stated that the same are included in and covered by the Schedule of Rates.

iii) SCHEDULE OF RATES TO COVER CONSTRUCTION EQUIPMENTS, MATERIALS, LABOUR ETC.:

Without in any way limiting the provisions of the preceding sub-clause the Schedule of Rates shall be deemed to include and cover the cost of all construction equipment, temporary WORK (except as provided for herein), pumps, materials, labour, insurance, fuel, consumables, stores and appliances to be supplied by the CONTRACTOR and all other matters in connection with each item in the Schedule of Rates and the execution of the WORK or any portion thereof finished, complete in every respect and maintained as shown or described in the CONTRACT DOCUMENTS or as may be ordered in writing during the continuance of the CONTRACT.

iv) SCHEDULE OF RATES TO COVER ROYALTIES, RENTS AND CLAIMS:

The Schedule of Rates (i.e., VALUE OF CONTRACT) shall be deemed to include and cover the cost of all royalties and fees for the articles and processes, protected by letters, patent or otherwise incorporated in or used in connection with the WORK, also all royalties, rents and other payments in connection with obtaining materials of whatsoever kind for the WORK and shall include an indemnity to the EMPLOYER which the CONTRACTOR hereby gives against all actions, proceedings, claims, damages, costs and expenses arising from the incorporation in or use on the WORK of any such articles, processes or materials, octroi or other municipal or local Board Charges, if levied on materials, equipment or machineries to be brought to site for use on WORK shall





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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 sixuplicate on standard measurement sheets supplied by EMPLOYER and submitted to EMPLOYER/CONSULTANT for scrutiny and passing.

88.1.2 EMPLOYER/CONSULTANT shall scrutinize and check the measurements recorded on the sheets and shall certify correctness of the same on the measurement sheets.

88.1.3 ENGINEER-IN-CHARGE shall pass the bills after carrying out the comprehensive checks in accordance with the terms and conditions of the CONTRACTS, within 7 days of submission of the bills, complete in all respects and send the same to the Employer to effect payment to the CONTRACTOR.

88.1.4 TFL shall make all Endeavour to make payments of undisputed amount of the bills



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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



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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



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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 APPLICATION FOR COMPLETION CERTIFICATE:**

When the CONTRACTOR fulfils his obligation under Clause 81.1 he shall be eligible to apply for COMPLETION CERTIFICATE.

The ENGINEER-IN-CHARGE shall normally issue to the CONTRACTOR the COMPLETION CERTIFICATE within one month after receiving any application therefore from the CONTRACTOR after verifying from the completion documents and satisfying himself that the WORK has been completed in accordance with and as set out in the construction and erection drawings, and the CONTRACT DOCUMENTS.

The CONTRACTOR, after obtaining the COMPLETION CERTIFICATE, is eligible to present the final bill for the WORK executed by him under the terms of CONTRACT.

**94.2 COMPLETION CERTIFICATE:**

Within one month of the completion of the WORK in all respects, the CONTRACTOR shall be furnished with a certificate by the ENGINEER-IN-CHARGE of such completion, but no certificate shall be given nor shall the WORK be deemed to have been executed until all scaffolding, surplus materials and rubbish is cleared off the SITE completely nor until the WORK shall have been measured by the ENGINEER-IN-CHARGE whose measurement shall be binding and conclusive. The WORKS will not be considered as complete and taken over by the EMPLOYER, until all the temporary works, labour and staff colonies are cleared to the satisfaction of the ENGINEER-IN-CHARGE.

If the CONTRACTOR fails to comply with the requirements of this clause on or before the date fixed for the completion of the WORK, the ENGINEER-IN-CHARGE may at the expense of the CONTRACTOR remove such scaffolding, surplus materials and rubbish and dispose off the same as he thinks fit and clean off such dirt as aforesaid, and the CONTRACTOR shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

**94.3 COMPLETION CERTIFICATE DOCUMENTS:**

For the purpose of Clause 94.0 the following documents will be deemed to form the completion documents:

- i) The technical documents according to which the WORK was carried out.
- ii) Six (6) sets of construction drawings showing therein the modification and correction made during the course of execution and signed by the ENGINEER-IN-CHARGE.
- iii) COMPLETION CERTIFICATE for 'embedded' and 'covered' up work.



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- iv) Certificates of final levels as set out for various works.
- v) Certificates of tests performed for various WORKS.
- vi) Material appropriation, Statement for the materials issued by the EMPLOYER for the WORK and list of surplus materials returned to the EMPLOYER's store duly supported by necessary documents.

- 95 Final decision and final certificate:** 95.1 Upon expiry of the period of liability and subject to the ENGINEER-IN-CHARGE being satisfied that the WORKS have been duly maintained by the CONTRACTOR during monsoon or such period as hereinbefore provided in Clause 80 & 81 and that the CONTRACTOR has in all respect duly made-up any subsidence and performed all his obligations under the CONTRACT, the ENGINEER-IN- CHARGE shall (without prejudice to the rights of the EMPLOYER to retain the provisions of relevant Clause hereof) otherwise give a certificate herein referred to as the FINAL CERTIFICATE to that effect and the CONTRACTOR shall not be considered to have fulfilled the whole of his obligations under CONTRACT until FINAL CERTIFICATE shall have been given by the ENGINEER-IN- CHARGE notwithstanding any previous entry upon the WORK and taking possession, working or using of the same or any part thereof by the EMPLOYER.
- 96 Certificate and payments on evidence of completion:** 96.1 Except the FINAL CERTIFICATE, no other certificates or payments against a certificate or on general account shall be taken to be an admission by the EMPLOYER of the due performance of the CONTRACT or any part thereof or of occupancy or validity of any claim by the CONTRACTOR.
- 97 Deductions from the contract price:** 97.1 All costs, damages or expenses which EMPLOYER may have paid or incurred, which under the provisions of the CONTRACT, the CONTRACTOR is liable/will be liable, will be claimed by the EMPLOYER. All such claims shall be billed by the EMPLOYER to the CONTRACTOR regularly as and when they fall due. Such claims shall be paid by the CONTRACTOR within 15 (fifteen) days of the receipt of the corresponding bills and if not paid by the CONTRACTOR within the said period, the EMPLOYER may, then, deduct the amount from any moneys due i.e., Contract Performance Security or becoming due to the CONTRACTOR under the CONTRACT or may be recovered by actions of law or otherwise, if the CONTRACTOR fails to satisfy the EMPLOYER of such claims.

**SECTION-VII Taxes and Insurance**

- 98 Taxes, Duties, Octroi etc:** 98.1 The CONTRACTOR agrees to and does hereby accept full and exclusive liability for the payment of any and all Taxes, Duties, including Excise duty, octroi etc. now or hereafter imposed, increased, modified, all the sales taxes, duties, octrois etc. now in force and hereafter increased, imposed or modified, from time to time in respect of WORKS and materials and all contributions and taxes for unemployment compensation, insurance and old age pensions or annuities now or hereafter imposed by any Central or State Government authorities which are imposed with respect to or covered by the wages, salaries, or other compensations paid to the persons employed by the CONTRACTOR and the CONTRACTOR shall be responsible for the compliance of all SUB-CONTRACTORS, with all applicable Central, State, Municipal and local law and regulation and requirement of any Central, State or local Government agency or authority. CONTRACTOR further agrees to defend, indemnify and hold EMPLOYER harmless from any liability or penalty which may be imposed by the Central, State or Local authorities by reason or any violation by CONTRACTOR or SUB-CONTRACTOR of such laws, suits or proceedings that may be brought





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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



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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:





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Insurance shall be effected for all the CONTRACTOR's employees engaged in the performance of this CONTRACT. If any of the work is sublet, the CONTRACTOR shall require the SUB-CONTRACTOR to provide workman's Compensation and employer's liability insurance for the later's employees if such employees are not covered under the CONTRACTOR's Insurance.

iii) ACCIDENT OR INJURY TO WORKMEN:

The EMPLOYER shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workman or other person in the Employment of the CONTRACTOR or any SUB-CONTRACTOR save and except an accident or injury resulting from any act or default of the EMPLOYER, his agents or servants and the CONTRACTOR shall indemnify and keep indemnified the EMPLOYER against all such damages and compensation (save and except and aforesaid) and against all claims, demands, proceeding, costs, charges and expenses, whatsoever in respect or in relation thereto.

iv) TRANSIT INSURANCE

In respect of all items to be transported by the CONTRACTOR to the SITE of WORK, the cost of transit insurance should be borne by the CONTRACTOR and the quoted price shall be inclusive of this cost.

V) COMPREHENSIVE AUTOMOBILE INSURANCE

This insurance shall be in such a form as to protect the Contractor against all claims for injuries, disability, disease and death to members of public including EMPLOYER's men and damage to the property of others arising from the use of motor vehicles during on or off the 'site' operations, irrespective of the Employership of such vehicles.

VI) COMPREHENSIVE GENERAL LIABILITY INSURANCE

- a) This insurance shall protect the Contractor against all claims arising from injuries, disabilities, disease or death of member of public or damage to property of others due to any act or omission on the part of the Contractor, his agents, his employees, his representatives and Sub-Contractor's or from riots, strikes and civil commotion.
- b) Contractor shall take suitable Group Personal Accident Insurance Cover for taking care of injury, damage or any other risks in respect of his Engineers and other Supervisory staff who are not covered under Employees State Insurance Act.
- c) The policy shall cover third party liability. The third party (liability shall cover the loss/ disablement of human life (person not belonging to the Contractor) and also cover the risk of damage to others materials/ equipment/ properties during construction, erection and commissioning at site. The value of third party liability for compensation for loss of human life or partial/full disablement shall be of required



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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



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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



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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.



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ii) PAYMENT OF CLAIMS AND DAMAGES:

Should the EMPLOYER have to pay any money in respect of such claims or demands as aforesaid the amount so paid and the costs incurred by the EMPLOYER shall be charged to and paid by the CONTRACTOR and the CONTRACTOR shall not be at liberty to dispute or question the right of the EMPLOYER to make such payments notwithstanding the same, may have been made without the consent or authority or in law or otherwise to the contrary.

iii) In every case in which by virtue of the provisions of Section 12, Sub-section (i) of workmen's compensation Act, 1923 or other applicable provision of Workmen Compensation Act or any other Act, the EMPLOYER is obliged to pay compensation to a workman employed by the CONTRACTOR in execution of the WORK, the EMPLOYER will recover from the CONTRACTOR the amount of the compensation so paid, and without prejudice to the rights of EMPLOYER under Section 12, Sub- section (2) of the said act, EMPLOYER shall be at liberty to recover such amount or any part thereof by deducting it from the Contract Performance Security or from any sum due to the CONTRACTOR whether under this CONTRACT or otherwise. The EMPLOYER shall not be bound to contest any claim made under Section 12, Sub-section (i) of the said act, except on the written request of the CONTRACTOR and upon his giving to the EMPLOYER full security for all costs for which the EMPLOYER might become liable in consequence of contesting such claim.

**106 Health and sanitary  
arrangements for workers:**

106.1 In respect of all labour directly or indirectly employed in the WORKS for the performance of the CONTRACTOR's part of this agreement, the CONTRACTOR shall comply with or cause to be complied with all the rules and regulations of the local sanitary and other authorities or as framed by the EMPLOYER from time to time for the protection of health and sanitary arrangements for all workers.

106.2 The CONTRACTOR shall provide in the labour colony all amenities such as electricity, water and other sanitary and health arrangements. The CONTRACTOR shall also provide necessary surface transportation to the place of work and back to the colony for their personnel accommodated in the labour colony.

**SECTION-IX Applicable Laws and Settlement of Disputes**

**107 Arbitration:**

107.1 Unless otherwise specified, the matters where decision of the Engineer-in-Charge is deemed to be final and binding as provided in the Agreement and the issues/disputes which cannot be mutually resolved within a reasonable time, all disputes shall be referred to arbitration by Sole Arbitrator.

The Employer [Talcher Fertilizers Ltd.] shall suggest a panel of three independent and distinguished persons to the bidder/contractor/supplier/buyer (as the case may be) to select any one among them to act as the Sole Arbitrator.

In the event of failure of the other parties to select the Sole Arbitrator within 30 days from the receipt of the communication suggesting the panel of arbitrators, the right of selection of the sole arbitrator by the other party shall stand forfeited and the EMPLOYER (TFL) shall have discretion to proceed with the appointment of the Sole Arbitrator. The decision of Employer on the



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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 FOR THE SETTLEMENT OF DISPUTES BETWEEN GOVERNMENT DEPARTMENT AND ANOTHER AND ONE GOVERNMENT DEPARTMENT AND PUBLIC ENTERPRISE AND ONE PUBLIC ENTERPRISE AND ANOTHER THE ARBITRATION SHALL BE AS FOLLOWS:

"In the event of any dispute or difference between the parties hereto, such dispute or difference shall be resolved amicably by mutual consultation or through the good offices of empowered agencies of the Government. If such resolution is not possible, then, the unresolved dispute or difference shall be referred to arbitration of an arbitrator to be nominated by Secretary, Department of Legal Affairs ("Law Secretary") in terms of the Office Memorandum No.55/3/1/75-CF, dated the 19th December 1975 issued by the Cabinet Secretariat (Department of Cabinet Affairs), as modified from time to time. The Arbitration Act 1940 (10 of 1940) shall not be applicable to the arbitration under this clause. The award of the Arbitrator shall be binding upon parties to the dispute. Provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to Law Secretary whose decision shall bind the parties finally and conclusively.

**108 Jurisdiction:**

The CONTRACT shall be governed by and constructed according to the laws in force in INDIA. The CONTRACTOR hereby submits to the jurisdiction of the Courts situated at DELHI for the purposes of disputes, actions and proceedings arising out of the CONTRACT, the courts at DELHI only will have the jurisdiction to hear and decide such disputed, actions and proceedings.

**SECTION-X Safety Codes**

**109 General:**

109.1 CONTRACTOR shall adhere to safe construction practice and guard against hazardous, and unsafe working conditions and shall comply with EMPLOYER's safety rules as set forth herein. Prior to start of construction, CONTRACTOR will be furnished copies of EMPLOYER's "Safety Code" for information and guidance, if it has been prepared.

**110 Safety regulations:**

110.1 i) In respect of all labour, directly employed in the WORK for the performance of CONTRACTOR's part of this agreement, the





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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





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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 or railing whose minimum heights shall be 1 metre.
- v) Safe-means of access shall be provided to all working platforms and other working places, every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length while the width between side rails in rung ladder shall in no case be less than 30 cms for ladder upto and including 3 metres in length. For longer ladder this width should be increased 5mm for each additional foot of length. Uniform steps spacing shall not exceed 30 cms. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed to cause danger or inconvenience to any person or public. The CONTRACTOR shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defense of every suit, action or other proceeding of law that may be brought by any person for injury sustained owing to neglect of the above precautions and pay any damages and costs which may be awarded in any such suit or action or proceeding to any such person or which may with the consent of the CONTRACTOR be paid to compromise any claim by any such person.

**115 Excavation and trenching:** 115.1 All trenches 1.2 metres or more in depth, shall at all times be supplied with at least one ladder for each 50 metres length or fraction thereof.

Ladder shall be extended from bottom of the trenches to atleast 1 metre above the surface of the ground. The sides of the trenches which are 1.5M in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides to collapse. The excavated materials shall not be placed within 1.5 metres of the edge of the trench or half of the trench width whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or under-cutting shall be done.

**116 Demolition/general safety:** 116.1

- i) Before any demolition work is commenced and also during the progress of the demolition work
  - a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.



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- b) No electric cable or apparatus which is liable to be a source of danger shall remain electrically charged.
- c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
- ii) All necessary personal safety equipment as considered adequate by the ENGINEER-IN-CHARGE, should be kept available for the use of the persons employed on the SITE and maintained in condition suitable for immediate use, and the CONTRACTOR shall take adequate steps to ensure proper use of equipment by those concerned.
- a) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective gloves.
- b) Those engaged in white washing and mixing or stacking or cement bags or any material which are injurious to the eyes be provided with protective goggles.
- c) Those engaged in welding and cutting works shall be provided with protective face & eye shield, hand gloves, etc.
- d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- e) When workers are employed in sewers and manholes, which are in use, the CONTRACTOR shall ensure that the manhole covers are opened and are ventilated atleast for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or board to prevent accident to the public.
- f) The CONTRACTOR shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken.
- 1) No paint containing lead or lead product shall be used except in the form of paste or readymade paint.
- 2) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
- 3) Overalls shall be supplied by the CONTRACTOR to the workmen and adequate facilities shall be provided to enable the working painters to wash them during and on cessation of work.
- iii) When the work is done near any place where there is risk of drowning,



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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:
- These shall be of good mechanical construction, sound materials and adequate strength and free from patent defect and shall be kept in good working order.
  - Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.
  - Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding, winch or give signals to the operator.
  - In case of every hoisting machine and of every chain ring hook, shackle, swivel, and pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gears referred to above shall be plainly marked with the safe working load of the conditions under which it is applicable and the same shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond safe working load except for the purpose of testing.
  - In case of departmental machine, the safe working load shall be notified by the ENGINEER- IN-CHARGE. As regards CONTRACTOR's machines, the CONTRACTOR shall notify the safe working load of the machine to the ENGINEER-IN-CHARGE whenever he brings any machinery to SITE OF WORK and get it verified by the Engineer concerned.
- v) Motors, gears, transmission lines, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as to reduce to minimum the accidental descent of the load, adequate precautions should be taken to reduce the minimum risk of any part or parts of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves, and boots as may be necessary should be provided. The workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.
- vi) All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffolds, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.



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- 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



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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.

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## SECTION-V

### SPECIAL CONDITIONS OF CONTRACT

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## 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 Grid Connectivity to TFL to supply 90 MW Power and construction of 220 kV LILO GISAT TALCHER FERTILIZERS LTD., ANGUL, ODISHA

Further, it may also be noted that the 220kV GIS Substation along with associated 220kV LILO Line shall be handed over to OPTCL after successful commissioning.

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.

1.3 **Brief Scope of Work:** Bidder's scope includes check survey (including soil testing at Tower Locations), sourcing of Tower & Foundation design from OPTCL, Supply, Installation/ erection of Transmission Tower, stringing of ACSR Zebra Conductor, testing, and commissioning/charging of 220kV LILO Transmission Line. This will include following:

- Fabrication and supply of 220kV Double-circuit towers including stubs as per tested/approved design/drawings including fasteners, step bolts, hangers, D-shackles etc.
- Supply of tower accessories like phase plate, circuit plate, number plate, danger plate, anti-climbing device etc.
- Supply of Conductor, OPGW earth wire, hardware & accessories for Conductor & earth wire, Insulators and Hardware Fittings.
- Classification of foundation for different type of tower and casting of foundation for tower footings as per approved foundation drawings.
- Erection of towers, tack welding of bolts and nuts, including supply and application of zinc rich primer & two coats of enamel paint, tower earthing, fixing of insulator strings, stringing of conductors and earth wire along with all necessary line Accessories,
- Painting of towers & supply and erection of span markers, obstruction lights for aviation requirements (as required) and Testing and commissioning of the transmission lines.
- Bidder's Scope also includes obtaining Right of Way Clearance for construction of the Transmission Line.

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## 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 Paradeep, 200 km by rail/road from the site. Talcher is situated at 21° 10" N Latitude and 82° 5" E Longitude.

## 3.0 GENERAL

- 3.1 Special Conditions of Contract shall be read in Conjunction with the General conditions of Contract, specification of work, Drawings and any other documents forming part of this Contract wherever the context so requires.
- 3.2 Notwithstanding the sub-division of the documents into these separate sections and volumes, every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.
- 3.3 Where any portion of the General Condition of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, unless a different intention appears, the provisions of the Special Conditions of Contract shall be deemed to override the provisions of the General Conditions of Contract and shall to the extent of such repugnancy, or variations, prevail.
- 3.4 Wherever it is mentioned in the specifications that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost and the value of contract shall be deemed to have included cost of such performance and provisions, so mentioned.
- 3.5 The materials, design, and workmanship shall satisfy the relevant Indian Standards and CPWD specifications, the Job Specifications contained herein and Codes referred to. Where the job specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.
- 3.6 It will be the Contractor's responsibility to bring to the notice of Engineer-in-Charge any irreconcilable conflict in the contract documents before starting the work (s) or making the supply with reference which the conflict exists.

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3.7 In the absence of any Specifications covering any material, design of work (s) the same shall be performed / supplies / executed in accordance with Standard Engineering Practice as per the instructions / directions of the Engineer-in-Charge, which will be binding on the Contractor.

3.8 'Codes' shall mean the following including the latest amendments and/or replacements, if any:

- i) Indian Electricity Act, 2003 and Rules and Regulations made thereunder.
- ii) Indian Factory Act, 1948 and Rules and Regulations made thereunder.
- iii) Indian Explosives Act, 1884 and Rules and Regulations made thereunder.
- iv) Indian Petroleum Act, 1934 and Rules and Regulations made thereunder.
- v) A.S.M.E. Test Codes.
- vi) A.I.E.E. Test Codes
- vii) American Society of Materials Testing Codes.
- viii) Standards of the Bureau of Indian Standards (BIS).
- ix) Other Internationally approved standards and/or rules and regulations touching the subject matter of the Contract.
- x) OPWD Code with its latest amendments.

3.9 All the spares for the equipment under the contract will strictly conform to the specification and documents and will be identical to the corresponding main equipment / components supplied under the contract and shall be fully interchangeable.

All the mandatory spares covered under the contract shall be supplied along with the main equipment and the delivery would be completed by the respective dates for the various categories of equipment as per the agreed Work Completion Schedule.

#### 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

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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, misapplied and/or disposed as aforesaid with other material of equivalent quality and quantity delivered to site at the CONTRACTOR's risks and costs in all respects.
- v) The CONTRACTOR shall take out, at his own cost and keep in force at all times, during transit, handling, storage, and erection upto completion in all respect of the work, policy (ies) with Insurance Company (ies) approved by the OWNER for the full replacement value of the materials at site against the risks specified in the CONTRACT. Such policies shall be in the joint names of the OWNER and the CONTRACTOR, with exclusive right in the OWNER to receive all monies due in respect of such policy (ies) and with right in the OWNER (but without obligation to do so) to take out and pay the premia for any such policy (ies) and deduct the premia and any other costs and expense in this behalf from the monies for the time being due or in future becoming due to the CONTRACTOR. In case of Insurance claim, the GST leviable on the transfer of the claim money from OWNER to CONTRACTOR shall be over and above the GST cap indicated in the CONTRACT and shall be borne by OWNER.
- vi) If the CONTRACTOR shall default in replacing at the job SITE, without any additional cost to the OWNER, any material lost, damaged, deteriorated, misused, wasted, short, stolen, misapplied or disposed of within the provisions hereof above, the CONTRACTOR shall be liable to pay to the OWNER the cost of such materials.
  - a) Notwithstanding anything herein provided, the CONTRACTOR shall be and remain solely and exclusively liable to repair, restore or replace, as the case may be, the materials damaged or destroyed as a result of any act or omission, notwithstanding the existence or otherwise of any policy(ies) of insurance aforesaid, with the intent that any policy(ies) of insurance aforesaid taken out by the CONTRACTOR or by the OWNER, on default by the CONTRACTOR, shall not anyway absolve the CONTRACTOR from his full liability up to and until issue of the Preliminary Acceptance Certificate as provided for herein in respect of the works, the work(s) and all materials incorporated therein shall be and remain at the risks of the CONTRACTOR in all respects, including (but

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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, lightning and other adverse weather conditions), accidents of kinds, fire, war risks and explosion.
- vii) If the CONTRACTOR shall default in replacing at the job site, free of any cost to the OWNER, any material lost, damaged, deteriorated, misused, wasted, short, stolen, misapplied or disposed of within the provisions hereof above, the CONTRACTOR shall be liable to pay to the OWNER the cost of such materials.

## 4.2 SUPPLY OF MATERIALS

- 4.2.1 The CONTRACTOR shall supply the materials required to be supplied within the Contractor's scope of supply for incorporation in the permanent works in accordance with and to meet the requirements in quality, quantity and other particulars of the descriptions, specifications, plans, drawings, designs and other documents applicable thereto, and the CONTRACTOR shall be deemed to have undertaken that all materials selected, procured and supplied by the CONTRACTOR within the scope of supply shall be of the best quality and workmanship and shall be capable of producing the designed desired results and to perform the designed and desired functions to meet the contractual requirements in all respects for the project.
- 4.2.2 The CONTRACTOR shall undertake and complete the supply of materials within the scope of supply to meet the scheduled progress and requirements of the WORK within the scope of work.
- 4.2.3 All materials shall be deemed to have been accepted only when the material is received at the project SITE and accepted by the ENGINEER-IN-CHARGE. Such acceptance shall however be subject to the terms and conditions of CONTRACT, including the right of rejection and/or replacement as elsewhere herein specified.
- 4.2.4 Without prejudice to any other terms of the contract, it is clarified that the mere agreement, acceptance or prescription of a Delivery or other Schedule containing an extended time of commencement or completion in respect of the entire delivery(ies) or any of them shall not anyway constitute an extension of time in a terms of the CONTRACT so as to bind the OWNER or relieve the CONTRACTOR of all or any of his liabilities under CONTRACT, nor shall constitute a promise on behalf of the OWNER or a waiver by the OWNER of any of its rights in terms of the contract relative to the performance of the CONTRACT within the time specified or otherwise, but shall be deemed only (at the most) to be a guidance to the CONTRACTOR for better organising his work on a recognition that the CONTRACTOR has failed to organise his supplies and/or make the same within the time specified in the Delivery Schedule.



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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 ENGINEER-IN-CHARGE / OWNER.
- ii) Where the makes of materials are not indicated in the Bidding document, the CONTRACTOR shall furnish details of proposed makes and supplies and supply the same after obtaining the OWNER's/ ENGINEER-IN-CHARGE's approval.

### 5.0 OWNER'S OBLIGATIONS:

The OWNER'S obligations are limited to the following:

- a) Handing over the substation site .
- b) Approval of Construction drawings supplied by the Contractor.
- c) Payment to the contractor for performance of work under the contract as per the terms and conditions specified therein.
- d) A piece of land for setting up temporary office, Godown, etc., if available.

### 6.0 POWER & WATER FOR CONSTRUCTION AND OTHER PURPOSES

Availability of water & power at site is very limited. Contractor shall have to make his own arrangements for Construction work.

### 7.0 RATES

- 7.1 OWNER shall pay to contractor the total rates quoted by them for the due and faithful performance of contractor's obligation under the contract. The rates quoted by the contractor in SOR shall remain fixed and firm and not subject to any escalation unless and otherwise specified in the tender.
- 7.2 The rates shall be deemed to allow for all minor extras and constructional details which are not specifically shown on drawings or given in the specifications but are essential in the opinion of the Owner/ Consultant to the execution of work to conform to good workmanship and sound engineering practice. The Owner / Consultant reserve the right to make any minor changes during the execution without any extra payment.
- 7.3 The Owner / Consultant decision to classify any item 'minor changes', 'minor extras' and 'constructional details' shall be final conclusive and binding on the Contractor.
- 7.4 Rates quoted shall include for payment of royalties for obtaining earth, morrum, sand, aggregates, stones, etc. Nothing extra shall be paid to the Contractor on this account.
- 7.5 Contractor shall be responsible for making all necessary approach roads to the sites of execution for taking his rigs, cranes & equipments. No extra claim in this regard shall be entertained.



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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 contractor shall not be entitled to any **increase** whatsoever **on the SOR rates** on account of any variation in the quantities and/or omission/addition of items **vis-à-vis the quantities mentioned** in the “Schedule of Rates (**Section VII**)” as long as the contract value finally determined on the basis of the certified final quantities and the contract item rates is within the stipulated variation as per clause no. 60.2 of GCC.

## 8.0 SPECIFICATIONS

8.1 If specification for an item of work is not covered by CPWD/ BIS specifications or Technical Specifications, the same shall be decided by the Owner/ Consultant and shall be binding on the Contractor.

8.2 The Owner/ Consultant shall have the right to cause the Contractor to purchase and use such materials of particular make or from a particular source which may in his opinion be necessary for proper and reasonable compliance with the specifications and execution of work.

8.3 (a) As and when required by the Owner/ Consultant, the Contractor shall provide all facilities at site or at manufacture’s works or in approved laboratory for testing of materials and/or workmanship. All the expenditure in respect of this shall be borne by the Contractor. The Contractor shall, when required to do so by the Owner/Consultant, confirm that the materials have been tested in accordance with requirements of the specifications.

(b) Neither the omission by the Owner/ Consultant to test the materials nor the production of manufacturer(s) certificate, etc. shall affect the right of the Owner/Consultant to reject, after delivery, the materials found not in accordance with the specifications.

## 9.0 GATE PASSES

All tools, plant and materials shall be brought by the Contractor to the works site through a covering note to be submitted in 3 copies. One copy of the covering note will be delivered to the security staff and one copy to the Owner/Consultant. The third copy shall be retained by the Contractor. The Contractor shall follow all rules and regulations for entry / exit of their men and materials in/from project site as framed by Owner/Consultant.

## 10.0 TIME SCHEDULE

10.1 Bidder shall be required to complete the WORK under the CONTRACT so as to achieve the GUARANTEED COMPLETION DATE in accordance with the following:

<b>Completion Period/ Completion Schedule</b>	<b>12 (Twelve) Months from date of issuance of FOA (Fax of Acceptance)</b>
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Completion date shall be considered as date of issuance of Completion Certificate by TFL after successful Commissioning of the system.

- 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 OWNER/ CONSULTANT's to the CONTRACTOR. Working drawings submitted by the OWNER/ CONSULTANT's progressively during the pendency of the contract, shall be approved/ marked "Good for execution/ construction" by Owner/ Consultant. The Contractor on this account shall not be entitled to put forth any claim whatsoever on account of delay in approval of the drawings to the Owner/ Consultant.

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Fabrication drawing, if any shall be prepared by the contractor itself and same shall be approved by OWNER/ CONSULTANT'S.

## 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

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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:**

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Contractor is to submit the bills and record of measurements to EIC complete in all respect for certification by Owner/Consultant in three copies for works executed by him progressively.

## 20.2 MEASUREMENT OF WORKS

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).



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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

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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.

### **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 raw materials only after its successful testing at any NABL accredited lab and subsequent concurrence of the report by the 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.



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## 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 any Material Inspection , shall be done directly with 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.

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- 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

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- (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 INSPECTION

35.1 Inspection of equipment/ materials at manufacturer/ supplier works, prior to dispatch shall be carried out by OWNER and/or CONSULTANT unless is explicitly waived off (in writing) by the OWNER and/or CONSULTANT.

35.2 Once the materials are ready for inspection, the materials will be offered for inspection to OWNER through proper channel. The offer of the inspection should contain the following documents and information;

- i) List of materials/equipment

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- ii) Quantity to be inspected
- iii) Routine test certificates of the equipment/materials
- iv) Name of the Vendors
- v) Place of inspection with detail address
- vi) Name of contact persons with telephone numbers
- vii) Bill of Materials in case of Tower materials and sub-station structures

### 35.3 Inspection by OPTCL

35.3.1 The inspection of materials/equipment by OPTCL shall be carried out at CONTRACTOR'S cost. The tour cost of OPTCL's inspecting officer will be borne by the CONTRACTOR. The deputation of the inspecting officers of OPTCL for witnessing the acceptance test will be decided & communicated to all concerned after receipt of above mentioned documents & scrutiny thereof.

35.3.2 The inspection will be witnessed by the OPTCL inspecting officer as per OPTCL practice in the presence of the representative of the manufacturer and TFL/CONSULTANT. The inspecting officer will submit the inspection report, test result, minutes of discussion, calibration certificates of the measuring and testing instruments etc. to OPTCL office.

If the test results are acceptable and the observations made by the inspecting officer are complied with, a dispatch instruction will be issued from OPTCL office Materials/equipment procured and received at site, contrary to the procedure enumerated above, shall not be allowed to be used in construction activities involving OPTCL transmission network.

35.3.3 Expenses in respect of OPTCL's representative for witnessing the inspection & testing of the offered equipment/materials at the inspection and testing site.

OPTCL inspecting officer on receipt of offer for inspection from the contractor/supplier, shall proceed to the manufacturer works to witness the Type/Acceptance/Routine test.

35.3.4 The travel expenses under the following heads, in respect of OPTCL's representative for witnessing the inspection & testing of the offered equipment/materials at the inspection and testing site, shall be borne by the contractor.

**a. Hotel Accommodation:**

- Single room accommodation in 4 star hotel for OPTCL inspecting officer, not below the rank of Assistant General Manager (Grade E-6),
- Single room accommodation in 3 star hotel for OPTCL inspecting officer of the rank below Assistant General Manager (Grade E-6).

**N.B.:** It is the responsibility of the contractor to arrange the hotel accommodation matching with their inspection and testing schedule. In case of extended duration of inspection or non-availability of the return ticket, Contractor shall arrange for the extended stay of the inspecting officer in the Hotel accordingly. In case, there is no hotel with prescribed standard in and around the place of inspection, the contractor

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shall suggest alternative suitable arrangement at the time of offer for inspection, which is subjected to acceptability of OPTCL inspecting officer.

**b. Journey of the Inspecting Officer:**

To and fro travel expenditure from the Head Quarters of the inspecting officer to the place of inspection/testing shall be borne by the contractor as per the following.

- Journey from the Head Quarters to the nearest Airport by train (1st/Ind A/C) or Taxi (A/C).
- Journey from destination Airport to the place of inspection/testing by train (1st/Ind A/C) or Taxi (A/C).
- For train journey, inspecting officer, not below the rank of Assistant General Manager shall be provided with 1st class AC ticket and inspecting officer below the rank of Assistant General Manager shall be provided with 2nd class AC ticket.

- Booking/cancellation of Air-ticket / Train-ticket is the responsibility of the contractor.
- Moreover, if during the journey there is an unavoidable necessity for intermediate travel by road/ waterway/sea-route, the contractor/supplier shall provide suitable conveyance to the inspecting officer for travel this stretch of journey or bear the cost towards this. Any such possibilities shall be duly intimated to OPTCL at the time of their offer for inspection.

**c. Local Conveyance:** Local journey for the inspecting officer between Hotel and the place of the inspection/testing site, Air-conditioned four wheeler vehicles in good condition shall be provided by the contractor.

**d. Other Important Information:**

- All the above expenses shall be deemed to be included in the bidder's quoted price for that supply item. Bidder shall not be eligible to raise any extra claim in this regard.
- Contractor may assume that only in 40% of the inspection and testing offer cases, OPTCL/TPIA inspecting officer (not below the rank of Assistant General Manager) will witness the inspection and testing.
- In case of inspection and testing of some critical equipment/materials like Power Transformers, CT, PT, Breakers, S/S Automation Equipment and Cable, OPTCL may depute more than one inspecting officer.
- Contractor shall judiciously plan the inspection/testing schedule and place of inspection/testing, so that optimum number of inspection/testing and minimum time shall be required to cover all the equipment/materials of the relevant contract package.

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- It shall be the responsibility of the Contractor to organize the above tour related matters of OPTCL inspecting officer including the matters related to overseas inspection/testing, if any.
- e. Providing vehicle to the field Engineers for proper supervision of site works:
- For effective monitoring of the site works, the contractor shall submit monthly and weekly program of site work well in advance in prescribed format to OPTCL site engineer.
  - In case of transmission line work, the contractor shall clearly indicate the location no. in the program.
  - Contractor shall provide a four wheeler vehicle in good running condition and suitable for the site use to the field officers of the respective head-quarters to visit different work locations for monitoring the site works as per the program and back to the headquarters after monitoring the work.

Note: The expenses towards above, including cost pertaining to up-keeping cost of the vehicle, i.e. fuel, driver etc., shall be deemed to be included in the bidder's quoted price without any additional financial implication to OPTCL. Bidder shall not be eligible to raise any extra claim in this regard.

- 35.3.5 The materials shall be inspected by OPTCL or any authorized representative of OPTCL at the Contractor's or its Vendor's manufacturing works. The Contractor shall give the advance notice in writing about the place of Inspection and/or testing atleast 15 days before the schedule date on which the equipment/materials will be ready for Inspection and/or Testing. Routine test certificates are to be submitted along with the offer for inspection.
- 35.3.6 The OPTCL or his representative shall be entitled at all reasonable times during manufacture / installation to inspect examine and test the equipment/materials at the contractor's/Vendors premises / erection site about workmanship of the materials to be supplied under this contract. The contractor shall provide unhindered clearance, giving full rights to OPTCL to inspect, examine and test as if the equipment/materials were being manufactured in his premises/Vendors Premises. Such inspection/examination and testing shall not relieve the contractor of his obligations under the contract.
- 35.3.7 The Engineer-In-Charge shall have the right to re-inspect any equipment/materials though previously inspected and approved by him at the Contractor's or its Vendor's works, before and after the same are erected at Site. If by the above inspection, OPTCL rejects any equipment, the Contractor shall make good for such rejections either by replacement or modifications/repairs as may be necessary to the satisfaction of the Engineer-In-Charge, free of cost. Such replacement will also include the replacements or re-execution of such of those works of other Contractors and/or agencies, which



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might have got damaged or affected by the replacements or re-work done to the Contractor's/Vendor's work.

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.



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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.

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- b. The contractors shall periodically submit the challans / receipts / proof for the depositing PF contribution with RPFC and ESIC.
- c. The contractor is required 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 enactments including the employees Provident Fund and Miscellaneous Provisions Act, 1952, Contract Labour (R&A) Act, 1970, Minimum Wages Act, 1948, Payment of wages act 1936, Workman Compensation Act 1923, Employees' State Insurance Act 1948 and other relevant acts, rules and regulations enforced from time to time.
- f. The contractor shall be solely responsible for the payment of wages and other dues to the personnel, if any, deployed by him latest by 7<sup>th</sup> day of the subsequent month.
- g. The contractor shall be solely responsible and indemnify the TFL against all charges, dues, claim etc. arising out of the disputes relating to the dues and employment of personnel, if any, deployed by him.
- h. The contractor shall indemnify TFL against all losses or damages, if any, caused to it on account of acts of the personnel, if any, deployed by him.
- i. All personnel deployed by the contractor should be on the rolls of the contractor.
- j. The contractor shall ensure regular and effective supervision and control of the personnel, if any, deployed by him and gives suitable direction for undertaking the contractual obligations.
- k. The personnel to be deputed by the contractor shall observe all security, fire and safety rules of TFL while at the site. His Work/Services will be supervised by the supervisors of contractor. Contractor has to 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.

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- 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.
- x. All registration and statutory inspection fees, if any, in respect of his work pursuant to this Contract shall be to the account of the Contractor. However, any registration, statutory inspection fees lawfully payable under any statutory laws and its amendments from time to time during erection in respect of the equipment ultimately to be owned by OPTCL, shall be to the account of OPTCL. Should any such inspection or registration need to be re-arranged due to the fault of the Contractor or his Sub Contractor, the additional fees to such inspection and/or registration shall be borne by the Contractor

#### 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**

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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, 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. Contract Performance Security
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) Electrical Works:**

**I) 220kV Transmission Line:**

For Supply Items (including Mandatory Spares, if applicable);

- 20% upon successful Inspection and issuance of Dispatch Clearance.
- 50% upon receipt, storage, and physical verification at site.
- i) 15% of Tower Structural material including stub shall be paid on completion of erection of Complete Tower and
- ii) 15% of other material (except Tower Structural material and stub) shall be paid upon erection of respective material
- 10% on Successful completion of stringing, testing and commissioning of the Transmission Line.
- Balance 5% (Retention Money) shall be released along with final bill

For Erection Items;

- 80% on completion of each of the items of Erection activity
- 15% on Successful completion of stringing, testing and commissioning of the entire Transmission Line
- Balance 5% (Retention Money) shall be released along with final bill

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**II) For Items involving both Supply & Erection**

- 65% on receipt and storage at site and on physical verification and furnishing of necessary certificate by Employer's representative.
- 20% on its completion of erection / Installation.
- 10% on its testing and commissioning.
- Balance 5% (Retention Money) shall be released along with final bill.

**III) For Lump sum/Lot Items:**

- 70% shall be paid on receipt and acceptance of material at site on pro rata basis
- 20% on completion of erection / Installation pro rata basis
- 5% on Inspection & testing pro rata basis
- Balance 5% (Retention Money) shall be released along with final bill

Note: Bidder shall submit the breakup details of LOT items before submission of invoice

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. 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 :**

- 1) 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.
- 2) Set / Lot / Lumpsum shall be governed as per the requirement of the corresponding item description read in conjunction with relevant provisions of Technical Specifications and

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the Billing breakup referred to above shall be issued by the Employer based on Contractor's request, if and as may be required during the currency of the Contract

The bid price for which the quantities are to be estimated by the Bidder shall remain constant unless there is change made in the Scope of Work by Employer. The quantities and unit prices (i) subsequently arrived while approving the Bill of Quantities (BOQ) / Billing breakup of lumpsum quantities/ lot/ Set and/ or (ii) estimated by the bidder shall be for on account payment purpose only. In case additional quantities, over and above the quantities BOQ/billing breakup and /or estimated by the bidder, are required for successful completion of the scope of work as per Technical Specification, the Bidder shall execute additional quantities of these items for which no additional payment shall be made over and above the lumpsum bid price. In case quantities of these items supplied at site are in excess of that required for successful completion of scope of work, such additional quantities shall be the property of the bidders and they shall be allowed to take back the same from the site for which no deduction from the lumpsum bid price shall be made. Further, in case actual requirement of quantities for successful completion of scope of work is less than the quantities identified in the approved BOQ /billing breakup and/or estimated by the bidder, the lumpsum bid price shall remain unchanged and no deduction shall be made from the lumpsum price due to such reduction of quantities

#### 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/ARPF
- iv. Insurance Contractor All Risk (CAR) Policy
- v. Workmen compensation policy

40.7 Balance 5% (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



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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 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.**

#### **41.0 DISPATCH, TRANSPORTATION/SHIPPING**

- 41.1 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 concerned authority 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.**



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- 41.2 The Contractor, wherever applicable, shall after proper painting, pack and crate all equipment in such a manner as to protect them from deterioration and damage during rail and road transportation to the site and storage at the site till the time of erection. The Contractor shall be held responsible for all damages due to improper packing and handling.
- i) The Contractor shall notify Employer of the date of each shipment from his works, and the expected date of arrival at the Site for the information of Employer.
  - ii) The Contractor shall also give all shipping information concerning the weight, size and content of each packing including any other information Employer may require.
  - iii) The Contractor shall prepare detailed packing list of all packages and containers, bundles and loose materials forming part of each and every consignment dispatched to Site.
  - iv) The Contractor shall further be responsible for making all necessary arrangements for loading, unloading and other handling right from his works up to the Site and also till the equipment is erected, tested and commissioned. He shall be solely responsible for proper storage and safe custody of all equipment.

### 41.3 EMBOSSING/PUNCHING/CASTING

All equipment and materials supplied /erected under the works of 220kV LILO Transmission Line shall bear distinct mark of "OPTCL, PKG No. & Year" by a way of embossing / punching / casting. This should be clearly visible to naked eye.

### 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

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insurance claims by underwriters under intimation to OWNER. CONTRACTOR shall also keep OWNER fully informed about progress of each such case. CONTRACTOR shall undertake immediate repair and replacement of the equipment lost in transit, storage, assembly, erection and COMMISSIONING of PLANT pending settlement of claim thereafter by the underwriters.

- 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, warehouse, railway or other siding, factory or other places of delivery, loading, handling, transporting and unloading and safely stacking, placing or storing the same at approved godowns, yards or other place(s) of storage including lashing or other-wise securing or protecting the same in transit and during and in storage.

- 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 anyway absolve the CONTRACTOR from his full liability up to and until issue of the Completion Certificate as provided for herein in respect of the works, the work(s) and all materials incorporated therein shall be and remain at the risks of the CONTRACTOR in all respects, including (but not limited to) accident, lightning, earth-quake, fire, storm, flood, tempest, riot, civil commotion and/or war or otherwise with respect to the materials, but shall constitute merely an additional security and not a substitution of liability.
- 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

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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 STATUTORY VARIATION IN TAXES AND DUTIES**

- 44.1 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.
- 44.2 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.
- 44.3 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, or shall not apply to the Contract price and shall be borne by the CONTRACTOR.

However, any decrease in taxes and duties during the delayed period shall be passed on to the OWNER.

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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-

- 44.4 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.

**44.5 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 STATUTORY APPROVAL**

- 45.1 Unless otherwise specified in the Bidding Document, it shall be the CONTRACTOR'S sole responsibility to obtain all approvals from any authority required under any statute, rule or regulation of the Central or Odisha State Government for the performance of the contract and / or the contractual work. The application on behalf of Employer for submission to relevant authorities along with copies of required certificates complete in all respects shall be prepared and submitted by the CONTRACTOR well ahead of time so that the actual construction / commissioning of the works is not delayed for want of the approval / inspection by the concerned authorities. The CONTRACTOR shall arrange for the inspection of the works by the authorities and will undertake necessary coordination and liaison required and shall not be entitled to any extension of time for any delay in obtaining such approvals.
- 45.2 Statutory fees, if any, paid for all such inspection and approvals shall be reimbursed at actual to the CONTRACTOR by Employer on production of documentary evidence.
- 45.3 Any deficiency (ies) as pointed out by any such authority shall be rectified by the CONTRACTOR within the scope of relative supply and / or work at no extra cost to Employer. The inspection and acceptance of the work by such authorities shall, however, not absolve the CONTRACTOR from any of its responsibilities under this contract.
- 45.4 Any cost incurred towards payment of official fees for obtaining Right of Way (RoW) clearances for construction of 220kV LILO Transmission Line shall be reimbursed in actual on submission of valid payment receipts along with the relevant documents. It may be



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noted that successful bidder will be responsible to arrange all the requisite clearances including RoW.

#### 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 Warranty 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,

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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-V ENDORS shall not relieve CONTRACTOR of any duties, liabilities or obligations under this CONTRACT.

#### 48.0 FUNCTIONAL GUARANTEES

Bidder shall state the guaranteed technical particulars, performance or efficiency of different equipment/materials with respect to the Technical Specifications. Equipment/Materials offered shall have guaranteed acceptable particulars /performance/efficiency specified in Technical Specification.

#### 49.0 TRIAL OPERATION:

For Trial Operation, the system for a particular package, Sub-Station and Line shall be energized in presence of the representative of OPTCL and same shall be maintained in energized condition for a period of at least twenty-four (24) hours. In case of any defect is observed, then such mutually agreed defect shall be liquidated within a maximum period of one week by the bidder. Thereafter, the system shall be maintained in energized condition.

#### 50.0 PLANNING AND DESIGNING IN PURVIEW OF VULNERABILITY ATLAS OF INDIA

Vulnerability Atlas of India (VAI) is a comprehensive document which provides existing hazard scenario for the entire country and presents the digitized State/UT- wise hazard, maps with respect to earthquakes, winds and floods for district-wise identification of vulnerable areas. It also includes additional digitized maps for thunderstorms, cyclones and landslides. The main purpose of this Atlas is its use for disaster preparedness and mitigation at policy planning and project formulation stage.

This atlas is one of its kind single point source for the various stakeholders including policy makers, administrators, municipal commissioners, urban managers, engineers, architects, planners, public etc. to ascertain proneness of any city/location/site to multi-hazard which includes earthquakes, winds, floods thunderstorms, cyclones and landslides. While project formulation, approvals and implementation of various urban housing, buildings and infrastructures schemes, this Atlas provides necessary information for risk analysis and hazard assessment.



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The Vulnerability Atlas of India has been prepared by Building Materials and Technology Promotion Council under Ministry of Housing and Urban Affairs, Government of India and available at their website [www.bmtpc.org](http://www.bmtpc.org).

It is mandatory for the bidders to refer Vulnerability Atlas of India for multi hazard risk assessment and include the relevant hazard proneness specific to project location while planning and designing the project in terms of

- i. Seismic zone (II to V) for earthquakes,
- ii. Wind velocity (Basic Wind Velocity: 55, 50, 47, 44, 39 & 33 m/s)
- iii. Area liable to floods and Probable max, surge height
- iv. Thunderstorms history
- v. Number of cyclonic storms/severe cyclonic storms and max sustained wind specific to coastal region
- vi. Landslides incidences with Annual rainfall normal
- vii. District wise Probable Max Precipitation.

#### 51.0 STANDARD CONDITIONS OF SCC: PART I TO PART III

The Contractor has to fully comply with all applicable Labour Laws and Regulations passed, modified and notified from time to time by the Central, State and Local Government agencies/authorities. Brief guidelines and Annexures related to labour laws/Acts for Workmen/labour are enclosed as STANDARD CONDITIONS OF SCC: PART I to PART III.

#### 52.0 GUARANTEE/WARRANTY:

52.1 The Contractor shall guarantee that the equipment/materials will be new, unused and in accordance with the Contract documents and free from defects in material and workmanship for a period of 12 (Twelve) months commencing immediately after the satisfactory commissioning of the entire works under the contract. The Contractor's liability shall be to the extent of repair/replacement of such defective equipment/material either arising from faulty design or defective equipment/materials and/or bad workmanship. Such defective equipment/materials shall be handed over to the Contractor for repair or replacement by a new one, unless otherwise repairable at site. The Contractor shall complete the repair/replacement work within the reasonable time frame intimated by the Engineer-In-Charge.

If any defects are not remedied within the time frame, the Engineer-In-Charge may proceed to do the work at the Contractor's risk and cost but without prejudice to any other rights, which "**TALCHER FERTILIZERS LIMITED**" may have against the Contractor in respect of such defects.

52.2 If it becomes necessary for the Contractor to replace or renew any defective portions of the works the provision of this clause shall apply to portion of the works so replaced or renewed until the expiry of guarantee period.

52.3 The repaired or new parts will be supplied and erected free of cost by the Contractor. If any repair is carried out on his behalf at the site, the Contractor shall bear the cost of such repairs.

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- 52.4 The cost of any special or general overhaul rendered necessary during the maintenance period due to defects in the equipment or defective work carried out by the Contractor, the same shall be borne by the Contractor.
- 52.5 The acceptance of the equipment or works by the Engineer-In-Charge shall in' no way relieve the Contractor of his obligations under this clause.
- 52.6 In the case of those defective parts, which are-not repairable at site but are essential for the operation of the equipment, the Contractor and the Engineer-In-Charge shall mutually agree to a program of replacement or renewal, which will minimize interruption to the maximum extent in the operation of the equipment.
- 52.7 At the end of the guarantee period, the Contractor's liability ceases except for latent defects.

## STANDARD CONDITIONS OF SCC: PART I

### Compliances under various Labour Laws

The Contractor has to fully comply with all applicable Labour Laws and Regulations passed, modified and notified from time to time by the Central, State and Local Government agencies/authorities. Specific attention of the Contractor is drawn to the following obligations amongst others:

1. **The Minimum Wages Act, 1948, Payment of Wages Act, 1936 and Payment of Bonus Act 1965 or The Code on Wages, 2019 (after it comes into force)**

1.1. **Minimum Wages:**

- a. During the tenure of the contract, the Contractor must ensure the payment of minimum wages, as notified by the Central Government or State Government whichever is higher, as per the provisions of the Minimum Wages Act, 1948 / Code on Wages, 2019 (after it comes into force).
- b. **Wage period and monthly wages:** Wage period shall be monthly and wages for a month shall be calculated by multiplying daily rate of Minimum Wages by 26. The monthly wages include the wages of the weekly days of rest as applicable to the office/establishment of TFL. Deduction in case of any days of absence other than weekly days of rest shall be calculated using the following formula:

**Deduction for absence = days of absence x (monthly wages / number of days in the relevant month)**

However, in case the resource has worked for less than 7 working days in a particular month, the payment of wages is to be made as per the actual number of days worked based on notified wage rate per day.

*Illustration I (05 days per week working pattern):*

Sl. No.	Month	Nos. of days in the month	Nos. of weekly off	Nos. of days absence	Nos. of days present	Daily wage as notified	Monthly wage	Deduction	Wage to paid
1	Feb.	28	8	2	18	603	15678	1119.86	14558.14
2	March	31	10	5	16	603	15678	2528.71	13149.29
3	April	30	8	10	12	603	15678	5226	10452.00
4	May	31	10	-	4	603	2412	0	2412.00

**Illustration II (06 days per week working pattern):**

Sl. No.	Month	Nos. of days in the month	Nos. of weekly off	Nos. of days absence	Nos. of days present	Daily wage as notified	Monthly wage	Deduction	Wage to paid
1	Feb.	28	4	2	22	603	15678	1119.86	14558.14
2	March	31	5	5	21	603	15678	2528.71	13149.29
3	April	30	4	10	16	603	15678	5226	10452.00
4	May	31	5	-	4	603	2412	0	2412.00

**1.2. Payment of Wages:**

The Contractor shall disburse monthly wages **through e-banking / digital mode through cashless transaction only**, and avoid illegitimate deductions and maintain records /returns as prescribed. The Contractor shall be solely responsible for the payment of wages and other dues to the resources, if any, deployed by him latest by 7<sup>th</sup> day of the subsequent month as per the provisions of the Payment of Wages Act, 1936 / as applicable under Code on Wages, 2019 (after it comes into force) in the presence of Engineer In-charge (EIC) or authorized representative of TFL. After disbursement of wages, the representative of the Contractor and EIC/ authorised representative of TFL have to certify the payment of wages to the resources and sign the Wage Register - Form B (under The Ease of Compliance to Maintain Registers under various Labour Laws Rules, 2017) / FORM-I of Code on Wages, 2019 (after it comes into force) with specific seal detailing name/designation/Company.

**1.3. Payment of Bonus:**

Contractor shall ensure payment of bonus as per the provisions of the Payment of Bonus Act, 1965 / Code on Wages, 2019 (after it comes into force). Present minimum rate of payment of Bonus as per the Payment of Bonus Act, 1965 is 8.33% of minimum wages per month or 8.33% of Rs.7,000/- per month whichever is higher. The rate shall be subject to amendments made from time to time to the legislation.

Payment of Bonus / ex-gratia (if Bonus is not applicable) shall be made preferably before Deepawali festival falling after the end of relevant financial year(s) and the balance payment at the time of closure of contract.

The amount towards the payment of bonus/ex-gratia shall be released / reimbursed to the contractor, after submission of proof of payment.

**2. Leaves/ Leave with wages/ Holiday:**

The Contractor shall comply with all the applicable leave Rules including leave with wages in terms of applicable labour legislations i.e. Factories Act, 1948 / Shops & Establishment Act/ Industrial Establishment (national & festival holidays, casual & sick leave) Act, 1965.

The Contractor shall extend the leave with wages and maintain the Register of Leave pertaining to the resource deployed. The payment towards un-availed leave, as per the Factories Act, 1948

/ Shops & Establishment Act, shall be settled with the resource at the time of closure of the contract or separation of resource from the contract by the contractor.

- i. As per the **Factories Act, 1948 (if applicable)**:-Annual Leave with Wages @ 01 day for every 20 days of work performed by him in the previous calendar year becomes due.
- ii. As per the **Shops & Establishment Act (if applicable)** : Privilege Leave not less than 15 days and Sickness/Casual Leave not less than 12 days ( this provision may vary from state to state).
- iii. As per the **Industrial Establishment (national & festival holidays, casual & sick leave) Act, 1965 (if applicable)**: (a) three national holidays of one whole day each on the 26<sup>th</sup> January, 15<sup>th</sup> August and 2<sup>nd</sup> October (b) five other holidays on any of the festivals specified in the - Schedule appended to this Act. (c) Every worker shall in each calendar year, be allowed by the employer 07 casual leave and 14 sick leave in such manner and on such conditions as may be prescribed (This provision may vary from state to state).

### **3. The Employees' Provident Fund & Miscellaneous Provisions Act 1952**

- a) The Contractor shall have independent PF code no. with the RPFC as required under the Employees' PF & Misc. Provisions Act, 1952.
- b) The Contractor has to ensure compliance (as per prevailing rates) and extend benefits under the Employees' Provident Fund Scheme 1952, the Employees' Pension Scheme 1995 & the Employees' Deposit Linked Insurance Scheme, 1976 to the resources deployed by him.
- c) The Contractor is required to submit copies of *separate e-Challans / ECR alongwith proof of payment/receipt* in respect of resources engaged through this contract only, on monthly basis. **Common challans would not be acceptable in TFL.** The Contractor should submit copies of previous months EPF e-Challans / ECR alongwith current month's bill. The TRRN. No. of the ECR would be verified online from EPFO portal by the Engineer-in-charge to confirm the status of payment and names of the resources deployed.
- d) **PF is mandatory irrespective of the number of resources deployed** by the Contractor under this contract. **PF membership and deposit of PF contribution is also mandatory even if the wage payment to the resource is exceeding the prescribed monthly wage ceiling ( i.e. Rs. 15,000/-) under the Employees' PF & Misc. Provisions Act, 1952 and in such case the liability of the Contractor towards PF contribution shall be limited to the prescribed monthly wage ceiling notified from time to time ( i.e. Rs. 15,000/- currently).**
- e) In case, the Contractor deploys any "**International Worker**", the Contractor should also make compliance under para 83 of EPF Scheme, 1952 i.r.o the "International Workers" and must register on the ***International Worker Portal of EPFO.***

### **4. The Employees' State Insurance Act, 1948 (If applicable and as per prevailing rates)**

- a) The Contractor shall have his own ESI code No. allotted by Employees' State Insurance Corporation (ESIC) as required under the Employees' State Insurance Act, 1948.
- b) The Contractor has to arrange **Smart Cards (i.e. ESI Identity Card) /e-Pehchan Card** for the resource(s) engaged by him from the Corporation.

## 5. The Employees' Compensation Act 1923 (wherever applicable)

In case, the work place is out of the notified coverage area under ESIC i.e. ESIC is not implemented in the area **or** in case of excluded employees under ESIC, the Contractor is required to take Employee Compensation / Workmen Compensation Policy from IRDAI approved Insurance Company taking into consideration the **maximum compensation liability** as per provisions of Employees' Compensation Act, 1923. It must be ensured that the contractor/contracting firm should extend coverage to the contract workers through Employee Compensation Policy, to meet the **Compensation Liability** under **Employee's Compensation Act, 1923** along with **Medi-claim Policy** within the overall premium @ 3.25 % of Minimum wages (i.e. employer contribution towards ESI).

## 6. Group Personal Accident Insurance Policy

The Contractor is required to take a Group Personal Accident Insurance Policy with coverage of **Rs. 3 Lakhs** per resource for the entire period of contract covering all resources deployed under the contract.

## 7. The Payment of Gratuity Act, 1972

In case of Death or permanent disablement of a resource during execution of work under the contract, the Contractor has to pay the Gratuity as per the provision under the Payment of Gratuity Act, 1972 to the nominee(s) of the resource as per the details maintained in the duly signed Nomination Form maintained by the Contractor. The proof of disbursement may be submitted to the EIC for claiming reimbursement of amount paid towards death Gratuity from TFL.

## 8. The Contract Labour (R&A) Act, 1970

- a) The Contractor is required to obtain Labour license under the provisions of the Contract Labour (R&A) Act, 1970 from the office of Licensing Officer, Central Labour Authority, Ministry of Labour and Employment, Govt. of India having jurisdiction of the Region.
- b) The Contractor shall discharge obligations as provided under the Contract Labour (R&A) Act, 1970 rules and regulations framed under the same and enforced from time to time.
- c) The Contractor shall ensure regular and effective supervision and control over the resources deployed for which a supervisor / representative of the Contractor should be available at all the times for giving suitable direction for undertaking the Contractual Obligations.
- d) The Contractor is solely responsible for payment of wages to each resource deployed by him and such wages shall be paid before the expiry of such period as may be prescribed.
- e) It shall be the duty of the Contractor to ensure the disbursement of wages to resource(s) through e-banking/digital mode. In case the resource does not have a bank account, the disbursement of wages may be made in cash in the presence of the Engineer-in-charge /

authorized representative of TFL initially and Contractor shall simultaneously arrange for opening the bank account of each contract labour deployed by him.

- f) In case, the Contractor fails to make payment of wages and deposit of PF contribution within the prescribed period or makes short payment of wages / short deposit of PF contribution, then TFL, as Principal Employer, will make payment of wages in full or the unpaid balance due, as the case may be, to the resource(s) deployed by the Contractor and deposit the PF contribution with PF authorities. Such amounts will be recovered from the Contractor either by deduction from any amount payable to the Contractor under any contract or as a debt payable by the Contractor.
9. The contractor is required to comply with all applicable labour laws and regulations including, but not limited to the following:
- a) The Factories Act, 1948 / The Shops & Establishment Act, 1948 (which ever applicable)
  - b) The Maternity Benefit Act, 1961
  - c) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1979 & Building and Other Construction Workers Welfare Cess Act, 1996
  - d) The Inter State Migrant Workmen (RECS) Act 1979 (if applicable)
  - e) Contract Labour (R&A) Act-1970
  - f) Employees' Provident Fund & Misc. Provisions Act- 1952
  - g) Employees' State Insurance Act-1948
  - h) Employees' Compensation Act, 1923
  - i) Payment of Gratuity Act, 1972
  - j) Minimum of Wages Act,1948
  - k) The Payment of Wages Act,1936
  - l) The Payment of Bonus Act,1965



## **STANDARD CONDITIONS OF SCC: PART II**

### **Responsibilities of the Contractor**

1. The Contractor shall be solely responsible and indemnify TFL against all charges, dues, claim etc. arising out of the disputes relating to the dues and employment of resources, if any, deployed by him.
2. The Contractor shall indemnify TFL against all losses or damages, if any, caused to it on account of acts of the resource(s) deployed by him.
3. The Contractor shall indemnify TFL from all claims, demands, actions, cost and charges etc. brought by any court, competent authority / statutory authorities against TFL.
4. The Contractor shall also indemnify TFL for any action brought against him for violation, non-compliance of any act, rules & regulation of center / state / local statutory authorities.
5. All resources deployed by the Contractor are deemed to be on the rolls of the Contractor.
6. **Age:** No resource below the age of **18 years** and above age of **58 years** shall be deployed by the contractor for the execution of the contract.
7. **Appointment/Nomination of supervisor:**  
As a part of the contract, the Contractor is required to appoint/nominate a supervisor (s) who will supervise, control and give directions to the resource(s) for discharging the contractual obligations. Accordingly, the Contractor has to give in writing the name and contact details of the supervisor (s) to the EIC. A copy of the same is also to be sent to HR In-charge and Security In-charge for records.
8. A copy of the Letter of Acceptance (LOA) should be submitted to the Security Department by the Contractor / his representative or supervisor for facilitating the movement of resource(s) including machine & materials involved in the contract.
9. The resources to be deputed/ deployed by the Contractor shall observe all security, fire and safety rules of TFL while at the site/work. All existing and amended safety / fire rules of TFL are to be followed at the work site by the Contractor and his deployed resource(s).
10. **Personal Protective Equipment / Safety Kit and Liveries:** Contractor shall ensure adequate supply of personal protective equipment / Safety Kit and Liveries as mentioned in the Scope of Work to all such resources deployed.
11. In case of accident, injury or death caused to the resource(s) 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.
12. The Contractor shall not deploy any resource suffering from any contagious or infectious disease. The Contractor shall get the deployed resource(s) examined from a civil Govt. Doctor / TFL's Doctor.

13. No resource(s) or representatives of Contractor (including Contractor) are allowed to consume alcoholic drinks or any narcotics within the premises of TFL (including Plant, Office and Residential etc.). If found under the influence of above, the Contractor shall immediately replace that resource(s) with intimation to the EIC.
14. While engaging / deploying the resources, the Contractor is required to make efforts to provide opportunity of employment to resources belonging to **Schedule Caste, Schedule Tribe and Other Backward Class** in order to have a fair representation of these sections of the society.
15. While engaging the resources, the Contractor is required to make efforts to provide an **opportunity to** candidates with experience of **apprentice training in TFL** under the provisions of the Apprentices Act, 1961.
16. The Contractor is required to maintain all Registers and other records in an **office** within the premises of TFL or at a place **within a radius of three kilometers**.
17. Contractor shall provide proper **Employment cards (FORM XII)** for the resource to be deployed by him, duly signed by the Contractor or authorized person on behalf of Contractor.
18. **Gate/ Entry Pass or Authorization:**  
Entry to the premises of TFL is restricted and is subject to appropriate entry authorization in the prescribed format of a Gate Pass or any other entry authorization w.r.t police verification as per instruction of Security department from time to time. Similarly, entry for material/ equipment's/ tools/ tackles etc. is restricted & subject to entry authorization by security department.
19. The Contractor shall issue **Identity cards** in his firm's name to the resource deployed.
20. Discipline of the resource(s) during discharge of duties must be regulated by the Contractor himself or by his representative.
21. **Police verification**
  - a) The Contractor (including his sub-Contractors/Petty Contractors etc, if allowed) will undertake police verification in respect of the resource(s) engaged by him in TFL's premises. Such verification will have to be carried out from concerned police station of their permanent place of residence/present place of residence.
  - b) Further, the Contractor is advised not to deploy any resource having past criminal record in the establishment/premises of TFL under this contract awarded to him.
  - c) In the event of violation of above clauses at (a) and (b), the Contractor will be solely responsible for the same.
  - d) If any such resource(s) having criminal record is deployed by the Contractor in the premises of TFL and has come to the notice of TFL at any point of time, the Contractor shall immediately replace that resource(s), failing which that particular resource(s) of the Contractor will not be allowed to enter into the premises of TFL.
22. While confirming to any of these conditions, the Contractor must ensure that all applicable Laws of State regarding labour, their welfare, conduct etc. are complied.

## **STANDARD CONDITIONS OF SCC: PART III**

### **Compliance of Government of India Directives**

#### **1. Pradhan Mantri Suraksha Bima Yojna (PMSBY) and Pradhan Mantri Jeevan Jyoti Bima Yojna (PMJJBY)**

Contractor shall, ensure that all its resources deployed under this contract have obtained additional insurance coverage under the Pradhan Mantri Suraksha Bima Yojana (PMSBY) and Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) through the participating banks and submit the proof of such insurance coverage to the satisfaction of TFL. The cost has been included in the estimate mentioned in SOR and the Contractor shall submit evidence / proof to TFL in this respect. Both the schemes are to be regulated continuously on yearly basis and the same should be renewed on each successive relevant date in subsequent years during the period of the contract.

#### **2. Labour Identification Number (i.e. LIN) Registration (Mandatory)**

The Unified Shram Suvidha Portal, developed by Government of India, facilitates reporting of Inspections & submission of Returns and has also been envisaged as a single point of contact between employer, resources and enforcement agencies bringing in transparency in their day-to-day interactions. For integration of data among various enforcement Agencies, the Contractor, as an inspectable unit, is required to register and obtain Labour Identification Number (i.e. LIN) from Shram Suvidha Portal and submit the same in TFL.

#### **3. Pradhan Mantri Rojgar Protsahan Yojna (PMRPY) – if applicable**

In order to support the Govt. of India's Initiative on Employment Generation, the Contractor must register for Pradhan Mantri Rojgar Protsahan Yojna (PMRPY) Scheme. The Contractor shall inform TFL/Engineer in Charge about the benefit availed, if any, against the scheme for adjustment against the invoice(s) / bill(s).

**Details in support of RA Bill for the Month of \_\_\_\_\_, 20\_\_**

- (1) Name of the Firm/Agency/Contractor \_\_\_\_\_
- (2) Nature of Contract: Job/ Service \_\_\_\_\_
- (3) Period of Contract: From \_\_\_\_\_ to \_\_\_\_\_
  - (a) Extension Period of Contract, if any from \_\_\_\_\_ to \_\_\_\_\_
  - (b) Place where contract workmen are working \_\_\_\_\_
- (4) Postal address of the Contractor: \_\_\_\_\_
- (5) Phone No. of the Contractor: \_\_\_\_\_
- (6) Fax No. and Email of the Contractor: \_\_\_\_\_
- (7) Name and Address of PF office from where EPF Code No. has been allotted: \_\_\_\_\_
- (8) EPF Code No. allotted by PF office: \_\_\_\_\_
- (9) Name and Address of ESIC office from where ESI Code No. has been allotted: \_\_\_\_\_
- (10) ESI Code No. allotted by ESIC office: \_\_\_\_\_
- (11) Labour License No. \_\_\_\_\_ dated \_\_\_\_\_
- (12) Validity period of Labour License from \_\_\_\_\_ to \_\_\_\_\_
- (13) Detail of Resource engaged by the Contractor:

Category	No. of Resources		Prevailing Minimum Wages
	Male	Female	
Unskilled			
Semi-skilled			
Skilled			
Highly skilled			
Total			

- (14) Copy of Wage Register in FORM – B ( to be replaced by FORM-I as per Code on Wages-2019, after it comes into force)
- (15) Details of deposit of contribution towards EPF:
  - a) EPF Challan No. \_\_\_\_\_ Amount \_\_\_\_\_ Date \_\_\_\_\_
- (16) Details of Deposition of contribution towards ESI
  - a) ESI Challan No. \_\_\_\_\_ Amount \_\_\_\_\_ Date \_\_\_\_\_
- (17) Whether any arrangement / agreement has been entered with any resource for extending benefits under Inter-state Migrant Workmen (RE&CS) Act, 1979: \_\_\_\_ (Yes / No)  
If Yes, No. of such Inter-state Migrant Workers: \_\_\_\_\_

**SIGNATURE OF CONTRACTOR/AUTHORIZED REPRESENTATIVE**

Place:  
Date:

**UNDERTAKING**

**(To be submitted along with un-priced bid)**

I/We hereby undertake that I/We have completely understood the terms & conditions of the Tender including minimum resources required to be deployed and the cost involved thereof in deployment of resources.

I/We further undertake to ensure all compliances of the tender conditions. Any non-compliance may be construed as deficiency in the performance of the contract. If such non-compliance is noticed TFL/owner is at liberty to take action in line with the tender conditions including termination of the contract.

*Signature of Bidder.....*

*Name of Bidder.....*

## Summary of Insurance Policies

Contractor is required to cover all resources deployed by him with the following insurances / schemes:

Sl. No.	SCHEME	APPLICABILITY	PREMIUM/ CONTRIBUTION	SUM ASSURED/ BENEFITS	REMARKS
1	The Employees' State Insurance Act, 1948	Applicable to all resources of the Contractor (within ESI wage limit) working in notified area.	3.25% of wages by employer 0.75% of wages by employees	Benefits under the Employees' State Insurance Act, 1948.	
2	The Employees' Compensation Act, 1923 (in lieu of ESI – mentioned at Sl. 1)	Applicable to excluded employees under ESI and those who are working in non-notified area to extend similar benefits as available under ESI Act, 1948	Premium to be calculated considering wage limit under EC Act, 1923 (i.e. Rs. 15,000/- p.m currently)	Maximum <b>Compensation Liability</b> under Employee's Compensation Act, 1923 along with a <b>Mediclaim policy</b> within overall premium @ 3.25 % of Minimum wages (i.e. employer contribution towards ESI)	Provides compensation and medical facility to resources.
3	Group personal Accident Insurance	Applicable to all resources of the Contractor	Based on the coverage	Insured value: Rs. 3 Lakh to cover expenses associated with any accident.	Death, permanent disablement, temporary total disability or any other medical expenses related to accident.
4	Pradhan Matri Suraksha Bima Yojana (PMSBY)	Eligibility – age group 18 to 70 years	Rs. 12/- per annum	<b>Accidental</b> death and permanent disability: (i) Permanent total disability – Rs. 2 lakhs. (ii) Permanent partial disability – Rs. 1 Lakh.	
5	Pradhan Mantri Jeevan Jyoti Bima Yojana(PMJJB)	Eligibility – age group 18 to 50 years. (can continue upto 55 years)	Rs. 330/- per annum.	Risk coverage – Rs. 2 Lakhs- in case of <b>death due to any reason</b>	

 <b>पी डी आई एल</b> <b>PDIL</b>	<b>PROJECTS &amp; DEVELOPMENT INDIA LIMITED</b>	PC-183/ E-4024/ S-V	0	 <b>Talcher</b> <b>Fertilizers</b>
		DOC. NO.	REV.	

**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  
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## **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.

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**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

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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**

X

The Contractor shall be fully responsible for planning, reporting, implementing and monitoring all HSE requirements and compliance of all laws & statutory requirements.

X

The Contractor shall also ensure that the HSE requirements are clearly understood & implemented conscientiously by their site personnel at all levels at site.

X

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.

X

Contractor shall furnish their annual Inspection Plan, with regard to project issues /subjects, frequency and performers to PDIL/Owner.

X

The Contractor shall regularly review inspection report internally and implement all practical steps / actions for improving the status continuously.

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- x 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.
- x 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.
- x 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.
- x 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**

- x 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
- x 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
- x 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.



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- x 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**

- x The Contractor shall promote and develop awareness on Health, Safety and Environment protection among all personnel working for the Contractor.
- x 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.
- x Contractor to motivate & encourage the workmen & supervisory staff by issuing / awarding them with tokens/ gifts/ mementos/ monetary incentives / certificates, etc.
- x 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**

- x 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
- x 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.
- x The Contractor shall deploy trained supervisory personnel / field engineers to cater to any emergency situation.
- x 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.
- x 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.

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- x 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:

- x 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).
- x 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**

- x 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.
- x 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.
- x Agenda of internal HSE meeting should broadly cover: -

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- 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**

- x 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.
- x 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.
- x Awareness about local laws on this issue shall form part of the Induction Training and compulsory work-site discipline.
  
- x 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.
  
- x 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:

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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.

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Sl. No.	Violation of HSE norms	Penalty Amount
15.	Failure to submit the monthly HSE report by 5 <sup>th</sup> 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.

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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/Owner within 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

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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/critical 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.



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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 (C<sup>0</sup> 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:-‘

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- 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

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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 C<sup>0</sup> 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 3<sup>rd</sup> 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<sup>2</sup>/m<sup>3</sup> 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.

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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.

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- 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 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.

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- X 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.
  - X All cable joints shall be done with proper jointing kit. No taped/ temporary joints shall be used.
  - X 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.
  - X All cables and wire rope used for earth connections shall be terminated through tinned copper lugs.
  - X 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.
  - X Separate core shall be provided for neutral. Earth / Structures shall not be used as a neutral in any case.
  - X ON/OFF position of all switches shall be clearly designated / painted for easy isolation in emergency.
- 3.3.7 Welding/ Gas cutting**
- X 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.
  - X 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
  - X The burner and the hose placed downstream of pressure reducer shall be equipped with Flash Back Arrester/Non Return Valve device.
  - X 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.
  - X At end of work, the cylinders in use shall be closed and hoses depressurized.
  - X Cutting of metals using gases, other than oxygen & acetylene, shall require written concurrence from Owner.
  - X 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.
  - X 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.
  - X 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.
  - X 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.
  - X All gas cylinders must have a cylinder cap on at all times when not in use.

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**3.3.8 Ergonomics and tools & tackles**

X

The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health.

X

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.

X

The contractor shall not be allowed to use defective equipment or tools not adhering to safety norms.

X

Contractor shall arrange non-sparking tools for project construction works in operating plant areas / hydrocarbon prone areas.

X

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.

X

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.

X

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.

X

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**

X

The contractor shall identify all operations that can adversely affect the health of its workers and issue & implement mitigation measures.

X

For surface cleaning operations, sand blasting shall not be permitted even if not explicitly stated elsewhere in the contract.

X

To eliminate radiation hazard, Tungsten electrodes used for Gas Tungsten Arc Welding shall not contain Thorium.

X

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.

X

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.

X

For jobs like drilling/demolishing/dismantling where noise pollution exceeds the specified limit of 85 decibels, ear muffs shall be provided to the workers.

X

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



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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.

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X

The contractor shall generate the Format No: HSE-8 “Permit for radiation work” before start of work.

X

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**

X

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.

X

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**

X

The contractor shall adhere to safe demolishing/ dismantling practices at all stages of work to guard against unsafe working practices.

X

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.

X

Before carrying out any demolition/ dismantling work, the contractor shall take prior approval of PDIL/Owner and generate the Format 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.

X

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**

X

X 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.

X

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.

X

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.

X

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.

X

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.

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X

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.

X

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.

X

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.

X

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:

X

A crèche at site where 10 or more female workers are having children below the age of 6 years.

X

Adequately ventilated / illuminated rooms at labour camps & its hygienic up-keeping.

X

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.

X

Adequately lighted & ventilated Rest rooms at site (separate for male workers and female workers).

X

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.

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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 dispose 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)

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**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. Contractor 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 constraints of its dimensions, location of foundation height, approach & weight.

X

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.

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- 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 :-
  - f* Variety
  - f* Period of the year / project span
  - f* Timings of the incident / accident
  - f* Age profile of victims
  - f* 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 possess 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)

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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.

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**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, masons 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.



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**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.

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- 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.

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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](http://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.

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- x 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.
- x 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.
- x provide posters, banners for safe working to promote safety consciousness.
- x identify, assess, analyze & mitigate the construction hazards & incorporate relevant control measures before actually executing site works. (HIRAC = Hazard Identification, Risk Analysis and Control).
- x 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 3<sup>rd</sup> 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.
- x 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.
- x arranging HSE training for site workmen (of his own & sub contractors) through internal or external faculty at periodical intervals.
- x assistance & cooperate during HSE audits by PDIL/Owner or any other 3<sup>rd</sup> party and submit compliance report.  
generate & submit of HSE records/report as per this specification.
- x apprise PDIL/Owner on HSE activities at site regularly.
- x carry-out all dismantling activities safely, with prior approval of PDIL/Owner representative.
- x 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.

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**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

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**APPENDIX-A  
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**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

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**APPENDIX-A  
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**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

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**APPENDIX-B**

**DETAILS OF FIRST AID BOX**

<b>SL. NO.</b>	<b>DESCRIPTION</b>	<b>QUANTITY</b>
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.	Tourniquet	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.



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**APPENDIX-C**

**TYPE OF FIRES VIS-À-VIS FIRE EXTINGUISHERS**

Fire ↓ Extinguisher →	Water	Foam	CO <sub>2</sub>	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 <sub>2</sub>	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.

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**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.

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**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES**

<b>ACTIVITY</b>	<b>TYPE OF HAZARD</b>	<b>EFFECT OF HAZARD</b>	<b>PREVENTIVE MEASURES</b>
(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. <u>Provide escape ladders.</u>
	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. <u>Battering/benching the sides.</u>
	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 <u>mechanical means.</u>
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 <u>Construct retaining wall side by side.</u>
	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 <u>Strengthen shoring and strutting</u>

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**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

<b>ACTIVITY</b>	<b>TYPE OF HAZARD</b>	<b>EFFECT OF HAZARD</b>	<b>PREVENTIVE MEASURES</b>
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.

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**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

<b>ACTIVITY</b>	<b>TYPE OF HAZARD</b>	<b>EFFECT OF HAZARD</b>	<b>PREVENTIVE MEASURES</b>
	Earthing of electrical mixers, vibrators, etc. <del>not done.</del>	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. <del>Ensure lighting arrangements during night hours</del>
	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 <del>Ensure proper mechanical locking of vibrator</del>
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. <del>Avoid usage of shift tools</del>
	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 <del>Ensure proper staging.</del>
	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

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**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

<b>ACTIVITY</b>	<b>TYPE OF HAZARD</b>	<b>EFFECT OF HAZARD</b>	<b>PREVENTIVE MEASURES</b>
	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 1/3 <sup>rd</sup> 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

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**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
	Transportation and Storage of Radiography 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 Electrocutation 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

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**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			<p>Do not allow open/bare connections Provide all connections through ELCB Protect electrical cables/equipment's from water and naked flames <u>Check all connections before energizing</u></p>
	Overloading of Electrical System	Bursting of system can occur which leads to fire	<p>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. <u>Ensure proper grid wise distribution of Power</u></p>
	Improper laying of overhead and underground transmission lines/cables	Can cause electrocution and prove fatal	<p>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</p>
(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	<p>In case a fire breaks out, press fire alarm system and shout "Fire, Fire" Keep buckets full of sand &amp; 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 access to Fire extinguishers. Do not use elevators for evacuation during fire. Maintain lightning arrestors for elevated structures Stop all electrical motors with internal combustion</p>



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**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 <u>Remain out of the danger areas.</u>
	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 <sub>2</sub> /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. <u>Wipe off the spills immediately</u>
	Short circuiting of electrical system	Same as above Can cause Electrocutation	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 <u>Ensure earthing of machineries and equipments</u>
(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 <u>Do not overtake on curves, bridges and slopes</u>
	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.

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**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. <u>Do not day dream while driving</u>
	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 <u>manufacturer instructions</u>
(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.

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**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			<p>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.</p> <p>The gas used as test fluid, if not air, shall be <u>nonflammable and nontoxic.</u></p>
(J) WORKING AT HEIGHTS	Person can fall down	May sustain severe injuries or prove fatal	<p>Provide guard rails/barricade at the work place</p> <p>Use PPE like full body harness, life line, helmets, safety shoes, etc.</p> <p>Obtain a permit before starting the work at height above 3 meters</p> <p>Fall arrest and safety nets, etc. must be installed</p> <p>Provide adequate working space (min. 0.6 m)</p> <p>Tie/weld working platform with fixed support</p> <p>Use roof top walk ladder while working on a sloping roofs</p> <p><u>Avoid movement on beams</u></p>
		May hit the scrap/material stacked at the ground or in between	<p>Keep the work place neat and clean</p> <p>Remove the scrap immediately</p>
	Material can fall down	May hit the workers working at lower levels and prove fatal	<p>Same as above plus</p> <p>Do not throw or drop materials or equipment from height. I.e. do not <i>bomb</i> materials</p> <p>All tools to be carried in a tool-kit</p> <p>Bag or on working uniform</p> <p>Remove scrap from the planks</p> <p>Ensure wearing of helmet by the workers <u>working at lower levels</u></p>
(K) CONFINED SPACES	Suffocation/drowning	Unconsciousness, death	<p>Use respiratory devices, if reqd.</p> <p>Avoid over crowding inside a confined space</p> <p>Provide Exhaust fans for ventilation</p> <p>Do not wear loose clothes, neck ties, etc</p> <p>Fulfill conditions of the permit</p>

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**APPENDIX-E: (Sheet 10 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			<p>Check for presence of hydrocarbons, O<sub>2</sub> 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</p>
	Presence of foul smell and toxic substances	Inhalation can pose threat to life	<p>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</p>
	Ignition/ flame can cause fire	Person may sustain burn injuries or explosion may occur	<p>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</p>
(L) HANDLING AND LIFTING EQUIPMENTS	Failure of load lifting and moving equipments	Can cause accident and prove fatal	<p>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</p>

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**APPENDIX-E : (Sheet 11 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

<b>ACTIVITY</b>	<b>TYPE OF HAZARD</b>	<b>EFFECT OF HAZARD</b>	<b>PREVENTIVE MEASURES</b>
	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

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**APPENDIX-E: (Sheet 12 of 12)**

**CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES (...Contd.)**

<b>ACTIVITY</b>	<b>TYPE OF HAZARD</b>	<b>EFFECT OF HAZARD</b>	<b>PREVENTIVE MEASURES</b>
(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.

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**APPENDIX-F**

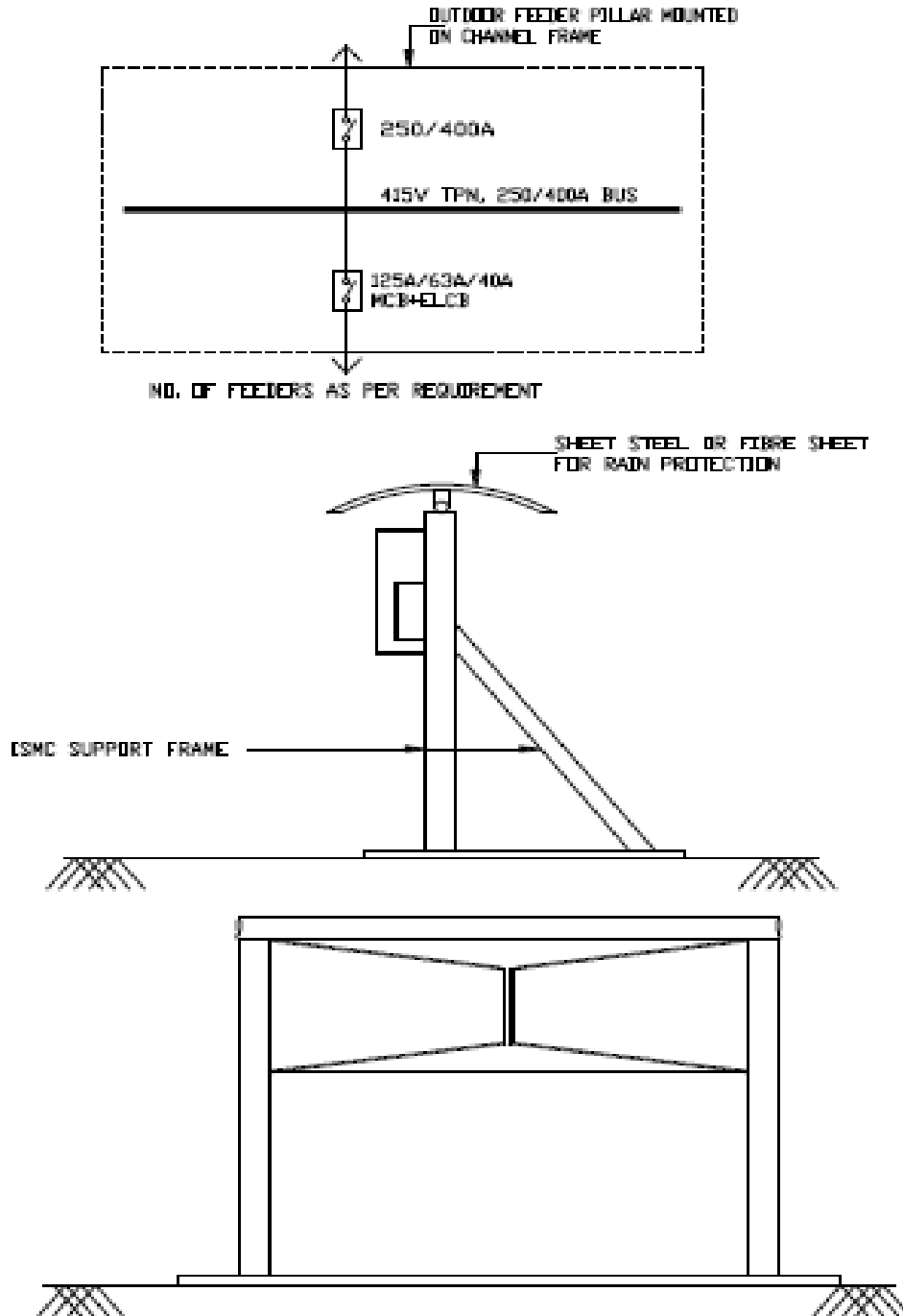
**TRAINING SUBJECTS / TOPICS**  
(For contractors' personnel)

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

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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 ACCESSABLE.
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 STEEL WITH HINGED DOORS AND ALL COMPONENT MOUNTED IN IT.
4. ALL INCOMING AND OUTGOING CABLES SHALL HAVE BOTTOM ENTRY.



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**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

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**FORMAT NO. : HSE-1 REV 0**

**(Sheet 1 of 6)**

**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	Satisfactory / 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 <sup>0</sup> , 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).....

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**FORMAT NO. : HSE-1 REV 0**

(Sheet 2 of 6)

SL. NO.	ITEM	Satisfactory / 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 <sup>0</sup> from horizontal				
e)	Other				

Safety walk-through performer (Name & Signature).....

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**(Sheet 3 of 6)**

SL. NO.	ITEM	Satisfactory / 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).....

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**FORMAT NO. : HSE-1 REV 0**

**(Sheet 4 of 6)**

SL. NO.	ITEM	Satisfactory / 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 <del>Clear</del>				
e)	<del>Other</del> 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).....

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**FORMAT NO. : HSE-1 REV 0**

(Sheet 5 of 6)

SL. NO.	ITEM	Satisfactory / 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).....

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**FORMAT NO. : HSE-1 REV 0**

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SL. NO.	ITEM	Satisfactory / 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.	<b>HEALTH CHECKS</b>				
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.	<b>ENVIRONMENT</b>				
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).....

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**FORMAT NO. : HSE-2 REV 0**

(Sheet 1 of 3)

**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) \_\_\_\_\_

<b>Non-disabling injury (Non-LTA)</b>	Hospitalized but resumed duty before end of 48 hrs	
<b>Disabling injury (other LTA)</b>	Hospitalized & failed to resume duty within next 48 hrs	
<b>Fatal (LTA):</b>	Death / Expiry	
<b>First Aid case (non LTA)</b>	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:** \_\_\_\_\_

\_\_\_\_\_



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**FORMAT NO. : HSE-2 REV 0**

**(Sheet 2 of 3)**

**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		Trunk (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					

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**FORMAT NO. : HSE-2 REV 0**

**(Sheet 3 of 3)**

**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

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**FORMAT NO. : HSE-3 REV 0**

(Sheet 1 of 5)

**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) \_\_\_\_\_

<b>Non-disabling injury (Non-LTA)</b>	Hospitalized but resumed duty before end of 48 hrs	
<b>Disabling injury (other LTA)</b>	Hospitalized & failed to resume duty within next 48 hrs	
<b>Fatal (LTA):</b>	Death / Expiry	
<b>First Aid case (non LTA)</b>	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:** \_\_\_\_\_

\_\_\_\_\_

**STANDARD SPECIFICATION FOR  
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**FORMAT NO. : HSE-3 REV 0**

**(Sheet 2 of 5)**

**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		Trunk (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

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HEALTH, SAFETY &  
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AT CONSTRUCTION SITES**

**FORMAT NO. : HSE-3 REV 0**

(Sheet 3 of 5)

**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	

**STANDARD SPECIFICATION FOR  
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**FORMAT NO. : HSE-3 REV 0**

**(Sheet 4 of 5)**

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 \_\_\_\_\_

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**(Sheet 5 of 5)**

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

**STANDARD SPECIFICATION FOR  
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**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  
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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/contlse) 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
<b>Remarks, if any</b>			

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  
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**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		
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)

**STANDARD SPECIFICATION FOR  
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**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	
<input type="checkbox"/>	<input type="checkbox"/>	Isolated from	<input type="checkbox"/>	<input type="checkbox"/>	water flushed &/or steamed	<input type="checkbox"/>	<input type="checkbox"/>	radiation sources removed
<input type="checkbox"/>	<input type="checkbox"/>	power/steam/air isolated from liquid or gases	<input type="checkbox"/>	<input type="checkbox"/>	Man ways open & ventilated	<input type="checkbox"/>	<input type="checkbox"/>	proper lighting provided
<input type="checkbox"/>	<input type="checkbox"/>	depressurized &/or drained	<input type="checkbox"/>	<input type="checkbox"/>	cont. inert gas flow arranged	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	blanked/ blinded/ disconnected	<input type="checkbox"/>	<input type="checkbox"/>	adequately cooled	<input type="checkbox"/>	<input type="checkbox"/>	

**(B) Expected Residual Hazards:**

<input type="checkbox"/>	<input type="checkbox"/>	lack of O <sub>2</sub>	<input type="checkbox"/>	<input type="checkbox"/>	combustible gas/ liquid	<input type="checkbox"/>	<input type="checkbox"/>	H <sub>2</sub> S / toxic gases
<input type="checkbox"/>	<input type="checkbox"/>	corrosive chemicals	<input type="checkbox"/>	<input type="checkbox"/>	pyrophoric iron / scales	<input type="checkbox"/>	<input type="checkbox"/>	electricity / static
<input type="checkbox"/>	<input type="checkbox"/>	heat/ steam / frost	<input type="checkbox"/>	<input type="checkbox"/>	high humidity	<input type="checkbox"/>	<input type="checkbox"/>	ionizing radiation
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

**(C) Protection Measures:**

<input type="checkbox"/>	<input type="checkbox"/>	gloves	<input type="checkbox"/>	<input type="checkbox"/>	ear plug / muff	<input type="checkbox"/>	<input type="checkbox"/>	goggles / face shield
<input type="checkbox"/>	<input type="checkbox"/>	protective clothing	<input type="checkbox"/>	<input type="checkbox"/>	dust / gas / air line mask	<input type="checkbox"/>	<input type="checkbox"/>	personal gas alarm
<input type="checkbox"/>	<input type="checkbox"/>	grounded air duct/blower /AC	<input type="checkbox"/>	<input type="checkbox"/>	attendant with SCBA/air mask	<input type="checkbox"/>	<input type="checkbox"/>	rescue equipment/team
<input type="checkbox"/>	<input type="checkbox"/>	Fire fighting arrangements	<input type="checkbox"/>	<input type="checkbox"/>	safety harness & lifeline	<input type="checkbox"/>	<input type="checkbox"/>	communication equipment
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

**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:

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**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	<input type="checkbox"/>
	Area cordoned off / safe working platform provided	<input type="checkbox"/>
	Lighting arrangements for working during nights ensured	<input type="checkbox"/>
	Warning signs/ flash lights installed	<input type="checkbox"/>
	Cold work permit taken (if applicable)	<input type="checkbox"/>
	PPEs like film badges, dosimeters used	<input type="checkbox"/>

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:

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**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	<input type="checkbox"/>	<input type="checkbox"/>
	Dismantling/ Demolishing method reviewed & approved	<input type="checkbox"/>	<input type="checkbox"/>
	Usage of appropriate PPEs ensured	<input type="checkbox"/>	<input type="checkbox"/>
	Precautions taken for neighbouring structures	<input type="checkbox"/>	<input type="checkbox"/>
	First-Aid arrangements made	<input type="checkbox"/>	<input type="checkbox"/>
	Fire fighting arrangements ensured	<input type="checkbox"/>	<input type="checkbox"/>
	Precautions taken for blasting	<input type="checkbox"/>	<input type="checkbox"/>

(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  
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**FORMAT NO. : HSE-10 REV 0**

**DAILY SAFETY CHECKLIST**

(To make use of before start of day's work)

Project : Sr.No. :  
Name of the work : Date :  
Name of contractor : Job No. :

<b>Description of Job decided to perform : -</b>
*

**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)

x

**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	
8x	Any Other	

Indicate actions taken, if status of any of the above items is found "No"

.....  
.....

x

Specific Safety guidelines / precautions, if any (communicated thro' TBT)

.....  
.....

x

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  
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**FORMAT NO. : HSE-11 REV 0**

(Sheet 1 of 2)

**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	Satisfactory/ 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.				

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(Sheet 2 of 2)

Sl No.	Subjects of Review	Satisfactory/ 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  
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**FORMAT NO. : HSE-12 REV 0**

**INSPECTION OF TEMPORARY ELECTRICAL BOOTH / INSTALLATION**

Project : Sr.No. :  
Name of the work : Date :  
Name of contractor : Job No. :  
Sub Station No:/Booth 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 ) & 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 <sup>rd</sup> 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  
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**FORMAT NO. : HSE-13 REV 0**

(Sheet 1 of 2)

**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 &  
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AT CONSTRUCTION SITES**

**FORMAT NO. : HSE-14 REV 0**

(sheet 1 of 2)

**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 tasks are 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).
- X 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-15 REV 0**

**PERMIT FOR HEAVY LIFT/CRITICAL ERECTION**

Project : Sr.No. :  
 Name of the work : Date :  
 Name of contractor : Job No. :  
 Nature of activities : Duration: From.....To.....  
 Location of work : Name /Type of crane :  
 Equipment/Structure to be erected: 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 crane 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. :

<b>X ENERGY ISOLATION PERMIT</b>	
X Clearance required from:.....Hrs .....Date	To .....Hrs ....Date
X Name of equipment/ energy source etc .....	
X Nature of job to be done: .....	
Area.....Location:.....	

<b>PERMIT VALIDATION</b>	<b>PERFORMING AUTHORITY</b>
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.	The work and precautions will be carried out under my overall responsibility.(Testing/execution engineer)
Issuing authority Area –Incharge/RCM Signature: _____ Date: _____ Name: _____	Signature: _____ Date: _____ Name: _____

<b>SAFETY PRECAUTIONS FOR CLEARANCE</b>	<b>NORMALISING AFTER CLEARANCE</b>
1. Notify workers of intent to de- energize <input type="checkbox"/> 2. Obtain lock,tag or locking/tagging devices <input type="checkbox"/> 3. Shut down ,de energize, dissipate any residual energies. <input type="checkbox"/> 4. Apply lock ,tag and locking and/or tagging devices <input type="checkbox"/> 5. *Any other job specific precautions <input type="checkbox"/> 6. Verify effectiveness of lockout by attempting to restart. <input type="checkbox"/> 7. Proper PPE is ensured <input type="checkbox"/>	1. Notify workers of intent to re- energize <input type="checkbox"/> 2. Conduct visual inspection to confirm that the danger zone is clear of workers <input type="checkbox"/> 3. Conduct visual inspection to confirm that tools ,equipments danger zone is clear of workers <input type="checkbox"/> 4. Reposition the safety devices(interlocks, valves, guards, covers ,sensors, as applicable, etc) <input type="checkbox"/> 5. *Any other job specific normalizing details <input type="checkbox"/> 6. Remove lock, tag and locking and/or tagging devices. <input type="checkbox"/> 7. Re energize. <input type="checkbox"/> 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.	I certify that the energy source mentioned above is isolated from all sources and is safe to start the work.
Tag No:..... Lock No:.....	Tag No:..... Lock No:.....
Issuing authority Area –Incharge/RCM Signature: _____ Date: _____ Name: _____ <b>(*to be included by contractor in consultation with PDIL/owner)</b>	Issuing authority Area –Incharge/RCM Signature: _____ Date: _____ Name: _____ <b>(*to be included by contractor in consultation with PDIL/owner)</b>

<b>ENERGY DE-ISOLATION PERMIT</b>	
<b>PERMIT VALIDATION</b>	<b>PERFORMING AUTHORITY</b>
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..	I herby certify that the equipment/energy source mentioned above has been de-isolated and is ready for normal operation.(Testing/execution engineer)
Issuing authority Area –Incharge/RCM Signature: _____ Date: _____ Name: _____	Signature: _____ Date: _____ Name: _____  Countersigned by Issuing authority

**FORMAT NO. : HSE-17 REV 0**

**PERMIT FOR EXCAVATION** (depth 2m and above)

**(Sheet 1 of 2)**

Project : Sr.No. :  
 Name of the work : Date :  
 Name of contractor : Job No. :  
 Job Description : Location:  
 Size of excavation :

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**

**(Sheet 2 of 2)**

**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.



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**TALCHER FERTILIZER LIMITED**

**Part – 1**

**TECHNICAL SPECIFICATION**

**FOR**

**CONSTRUCTION OF 220kV**

**TRANSMISSION LINE**

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## TRANSMISSION LINES

### 1.0 PREABMLE:

- Talcher Fertilizer Limited (TFL) is a Public Company incorporated in 2015. It is classified as Non-Govt. Company and is registered at Registrar of Companies at Cuttack. Considering the increase in demand for fertilizers in the Country, TFL intends setting up fertilizer project for production of 2200MTPD Ammonia and 3850MTPD.
- OPTCL approved for connectivity at 220kV tap off on the 220kV TTPS – Rengali line. Talcher Fertilizer Limited (TFL), located in Talcher at Odisha, for an expected energy requirement of around 90MW.
- TFL will establish 220kV GIS Switching Substation within TFL boundary with LILO Arrangement. Station will also have 220/33kV 20MVA Power Transformer for local requirement. The 220kV Transmission line and the GIS Substation will be operated and maintained by OPTCL.
- Project covers 220KV DC Transmission line of 5.0KM from TTPS - Rengali tap off point and 220kV Cable from GIS Substation to TFL receiving Substation

### 2.0 DETAILED SCOPE OF WORK UNDER THE BIDDING PACKAGE:

220 kV Double Circuit Transmission Line with Stringing of single ACSR equivalent to Zebra Conductor from Tap off point Tower location 6 on the TTPS and Rengali line

The scope of work under this project covers the following components:

Bidder's scope is to Design, Engineer, and supply, erection, testing and commissioning the following requirements.

Fabrication and supply of all type of 220kV Double-circuit towers including stubs as per tested/approved design/drawings including fasteners, step bolts, hangers, D-shackles etc., Supply of all types of tower accessories like phase plate, circuit plate, number plate, danger plate, anti-climbing device etc., Supply of Conductor, OPGW earth wire, hardware & accessories for Conductor & earth wire, Supply of Insulators and Hardware Fittings, Classification of foundation for different type of tower and casting of foundation for tower footings as per approved foundation drawings , Erection of towers, tack welding of bolts and nuts, including supply and application of zinc rich primer & two coats of enamel paint, tower earthing, fixing of insulator strings, stringing of conductors and earth wire along with all necessary line Accessories, Painting of towers & supply and erection of span markers, obstruction lights for aviation requirements (as required) and Testing and commissioning of the erected transmission lines as per indicative route drawing attached in the ANNEXURE-2. The above works has been the following section:

- Approximate Transmission line length under this section is 5.0kM.
- Tower Configuration: Double Circuit Vertical Configuration Galvanized Steel Towers with single peak
- Tap off arrangement at location no 6 on the Rengali –TTPS 220kV line.
- **Stringing: Strung with Single ACSR Zebra conductor and OPGW on the peak**
- Single ACSR equivalent to “Zebra per phase per circuit Conductor designed for Maximum operating Temperature of 75 Deg C. /85 Deg. C. (based on availability of designs Installation of Conductor, OPGW -24 core Ground wire and their accessories, Insulator and Hardware fittings).
- All Erection Works i.e. Route Alignment, Detailed Survey, Check survey, casting of Foundation, erection of Towers, stringing of Conductor & its peak with GW, hoisting of insulators and

installation of their accessories etc.

**Important: Bidder has to obtain project license from the competent authority/OPTCL in respect of the mentioned works prior to commencement of the works. The expenses towards the project license have to be borne by the Bidder.**

## **2.1 SURVEY (Detail & check survey, estimating of quantities & Tower spotting):**

### **2.1.1 General:**

Preliminary route alignment in respect of the proposed transmission lines has been fixed by the OWNER subject to alteration of places due to way leave or other unavoidable constraints. OPTCL approved Route Profile Drawing & Tower Spotting Data shall be provided to the Bidder. It is the bidder responsibility for the Right of way clearances for fixing the tower, transmission lines etc in the third party properties. However TFL shall reimburse the expenditure made towards ROW clearances against submission of Legitimate / Official bills in original. Owner shall render all helps in co- ordination with law and order department for solving the same. Forest clearance if any shall be arranged by owner.

Provisional quantities/numbers of different types of towers have been estimated and indicated in the ANNEXURE 1 (Tower schedule). However final quantities for work shall be as determined by the successful bidder, on completion of the detail survey by the owner, preparation of route profile drawing and choosing the suitable tower types as elaborated in the specification and scope of work. If in case there is change in the Route after award of Contract due to some unavoidable circumstances, It has brought to the notice of owner for detail survey.

The bidder shall undertake check survey on the basis of the tentative alignment fixed by the owner. The said preliminary alignment may, however, change in the interest of economy to avoid forest and hazards in work. While surveying the alternative route the following points shall be taken care by the bidder.

- a) The line is as near as possible to the available roads in the area.
- b) The route is straight and short as far as possible
- c) Good farming areas, religious places, forest, civil and defense installations, aerodromes, public and private premises, ponds, tanks, lakes, gardens, and plantations are avoided as far as practicable.
- d) The line is far away from telecommunication lines as reasonably possible. Parallelism with these lines shall be avoided as far as practicable.
- e) Crossing with permanent objects are minimum but where unavoidable preferably at right angles.
- f) Difficult and unsafe approaches are avoided.
- g) The survey shall be conducted along the approved alignment only in accordance with IS: 5613 (Part-II/Section-2), 1985.
- h) For river crossing/ Crossing of Nallas : Taking levels at 20 meter interval on bank of river and at 40 meter interval at bed of river so far as to show the true profile of the ground and river bed. The levels may be taken with respect to the nearest existing towers, pile foundation of towers, base or railway/road bridge, road culvert etc. The levels shall be taken at least 100 m. on either side of the crossing alignment. Both longitudinal and cross sectional shall be drawn preferably to a scale of 1:2000 at horizontal and 1:200 vertical.

After completing the check survey, the bidder shall submit the final profile and tower schedule for final approval of the employer. The final profile and tower schedule shall incorporate position of all type of towers. To facilitate checking of the alignment, suitable reference marks shall be provided. For this

purpose, concrete pillars of suitable sizes shall be planted at all angle locations and suitable wooden/iron pegs shall be driven firmly at the intermediate points. The bidder shall only approved sag template shall be used for tower spotting and the final profiles. The preliminary/detailed survey has been done by owner and any further/check survey required shall be done by the bidder.

#### **2.1.2 PROFILE PLOTTING AND TOWER SPOTTING:**

The profile shall be plotted and prepared to the scale 1 in 2,000 for horizontal and 1 in 200 for vertical on squared (mm) paper. If somewhere the difference in levels be too high, the chart may be broken up according to the requirements. A 10 mm overlap shall be shown on each following sheet. The chart shall progress from left to right for convenience in handling. The sheet size may be conveniently chosen.

With the help of sag template, final tower location shall be marked on the profiles and while locating the tower on survey chart, the following shall be kept in mind:

The bidder shall also submit the land schedule on revenue (if required) maps indicating alignment therein duly authenticated by Revenue Inspector & Tahasildar, enumeration of trees with the help of Forest officer and other prominent features required for alignment of the proposed 220 KV line. Final route to be plotted on 1:50000 Topo sheet for approval. Detail GIS (Geographical Information System) of towers to be included.

- a) The number of consecutive span between the section points shall not exceed 10 in case of straight run on a more or less plain stretch.
- b) Individual span shall be as near as to the normal design ruling span.

In different crossing the bidder shall take into consideration the prevailing regulations of the respective authorities before finalizing type and location of the towers. While carrying out survey work, the bidder has to collect all relevant data, prepare and submit drawings in requisite number for obtaining clearance from the PTCC, road, aviation, railways, river and forest authorities.

The bidder shall remain fully responsible for the exact alignment of the line. If after erection, any tower is found to be out of alignment, the same shall have to be dismantled and re-erected after correction by the bidder at his own cost, risk and responsibility, including installation of fresh foundation, if felt necessary by the employer.

After peg marking of the angle tower or tension towers, the bidder shall obtain approval from the employer and thereafter pegging of suspension type tower shall be done by the bidder and pegging of all the four legs of each type of towers at all the locations shall be done.

#### **2.1.3 SCHEDULE OF MATERIALS:**

When the survey is approved, the bidder shall submit to the employer a complete detail schedule of all materials to be used in the line. Size and length of conductor etc. are also to be given in the list. This schedule is very essential for finalizing the quantities of all line material. The bidder shall furnish the same. Tentative Tower schedule as per survey is given in Annexure -1.

#### **2.1.4 CHECK SURVEY:**

The bidder shall undertake the check survey during execution on the basis of the alignment profile drawing and tower schedule approved by the employer. If during check survey necessity arises for minor change in route to eliminate way leave or other unavoidable constraints, the bidder may change the said alignment after obtaining prior approval from the employer.

The bidder, while carrying out the check survey, shall peg mark the tower position on ground conforming to the survey charts. In the process, it is necessary to have the pit centers marks according to the excavating marking charts to be prepared by the bidder and approved by the employer. The levels up or down of each pit center with respect to the center of the tower location shall be noted and recorded for determining the amount of earth work required to meet the design. At the charting point of the route Survey, angle iron spike shall be driven firmly into the ground showing a little above the ground level.

#### **2.1.5 WAY-LEAVE AND TREE CUTTING:**

Way-leave permission which may be required by the bidder shall be arranged at his cost. While submitting final-survey report for approval, proposals for way-leave right of way shall be submitted by the bidder. Employer may extend help to get the permission within a reasonable time as mutually agreed upon for which due notice shall be given by the bidder in such a way so that obtaining permission from appropriate authority do not hinder the continued and smooth progress of the work.

The employer shall not be held responsible for any claim on account of damage done by the bidder or his personnel to trees, crops and other properties.

The bidder shall take necessary precaution to avoid damage to any ripe and partially grown crops and in the case of unavoidable damage, the employer shall be informed and necessary compensation shall be paid by the bidder.

All the documents required for application to the statutory authorities must be prepared by the bidder & submission to the employer for Submission of the application towards approval of PTCC, Railway Crossing etc. However, the responsibilities lie with the bidder to get the clearance.

Trimming of tree branches or cutting of a few trees en-route during survey is within the scope of survey to be done by the bidder. Bidder shall arrange for necessary way-leave and compensation in this regard. During erection of the line, compensation for tree cutting, damage caused to crops, actual cutting and felling of the trees including way-leave permission for such route clearance shall be arranged by the bidder at his cost. The bidder will identify the number of trees and detail of obstructions to be removed for erection of the line and intimate the employer well in advance in case of any help. Other related works like construction of temporary approach roads, etc. as required, shall be done by the bidder and the same will lie within the scope of bidder's work and such cost shall be considered to be included in the rates quoted by bidder.

While quoting the rate for detailed and check survey as per bidding activity schedule, the bidder shall include all costs involved in different activities described herein earlier.

#### **2.2 SUB-SOIL INVESTIGATION:**

To ascertain soil parameters in various stretch inter, the bidder shall carry out sub-soil investigation through reputed soil consultant as approved by the employer.



### **2.2.1 SCOPE OF WORK:**

The scope of sub-soil investigation covers execution of complete soil exploration for the transmission line under this contract including boring, drilling, collection of undisturbed soil sample where possible, otherwise disturbed samples, conducting laboratory test of soil samples to find out the various parameters such as Soil Bearing Capacity (SBC) at various depths, physical and chemical properties of soil & water etc. as detailed in this specification and submission of detailed reports in 6 copies along with specific recommendation regarding Suitable type of foundation for each bore-hole along with recommendation for soil improvement where necessary.

### **2.2.2 QUALIFYING REQUIREMENTS OF SOIL CONSULTANTS:**

The soil consultants shall be NABL accredited and should also provide satisfactory evidence concerning the following as and when asked for. That, he/they has/have adequate technical knowledge and previous practical experience in carrying out complete soil investigation jobs in any kind of soil.

That he/they has/have well equipped, modernized soil testing laboratory of his/their own. If asked for by the employer, the bidder shall arrange inspection of such laboratory of the soil consultant by the representative of the employer.

If in the opinion of the employer, the soil consultant (proposed by the bidder) is not well equipped or capable to undertake the sub-soil investigation job relating to this contract, then such soil consultant shall not be engaged to undertake the job. In that case, they shall have to engage other agency as will be approved by the employer.

### **2.2.3 TEST BORING:**

The boring shall be done at the major locations/crossing, special towers. However, it is desirable that there should be at least one sub-soil investigation bore-hole for the line. Such locations for sub-soil investigation shall be selected and finalized in consultation with the employer.

The test boring through different layers of all kinds of soil shall have to be carried out by the bidder through the approved soil consultant as briefed hereunder.

- a) Method of boring, selection of sampling tubes, sampling, recording of boring, protection, handling, leveling of samples shall be done as specified in IS: 1892/1977, if any, after obtaining approval from the employer. The bidder/consultant shall furnish in the soil report in details, the equipment and method of boring actually adopted.
- b) Depth of boring below ground level shall be 15 M. only unless continuous bedrock is encountered earlier. In case rock is encountered at any depth within 15 M. adequate study of rock and assessment of strength characteristics shall be done and recommendation shall be given.
- c) Undisturbed soil samples shall be obtained for the initial 4M depths at every 1.5M interval and at change of strata. After these initial 4M depths, samples shall be obtained preferably at every 3M or where there is a change of strata, or as advised by the employer.
- d) In case collection of undisturbed samples becomes difficult/impossible detailed soil testing on remolded soil samples is to be considered and reported in the soil report.
- e) Standard penetration test as per IS: 2131 with latest amendment shall have to be conducted in different strata and recorded properly.

- f) The ground water table shall be recorded during boring operation and incorporated in the bore log. If possible, the position of the water table just after monsoon period be ascertained from local people and indicated in the report.
- g) Plate Load test shall have to be conducted at special tower location.

#### **2.2.4 LABORATORY TESTS OF SOIL SAMPLES:**

The method and procedure of testing of soil sample to be followed shall be as per relevant IS codes. Adequate volume of test samples shall be collected from site. Ample shall be properly sealed immediately after recovery as specified in relevant IS code and transported carefully to laboratory for carrying out necessary laboratory tests to find out the following parameters of every samples. Data and time of taking of the sample shall be recorded in the test report.

- a) Natural moisture content, liquid limit, Plastic limit and Plasticity index.
- b) Bulk, dry and buoyant density of soil.
- c) Void ratio (e-long P curve shall be submitted)
- d) Specific gravity.
- e) Grain size distribution (Sieve analysis and hydrometer analysis)
- f) Tri-axial and consolidation tests (consolidation no drained and consolidated drained asand when application in table, graph and drawing.
- g) Permeability tests
- h) Chemical tests for both water and soil samples at different layers.
- i) Evaluation of safe bearing capacity at different strata for square footings shall be done for a maximum value of 25-mm. settlements.
- j) At depths. From 3M to 10M are different strata.
- k) Factor of safety shall be considered as 3 for evaluation of safe bearing capacity of soil.
- l) Unconfined compression test for cohesive soil ( $=0$ ) if encountered.

#### **2.2.5 REPORT ON SUB-SOIL INVESTIGATION:**

The bidder shall make analysis of soil samples and rock cores as collected by him in the field and approved by the employer as collected by him in the field and approved by him in the field and approved by the employer as well as field tests and laboratory tests. A comprehensive report shall have to be prepared by him, finally incorporating all the data collected in proper tabular forms or otherwise along with the analysis. The 3(three) copies of report in the draft form shall be submitted for employer's approval. 6(six) copies of final report incorporation employer's comments, if any shall be submitted within 3(three) weeks after completion of this work.

Recommendations shall include but not be limited to the following items (a) to (o)

- (a) Geological information of the region.
- (b) Past observations and historical data, if available, for the area or for other areas with similar profile or for similar structures in the nearby area.
- (c) Procedure of investigations employed and field and field as well as laboratory test results.
- (d) Net safe bearing capacity and settlement computation for different types of foundations for various widths and depths of tower and building.
- (e) Recommendations regarding stability of slopes, during excavations etc.
- (f) Selection of foundation types for towers, transformers and buildings etc.
- (g) Bore hole and trial pit logs on standard proforma showing the depths, extent of various soil strata etc.
- (h) A set of longitudinal and transverse profiles connecting various boreholes shall be

presented in order to give a clear picture of the site, how the soil/rock strata are varying vertically and horizontally.

- (i) Modulus of sub grade reaction from plate load test for pressure ranging up to 6 kg/cm. The recommended values shall include the effect of size, shape and depth of foundations.
- (j) Deformation modulus from plate load test in various test depth/stratification.
- (k) Coefficient of earth pressure at rest.
- (l) Depth of ground water table and its effect on foundation design parameters.
- (m) Recommendations regarding stability of slopes, during shallow excavation etc.
- (n) Whether piles are necessary or not. If piles are necessary, recommendation of depth, diameter and types of piles to be used.
- (o) Recommendations for the type of cement to be used and any treatment to the underground concrete structure based on the chemical composition of soil and sub-soil water.

### **2.3 MEASUREMENT OF SOIL RESISTIVITY:**

For the purpose of grounding design, soil resistance measurement shall be taken in the tower locations. Wenner's four (4) electrode method shall be used for earth resistance measurement in accordance with the procedure and the calculation detailed in IS: 3043 1987. At least 8(eight) test direction shall be chosen from the center of the locations to cover the whole site. The employer reserves the right to carry out separate soil investigation at his cost by engaging a separate agency for cross checking the result obtained by the bidder.

In case the results are at variance, the soil parameters to be adopted for final design will be at the sole discretion of the employer and such will be binding upon the bidder.

### **3.0 SUPPLY OF TOWER STRUCTURES FOR THE TRANSMISSION LINES:**

#### **3.1 SCOPE:**

The Bidder shall use their own Type Tested Design of Tower after approval from OPTCL. However, considering the fact that the Line shall be handed over to OPTCL, Bidder can obtain the approved standard Drawings of Stubs, Tower & their extension from OPTCL and the same shall be fabricated as per standard procedure of OPTCL from their approved Fabricators / manufacturing units. This specification provides for design, proto fabrication, galvanizing and delivery FOR (destination) of transmission line towers including super-structure stubs, tower extensions, stub- templates, tower accessories (Hangers, U-bolts, bird guards, anti-climbing devices), bolts and nuts, step bolts, flat and spring washers etc. as described hereinafter in this volume.

**The Bidder shall design the tower foundations and the concreting shall be done by M-25 grade concrete.**

#### **a) Wind effects:**

Tower shall be designed for reliability Level-I, Terrain category-I & Wind Zone-V Design wind pressure on towers, conductors, and earth wire and insulator string. The Tower Height shall be computed as per IS-802(Part/Sec-I) 1995 Bidder shall furnish the maximum wind pressure adopted in their design against each component mentioned above.

#### **b) Design Temperatures:**

The following temperature range for the power conductor and ground wires shall be adopted for the line

design:

- i) Minimum temperature: 5 deg. C
- ii) Everyday temperature of conductor: 32 deg. C
- iii) Maximum temperature of:
  - a) Conductor: ACSR Zebra 75 deg. C for ACSR  
90 deg. C for AAAC
  - b) Ground wire exposed to sun. 53 deg. C

The above values are subject to latest revision if any made in IS-802 (part-I/Sec-I) 1995.

**Maximum Tension:**

Maximum tension shall be based on either:

- a) at 5 deg. C with 2/3rd. full wind pressure or Conform to IS 802-1995
- b) at 32 deg. C with full wind pressure whichever Part-I/Sec-I-Clause No.10.3  
Is more stringent

**Factors of Safety & Span details:**

Factor of Safety: Should conform to IS-802 Part-I-1995

Normal span: The normal span of the line shall be 350 meters of 220KV

**Wind & Weight Span:**

The wind and weight span to be adopted in the design of the structures shall be as follows:

- i) Wind span: The wind span is the sum of the two half spans adjacent to the support under consideration. In case of towers located on a perfectly horizontal terrain, this shall be the normal span. For design purpose the wind on conductor shall be calculated on a wind span of at least 1.1 times the normal span.
- ii) Weight Span: The weight span is the horizontal distance between the lowest points of the conductors on the two spans adjacent to the tower. All C and D type towers shall be designed for uplift spans (minimum weight spans in the following table) also. These are applicable both for pointed and square cross arms.

For details of cross arms and towers, the span limits given below shall prevail.

Tower type	220 KV			
	Normal condition.		Broken wirecondition.	
	Max.	Min.	Max.	Min.
A/DA & B/DB	525	100	315	100
C/DC & D/DD	600	100	360	100

The design of towers and their extensions shall be done conforming to the design parameters specified herein, the scope of design also includes supply of design calculation for towers and extensions including detailed structural/shop drawings of towers extensions and stub setting templates. The bidder, who has already type tested the various tower viz: 0-2°, +3, +6; 0- 15°, +3, +6; 0-30°, +3, +6; 0-60°, +3, +6 (220KV) in any nationally or internationally recognized laboratories, and conforming to our specification, may also

offer the same.

### 3.2 STANDARDS & CODES:

**IMP:-The material and services covered under these specifications shall be performed as per requirements of the relevant standards and codes (Indian Standards IS) referred hereinafter against each set of equipment and services. In case of a conflict between such codes and/or standards and the Specifications, the latter shall govern.**

SL. No.	Indian Standards	Title
1.	IS 209-1979	Specification for Zinc
2.	IS 226-1975	Structural steel (Standard quality)
3.	IS 269-1976	Ordinary rapid hardening and low heat Portland cement.
4.	IS 383-1970	Coarse and fine aggregates from natural sources for concrete.
5.	IS 398-1982 Part-I	Specification for aluminium conductors for overhead transmission purposes
	IS 398-1982 Part-II	Aluminium conductor galvanized steel reinforced
	IS 398-1994 Part-IV	Aluminium alloy stranded conductor
	IS 398-1982 Part-V	Aluminium conductor galvanized steel reinforced for Extra High Voltage (400kV and above)
6.	IS 278-1978	Specification for barbed wire.
7.	IS 406-1964	Method of chemical analysis of Zinc slab
8.	IS 432-1966 (Part 1 & 11)	Mild steel and medium tensile bars and hard drawn steel wire for concrete reinforcement.
9.	IS 456-2000	Code of practice for plain and reinforced concrete.
10.	IS 731-1971	Porcelain insulators for overhead power lines with nominal

SL. No.	Indian Standards	Title
		voltage greater than 1000 Volts.
11.	IS 800-2007	Code of practice for use of structural steel in building construction
12.	a) IS 802-1995 (Part-I/Sec.I) (Part-I/Sec.II)-1992 b) IS 802-1978 (Part-II) c) IS 802-1978 (Part-III)	Code of practice for use of structural steel in overhead transmission Line: materials, loads and permissible stresses. Code of practice for use of structural steel in overhead transmission line: Fabrication, galvanizing, inspection and packing. Code of practice for use of structural steel in overhead transmission line towers: Testing.
13.	IS 1139-1966	Hot rolled mild steel, medium tensile steel and high yield strength deformed bars for concrete reinforcements.
14.	IS 1367-1967	Technical supply conditions for threaded fasteners
15.	IS 1489-1976	Portland pozzolena cement.
16.	IS 1521-1972	Method of tensile testing of steel wires
17.	IS 1573-1976	Electroplated coating of zinc on iron and steel
18.	IS 1786-1966	Cold twisted steel bars for concrete reinforcement
19.	IS 1778-1980	Reels and drums for bare conductors
20.	IS 1893-1965	Criteria of earthquake resistant design of structures.
21.	IS 2016-1967	Plain washers
22.	IS 2071 Part-I-1974 Part-II-1974 Part-III-1976	Method of high voltage testing
23.	ISIS 2121  Part-I -1981 Part-II -1981  Part-III-1992 Part-IV-1991	Specification for conductor and earth wire accessories for overhead power lines. Armour rods, binding wires and tapes for conductors. Mid-span joints and repair Sleeve for conductors. Accessories for earth wire. Non-tension joints.
24.	IS 2131-1967	Method of standard

SL. No.	Indian Standards	Title
		penetration test for soils
25.	IS 2551-1982	Danger notice plates
26.	IS 2486  Part-I  Part-II  Part-III	Specification for insulator fittings for overhead power lines with a nominal voltage greater than 1000 Volts. General Requirements and tests  Dimensional requirements  Locking devices
27.	IS 2629-1966	Recommended practice for hot dip galvanizing of iron and steel.
28.	IS 2633-1972	Method of testing uniformity of coating of zinc coated articles.
29.	IS 3043-1972	Code of practice for Earthing (with amendment No.1 and 2).
30.	IS 3063-1972	Single coil rectangular section spring washers for bolts nuts, screws.
31.	IS 3188-1965	Dimensions for disc Insulators.
32.	IS 4091-1967	Code of practice for design and construction of foundation for transmission line towers and poles.
33.	IS 4826-1979	Galvanized coating on round steel wires
34.	IS 5358-1969	Hot dip galvanized coatings on fasteners
35.	IS 5613 (Part-II/Sec-1) -1985 (Part-III/Sec.1) -1989	Code of practice for design, installation and maintenance of overhead power lines (Section-I: Designs)
36.	IS 5613 (Part-II/Sec-2) -1985 (Part-III/Sec.2) -1989	Code of practice for design, installation and maintenance of overhead power lines (Section 2: Installation and maintenance)
37.	IS 6610-1972	Specification for heavy washers for steel structures

SL. No.	Indian Standards	Title
38.	IS 6639-1972	Hexagonal bolts for steel structure.
39.	IS 6745-1972	Methods for determination of weight of zinc coating of zinc coated iron and steel articles.
40.	IS 8263-1976	Method of radio interference tests on high voltage insulator
41.	IS 8269-1976	Method of switching impulse tests on HV insulators.
42.	IS 8500-1977	Specification for weldable structural steel (medium and high strength qualities)
43.	IS 9708-1980	Specification for Stock Bridge vibration dampers for overhead power lines.
44.	IS 9997-1988	Aluminium alloy redraw rods
45.		Hard drawn aluminium wires for overhead line conductors.
46.		Thermal mechanical performance tests and mechanical performance tests on string insulator units.
47.		Salt fog pollution voltages withstand tests.
48.		Residual strength of string insulator units of glass or ceramic material for overhead lines after mechanical damage of the dielectric.
49.		Guide for the selection of insulators in respect of polluted conditions.
50.		Tests on insulators of ceramic material or glass for overhead lines with a nominal voltage greater than 1000 Volts.
51.		Ozone test on elastomer
52.	IS 1363 Part - 1 Part - 3	Hexagonal head bolts, screws and nuts of product Grade – C Hexagonal head bolts Hexagonal nuts
53.	IS 1367 Part – III Part – VI	Technical supply conditions for threaded steel fasteners Mechanical properties and test methods for bolts, screws and studs with full load ability Mechanical properties and test methods for nuts with full load ability
54.		Indian Electricity Rules - 1956
55.		Indian Electricity Act - 1910



The

SL. No.	Indian Standards	Title
56.	IS 1498-1970	Classification and identification of soil for general engineering purposes
57.	IS 1888-1982	Method of load test on soils
58.	IS 1892-1979	Code of practice for subsurface investigation for foundation
59.	IS 2911-1979 (Part-I)	Code of practice for design and construction of pile foundations
60.	IS 4453-1980	Code of practice for exploration by pits, trenches, drifts and shafts
61.	IS 6935-1973	Method for determination of water level in a bore hole
62.	IS 8009-1976 (Part-I)	Code of practice for calculation of settlement of foundation subjected to symmetrical vertical loads (Shallow Foundation)
63.	IS 2386-1963 (Part-3)	Methods of test for aggregates for concrete : Specific gravity, density, voids, absorption and bulking
64.	IS 14000-1994	Quality management and quality assurance standards
65.		GRIDCO Safety Manual (draft)-1997
66.		Composite insulators for a.c. overhead lines with a nominal voltage greater than 1000 V : Definition, test methods and acceptance criteria
67.	IS 2062	Structural Steel (Standard quality)
68.	IS 12427	Hexagonal bolts for steel structures
69.		Indian Electricity Rules 1956
70.		Publication for Regulation for electrical crossing or railway tracks

standards mentioned above are available from

Reference/ Abbreviation	Name and Address from which the Standards are available
IS	BUREAU OF INDIAN STANDARDS Manak Bhavan, 9, Bahadur Shah Zafar Marg, NEW DELHI(India)
INDIAN ELECTRICITY RULES 1956, REGULATION FOR	KITAB MAHAL Baba Kharak Singh Marg, NEW DELHI – 110 001 (INDIA)

ELECTRICAL CROSSING OF RAILWAY TRACKS
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### 3.3 PRINCIPAL PARAMETERS:

#### Electrical System Data:

a)	System voltage (kV rms)	220
b)	Max. voltage (kV rms)	245
c)	Lightning impulse withstand voltage (dry & wet) (kVp)	1050
d)	Power frequency withstand voltage (wet) (KV rms)	395
e)	Short circuit level (KA for 1 sec)	50

#### Line Data:

##### Conductor:

a)	NAME	ACSR ZEBRA
b)	Strength & wire diameter i) Aluminium ii) Steel	54/3.18 7/3.18
c)	Conductors per phase i) 220kV	Single
d)	Spacing between the conductors of same phase (sub-conductor spacing) (mm)	-
e)	Inter-phase spacing (mm)	8400
f)	Configuration i) Double circuit	Vertical
g)	Nominal Aluminium area (mm <sup>2</sup> )	420
h)	Section area of Aluminium (mm <sup>2</sup> )	428.90
i)	Total sectional area (mm <sup>2</sup> )	484.50

j)	Calculated resistance at 20 deg C (Max) ohm/km per conductor	0.06915
k)	Approx. calculated breaking load (kN) (Minimum)	130.32
l)	Modulus of elasticity (GN/M <sup>2</sup> )	69
m)	Co-efficient of linear exp. Per degree cent.	19.3X10-6
n)	Mass of zinc in gms/sqm	275
o)	Overall diameter (mm)	28.62
p)	Weight (kg/km)	1621
q)	Minimum ultimate tensile strength (KN)	130.32
r)	Conductor tension at 32° C without external load	
	i) Initial Unloaded tension	35%
	ii) Final Unloaded tension	25%

**Galvanized Steel Ground Wire:**

a)	Size (no. of strands/strand dia)	7/3.15
b)	Overall diameter (mm)	9.45(7/3.15)
c)	Standard weight (Kg/km)	432(7/3.15)
d)	Location of ground wire	One continuous ground Wire to run horizontally on the top of the towers
e)	Tensile load in each ground wire(to be furnished by the Bidder)	
	i) At min. temp. of 5° C and in still air (kgs)	
	ii) At every day temp. of 32° C and still air (kgs)	
	iii) At 5° C and 2/3rd of full wind (kgs)	

**Towers:**

	NAME	ACSR ZEBRA
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a)	Span lengths in meters i) Ruling design span(m)	300
b)	Wind load (kg/sqm) on conductor	52
c)	Shielding angle with vertical	20°
d)	Towers to be designed for heavy wind zone	V-zone

#### **Insulator Strings (Disc) (Antifog type):**

SL. No.	Particulars	Single Suspension String	Double Suspension String	Single Tension String	Double Tension String
1)	No. of standard Discs (nos.) (220 kV)	1X15	2X15	1X15	2X15
2)	Size of Disc (220kV)	255X145	255X145	305x170	305x170
3)	Electromechanical strength (KN)(220kV)	90	90	160	160

#### **4.0 GENERAL TECHNICAL REQUIREMENTS:**

##### **4.1 Tower Design – General**

The employer is looking for a structurally safe design of transmission line towers to be installed on EHV lines keeping the loadings and line parameters detailed in this specification and in compliance with IS: 802 (Part-1/Sec-1)-1995, IS: 802(Part-1/Sec-2)- 1992.

The Bidder may offer economical designs with rational sections or offer towers of recent design, proven in service and accepted by other reputed Central and State Sector Utilities and by OPTCL (Previously OSEB) confirming to this technical specification.

The technical particulars for vibration analysis and damping design of the system are as follows:

SL. No	Description	Technical Particulars
1)	Configuration	ACSR ZEBRA 54/7/ 3.18mm Double Circuit Single ACSR conductor per phase in vertical formation
2)	Span length in meters i) Ruling design ii) Minimum span	350 meters 100 meters

3)	Tensile load in each conductor for ruling span  i) At temperature of 5 deg C and still air ii) At temperature of 5 deg C and 36% full wind iii) At temperature of 32 deg C and full wind	Wind Zone:5 (50m/s.)  2919 Kgf 4090 Kgf  6551 Kgf
4)	Armour rods used	Standard performed Armour rods/AGS
5)	Maximum permissible Dynamic strain	± 150 micro strains

#### 4.2 DETAILS OF SOLID CORE LONG ROD INSULATORS:

The insulator shall consist of standard-discs for a three-phase 50 Hz effectively earthed 220 KV transmission system heavily polluted atmosphere. The insulator shall be ball and socket type.

The size of long rod insulator, minimum creepage distance, and the number to be used in different type of strings, their electromechanically strength and mechanical strength of insulator string along with hardware shall be as follows:

Sl. No.	Type of string.	Size of long rod insulator (mm)/(Unit) 220 KV	Minimum creepage distance(mm) 220 KV	No. of unit 220 KV	Electro mechanical strength of insulator (KN) 220 KV
1)	Single suspension	210X2030	7595	2	90 KN
2)	Double suspension	210X2030	7595	4	90 KN
3)	Single tension.	215X2550	7595	2	160 KN
4)	Double Tension.	210X2030	7595	4	160 KN
5)	Double suspension	210X2030	7595	4	90 KN

#### 5.0 GENERAL TECHNICAL REQUIREMENT-INSULATORS:

##### 5.1 PORCELAIN:

The porcelain used in the manufacture of the shell shall be ivory white, nonporous of high dielectric, mechanical and thermal strength free from internal stress blisters and thermal strength from internal stresses blisters, laminations, voids, foreign matter. Imperfections or other defects, which might render it in anyway unsuitable for insulator shells, Porcelain shall remain unaffected by climatic conditions, ozone, acid alkalis, and zinc of dust. The manufacturing shall be by the wet process and impervious character obtained by through verification.

## **5.2 PORCELAIN GLAZE:**

Surfaces to come in contact with cement shall be made rough by sand glazing. All other exposed surfaces shall be glazed with ceramic materials having the same temperature coefficient of expansion as that of the insulator shell. The thickness of the glaze shall be uniform throughout and the colour of the glaze shall be brown. The glaze shall have a visible luster and smooth on surface and be capable of satisfactory performance under extreme tropical climatic weather conditions and prevent ageing of the porcelain. The glaze shall remain under compression on the porcelain body throughout the working temperature range.

## **5.3 METAL PARTS:**

### **5.3.1 Cap and Ball pins:**

Twin Ball pins shall be made with drop forged steel and caps with malleable cast iron. They shall be in one single piece and duly hot dip galvanized. They shall not contain parts or pieces joined together, welded, shrink fitted or by any other process from more than one piece of material. The pins shall be of high tensile Steel, drop forged and heat malleable cast iron and annealed. Galvanizing shall be by the hot dip process with a heavy coating of zinc of very high purity with minimum of 6 dips. The bidder shall specify the grade, composition and mechanical properties of steel used for caps and pins.

### **5.3.2 SECURITY CLIPS:**

The security clips shall be made of phosphor bronze or of stainless steel.

### **5.3.3 FILLER MATERIAL:**

Cement to be used as a filler material, shall be quick setting, for curing Portland cement. It shall not cause fracture by expansion or loosening by contraction. Cement shall not react chemically with metal parts in contact with it and its thickness shall be as small and as uniform as possible.

## **6.0 MATERIAL DESIGN AND WORKMANSHIP-INSULATORS:**

### **6.1 GENERAL:**

- i) All raw materials to be used in the manufacture of these insulators shall be subject to strict raw materials quality control and to stage testing quality control during manufacturing stage to ensure the quality of the final end product. Manufacturing shall conform to the best engineering practices adopted in the field of extra high voltage transmission. Bidders shall therefore offer insulators as are guaranteed by them for satisfactory performance on Transmission lines.
- ii) The design, manufacturing process and material control at various stages be such as to give maximum working load, highest mobility, best resistance to corrosion good finish, elimination of sharp edges and corners to limit corona and radio interference voltage

### **6.2 INSULATOR SHELL:**

The design of the insulator shell shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to deterioration. Shells with cracks shall be eliminated by temperature cycle test followed by temperature cycle test followed by mallet test. Shells shall be dried under controlled conditions of humidity and temperature.

### **6.3 METAL PARTS:**

- i) The twin ball pin and cap shall be designed to transmit the mechanical stresses to the shell by compression and develop uniform mechanical strength in the insulator. The cap shall be circular with the inner and outer surfaces concentric and of such design that it will not yield or distort under loaded conditions. The head portion of the insulator or is under tension the stresses are uniformly distributed over the pinhole portion of the shell. The pinball shall move freely in the cap socket either during assembly of a string or during erection of a string or when a string is placed in position.
- ii) Metal caps shall be free from cracks, seams, shrinks, air holes, blowholes and rough edges. All metal surfaces shall be perfectly smooth with no projecting parts or irregularities which may cause corona. All load bearing surfaces shall be smooth and uniform so as to distribute the loading stresses uniformly. Pins shall not show any macroscopically visible cracks, insulations and voids.

### **6.4 GALVANIZING**

All ferrous parts shall be hot dip galvanized six times in accordance with IS: 2629. The zinc to be used for galvanizing shall conform to grade Zn 99.5 as per IS: 209. The zinc coating shall be uniform, smoothly adherent, reasonably light, continuous and free from impurities such as flux ash, rust stains, bulky white deposits and blisters. Before ball fittings are galvanized, all die flashing on the shank and on the bearing surface of the ball shall be carefully removed without reducing the designed dimensional requirements.

### **6.5 CEMENTING:**

The insulator design shall be such that the insulating medium shall not directly engage with hard metal. The surfaces of porcelain and coated with resilient paint to offset the effect of difference in thermal expansions of these materials.

### **6.6 SECURITY CLIPS (LOCKING DEVICES):**

The security clips to be used as locking device for ball and socket coupling shall be 'R' shaped hump type to provide for positive locking of the coupling as per IS: 2486 (Part-IV). The legs of the security clips shall allow for sore adding after installation to prevent complete withdrawal from the socket. The locking device shall be resilient corrosion resistant and of sufficient mechanical strength. There shall be no possibility of the locking device to be displaced or be capable of rotation when placed in position and under no circumstances shall it allow separation of insulator units and fitting 'W' type security clips are also acceptable. The hole for the security clip shall be countersunk and the clip shall be of such design that the eye of the clip may be engaged by a hot line clip puller to provide for disengagement under energized conditions. The force required for pulling the clip into its unlocked position shall not be less than 50 N (5 kgs.) or more than 500N (50 kgs.)

### **6.7 BALL AND SOCKET DESIGNATION:**

The dimensions of the balls and sockets for 80 KN long rod insulators shall be of 16mm and for 120 KN shall be of 20mm designation in accordance with the standard dimensions stated in IS: 2486 (Part-III).

### **6.8 DIMENSIONAL TOLERANCE OF INSULATORS DISCS:**

It shall be ensured that the dimensions of the long rod insulators are within the limits as per relevant IEC/ISS.

### Vibration dampers:

All the requirements for vibration damper suitable for line conductors, shall also be applicable for galvanized steel earth wires (7/3.15mm. for 220kV lines). Minimum one damper on each side per earth wire at suspension point and two dampers on each side at tension point shall be used for ruling design span. Bidders may offer damping systems involving a greater number of dampers for ruling design span; however, suitable price compensation shall be considered for evaluation. The vibration analysis of the system, with and without dampers, dynamic characteristic of the damper as detailed shall be submitted by the Bidder along with his bid. The technical particulars for vibration analysis and damping design of the system are as follows

SL.No	Description	Technical Particulars
1)	Configuration	One galvanized steel earth wire in horizontal configuration.
2)	Span length in meters a) Ruling design span b) Minimum span	350 meters 100 meters
3)	Tensile load in each earth wire for ruling span a) At temperature of 5 deg.C and still air b) At temperature of 5 deg.C and 36% full wind c) At temperature of 32 deg.C and full wind	Wind Zone: 5 (50m/s) 1120 Kgf 1667 Kgf 2815 Kgf
4)	Maximum permissible dynamic strain	+/- 150 micro strains

### Flexible copper bond:

At suspension and tension towers the earth wire suspension and tension clamps shall be securely bonded to the tower steelwork by means of a multi-strand flexible copper bond wire. The copper bond shall be sufficiently flexible to allow movement of the suspension clamp under all operating conditions and terminated with compression lugs.

The flexible copper bond shall be of nominal 34 sq.mm equivalent copper area and not less than 500 mm in length. It shall consist of 259 wires of 0.417 mm dia. tinned copper conductor. It shall be laid up as seven stranded ropes, each of 37 bunched wires. The tinning shall be as per IS 9567. Two tinned copper connecting lugs shall be press jointed to either ends of the flexible copper cable. One lug shall be suitable for 12 mm, dia. bolt and the other for 16 mm dia. bolt. The complete assembly shall also include one 16 mm dia., 40 mm long mild steel bolt hot dip galvanized with nut and lock washers

### Arcing horn:

The arcing horn shall be either ball ended rod type or tubular type and shall be formed from galvanized mild steel and of approved types. The arcing horns shall be attached in an approved manner to all suspension and tension insulator sets. The horns shall be attached to the insulator fittings, but not directly to conductor clamps or to the caps of insulator units. The design of the arcing horns shall be such as to reduce, as far as reasonably possible, damage to the line conductors, clamps, insulator strings and arcing horns themselves under all flashover conditions. The general shape and method of attachment of the live end arcing horn shall also not restrict the replacement of insulators under live line conditions.



The total effective arcing distance shall be 2130mm for 220kV under nominal dimensions of insulator. Arcing horns shall be provided on tower and/or line side as indicated on the enclosed string sketches, however, same has been tabulated below for ready reference:

SL.No	Voltage Level	Types of Strings	Arcing horns to be provided on	Min. Arcing dist. to be maintained(mm)
1.	220kV	Single 'I' suspension strings	Line side only	2130
2.	220kV	Double suspension strings	Both on line side and tower side	2130
3.	220kV	Single tensionstrings	Line side only	2130
4.	220kV	Double tensionstrings	Both on line side and tower side	2130

## 7.0 Transmission Towers:

### 7.1 General Description:

The towers shall be of the following types:

- a. Double Circuit (A, B, C & D)
- b. Special Towers (River Crossing, Railway Track Crossing, Power Line Crossing etc.

### Types of Towers:

The towers shall normally be of the following standard types, and as stated in Schedule C.

Note: The above towers can also be used for longer span with smaller angle of deviations. (To be decided as per the tower spotting data to be submitted by the Bidder and approved by Project Manager.)

The towers shall be of the self-supporting type, built up of lattice steel sections or members and designed to carry the power conductors with necessary insulators. Ground wires and all fittings under all loading conditions. Outline diagrams of the towers required are to be furnished by the Bidder.

The towers shall be fully galvanized structures built up of structural mild steel sections. All members shall be connected with bolts, nuts and spring washers.

For design of structure weight span limits given in Table 5.1 shall prevail.

TABLE 5.1

Tower Type	Normal Condition		Broken Wire Condition	
	Max. (m)	Min. (m)	Max. (m)	Min. (m)
DA	525	200	315	100
DB, DC & DD	525	0	315	-200

However, for calculating the tower height, an allowance of 150mm shall be provided, over and above the specified ground clearances, at still air and maximum conductor temperature, to account for any stringing error.

Situation	Minimum clearance (meters)
System voltage (kV):	220

Normal ground (open country)	7.015
*Road crossings, road level	7.90
Rail crossings, rail level:	17.9
River crossings, bank level	
River crossings, navigable rivers, above highest as specified by the authority.	
flood level;(data to be obtained from Navigation Authority)	
Above trees	4.6
Buildings, poles, structures and walls, etc. upon which a man may stand : horizontal clearance	5.5
Same above : vertical clearance	3.8
Power lines	4.6

\*Any road which is normally maintained by Government and/or other recognized public authority.

## 7.2 Stubs and Superstructures:

- i. The stub shall mean a set of four stub angles fully galvanized and shall include cleats, gussets, bolts and nuts, etc. the black portion of the stub being cast in foundation footings. Stub length shall correspond to foundation depth of 3-0 meters from ground level.
- ii. Superstructure shall mean the galvanized tower assembly above the stubs which includes structural members like angle sections, cross arms, ground wire peaks, accessories and fittings such as gusset plates, pack washers, spring washers, ladders, step bolts, anti-climbing devices and such other items which are required for completing the towers in all respect. Steel and zinc required for manufacturing these items will be arranged by the supplier.
- iii. Supply of bolts and nuts and spring washers, hangers/D-shackles for attaching suspension strings and 'U' bolts for attaching ground wire suspension assemblies are included in the supply of tower.
- iv. The following provisions shall apply in connection with the procurement of steel and zinc by the supplier.
  - a) The steel used for fabrication of tower parts extensions, templates etc. shall be of mild steel of tested quality as per IS: 2062 GRA.
  - b) The Bidder shall take into account the fabrication wastage while quoting the rates. The employer will not accept any liability in connection with the wastage of steel during fabrication or otherwise.
  - c) The Bidder shall indicate in his offer the sizes of steel sections which are proposed to be used by him in the design of towers.
  - d) Substitutions, if any, of steel sections of the tower parts by higher sizes, due to non- availability or otherwise shall be to the supplier's account. The employer will not accept any liability on this account.
  - e) The steel shall be procured exclusively from the main steel producers. However, sections not rolled by main producers, can be procured from re-rollers provided.  
Re-rolling of structural steel sections is done from billets/ingots of tested quality.  
Re-rolled sections are duly tested as per relevant standard.

- f) The zinc used for galvanizing fabricated material shall be of High Grade Electrolytic zinc.

### **7.3 Extensions:**

- a) The towers shall be designed so as to be suitable for adding 3 meters, 6 meters, and 9 meters extensions for maintaining adequate ground clearances without reducing the specified factor of safety in any manner.
- b) The Bidder shall have to design leg extensions for all types of towers ranging from minus 3 meters to plus 9 meters at intervals of 1.5 meters and such leg extensions shall be suitable for being fitted to a normal tower as well as a tower with extensions. This is to enable tower spotting in hilly terrain

### **7.4 Stub setting Templates:**

Stub templates shall be designed and supplied by the supplier as per requirement for all types of towers with or without extensions. Stub templates for standard towers and towers with extension shall be fined type. The stub templates shall be painted with anti-corrosive paints.

### **7.5 Fasteners: Bolts, Nuts & Washers**

All bolts shall be of property class 5.6 and nuts of property class 5.0 IS: 1367 (Part – 3) 1991 and IS: 6639-1972 shall conform to IS: 12427, they shall be galvanized and shall have hexagonal heads and nuts, the heads being forged out of solid steel rods and shall be truly concentric and square with the shank. The shank shall be perfectly straight.

Fully threaded bolts shall not be used; the length of bolts should be such that the threaded portion shall not extend into the place of contact of the members.

All bolts shall be threaded to take the full depth of the nut and threaded far enough to permit firm gripping of the members, but not any further. It shall be ensured that the threaded portion of each bolt protrudes not less than 3 mm and not more than 8 mm when fully tightened. All nuts shall fit hand tight to the point where the shank of the bolt connects to the head.

Flat and tapered washers shall be provided wherever necessary. Spring washers shall be provided for insertion under all nuts. These washers shall be of electro-galvanized steel and of the positive lock type. Their thickness shall be 2.5 mm for 12 mm dia. bolts, 3.5 mm for 16 mm dia. bolts and 4.5 mm for 20 mm dia. bolts.

The Bidder shall furnish bolt schedules giving thickness of members connected, size of bolts and nuts, the length of the shank, the length of the threaded portion of bolts, sizes of bolt holes, thickness of washers and any other special details of this nature.

To obviate bending stress in bolts or to reduce it to a minimum, no bolt shall connect aggregate thickness of more than three (3) times its dia.

The bolt positions in assembled towers shall be as per IS: 5613 (Part-I/Section-I) (Part- II/Section-2)-1985.

Bolts at the joints shall be so staggered that nuts may be tightened with spanners without fouling.

### **7.6 Tower Accessories:**

#### **7.6.1 Step Bolt Ladders:**

These bolts shall be of property class 4.6 conform to IS: 6639-1972.

Each tower shall be provided with step bolts on one of the main legs, of not less than 16 mm diameter and 175 mm long, spaced not more than 400 mm apart and extending from about 2.5 meters above the ground

level to the top of the tower. Each step bolt shall be provided with two nuts on one end to fasten the bolt security to the tower and button head at the other end to prevent the feet from slipping away. The step bolts shall be capable of withstanding a vertical load not less than 1.5 KN and shall be used as a ladder for climbing.

#### **7.6.2 Anti-climbing devices:**

This shall conform to IS: 5613 (Part-I/Sec –I), 19085.

Fully galvanized barbed wire type anti-climbing device shall be provided at a height of approximately 3 meters as an anti-climbing measure. Four layers of barbed wires will be provided each inside and outside the tower in horizontal plane, spacing between the layers being 140 to 150 mm. The towers to be designed by the supplier shall have provision to fixed the barbed wire as indicated above. Thus the angle pieces with notches for accommodating barbed wire shall be designed and supplied with the towers along with provision for suitable bolt holes on leg members for fitting bolt holes on leg member for fitting the angles. The scheme of the anti-climbing device shall be submitted along with the tower drawing. Barbed wire shall be included in the scope of bidder.

#### **7.6.3 Insulator strings and ground wire clamp attachments:**

- a) For the attachment of suspension insulator strings a suitable swinging hanger on the tower shall be provided so as to obtain requisite clearance under extreme swinging conditions and free swinging of the string. The hanger shall be designed to withstand an ultimate tensile strength of 11.500 kg.
- b) For ground wires at suspension towers suitable 'U' Bolts strong enough to withstand the full designed loads shall be provided to accommodate the hook of the ground wire suspension clamps.
- c) At tension towers, horizontal strain plates of suitable dimensions on the underside of each power cross-arm tip and at the top ground wire peak shall be provided for taking the 'D' Shackles of the tension insulator strings or ground wire tension clamps, as the case may be. Full details of the attachments shall be submitted by the supplier for the employer's approval before commencing with mass fabrication.

#### **7.6.4 Phase Plate:**

Phase plate shall be of mild steel of 16 gauge vitreous enameled at back and front, circular in shape and diameter 75 mm. One set of phase plate shall be consisting of 3 plates red, yellow and blue coloured accordingly to indicate the phase of the conductor. There shall be one fixing bolt on the plate. This shall conform to IS: 5613 (Part-II/Section01) of latest edition.

#### **7.6.5 Number Plate:**

The number plate shall be mild steel vitreous enameled at back and front, 200 mm x 150 mm, rectangular shape and inscribed thereon shall be the number of the tower location preceded by letter corresponding to the short name of the line and the type of towers. There shall be two fixing bolts on both ends of the plates. The dimension and details of the number plate shall be as per IS: 5613 (Part-II/Section1 & Section-2), 1985.

#### **7.6.6 Danger Plate:**

These shall be of mild steel vitreous enameled at back and front 250 x 200 mm rectangular shape and

inscribed thereon shall be in signal red the work 'DANGER' with its Oriya and Hindi translation and also with the inscription of Bone and Skull and voltage of the line. There shall be two holes on the plates for fixing. This shall conform to IS: 2551 (latest edition).

### **7.7 Details to Tower Fabrication Workmanship:**

Except where hereinafter modified details of fabrications shall conform to IS: 802 (Part- II)-1978.

But splices shall generally be used such that the inside cleat angle and outside plates are designed to transmit load. The inside cleat angle shall not be less than half the thickness of the connected heaviest member plus 2 mm. Lap splices may also be used for connecting members of unequal size in such a manner that the inside angle of the lap splice shall be rounded at the heel to fit the fillet of the outside angle. All splices shall develop full stress in the members connected through bolts. But as well as lap splices shall be made as above and as close to and above the main panel point as far as possible.

Points shall be so designed so as to avoid eccentricity. The use of gusset plates for joining tower members shall be avoided as far as possible. However, where connections are such that the elimination of the gusset plates would result in eccentric joints then gussets plates and spacer plates may be used in conformity with modern practices. The thickness of the gusset plate, required to transmit stress, shall not be less than that of the thinnest of connected member but not less than 5 mm in any case.

The use of filler in connection shall be avoided as far as possible. The diagonal web members in tension may be connected entirely to the gusset plate where necessary so as to avoid the use of filler and it shall be connected at the point of inter-section by one or more bolts.

The tower structures shall be accurately fabricated to bolt together easily at site without any strain on the bolts.

No angle member shall have the two leg flanges brought together by closing the angle.

The diameter of the hole shall be equal to the diameter of bolt plus 1.5 mm.

The structure shall be designed such that all parts are accessible for inspection and cleaning. Drain holes shall be provided at all points where pockets of depressions are likely to hold water.

All similar parts shall be made strictly interchangeable. All steel sections before any work is done on them, shall be carefully leveled, straightened and made true to detailed drawings by methods which shall not injure the materials so that when assembled, the different matching surfaces are in close contact throughout. No rough edges shall be permitted anywhere in the structure.

### **7.8 Drilling and Punching:**

- a) Before any cutting work is started, all steel sections shall be carefully straightened and trued by pressure and not by hammering. They shall again be trued after being punched and drilled.
- b) Holes for bolts shall be drilled or punched with a jig but drilled holes are preferred. The following maximum tolerance of accuracy of punched holes is permissible
  - i. Holes must be perfectly circular and no tolerance in this respect is permissible.
  - ii. The maximum allowable difference in diameter of the holes on the two sides of plates or angle is 0.8 mm i.e. the allowable taper in punched holes should not exceed 0.8 mm on diameter.
  - iii. Holes must be square with the plates or angles and have their walls parallel.
- c) All burrs left by drills or punches shall be removed completely. When the tower members be truly opposite to each other. Drilling or reaming to enlarge defective holes is not permitted.

### **7.9 Erection Mark:**

Each individual member shall have an erection mark conforming to the component number given to it in the fabrication drawings. This mark shall be done with marking dies of 16 mm size before galvanizing and shall be legible after galvanizing.

The erection mark shall be A-BB-CC-DDD where,

- A Employer code assigned to the supplier (Alphabet).
- BB Supplier's Mark (Numerical)
- CC Tower type (Alphabet)
- DDD Number mark to be assigned by Supplier (numerical).

#### **7.10 Galvanizing**

The super structure of all towers and stubs up to 150 mm below plinth level (Top of concrete pedestal) shall be galvanized. Galvanizing of tower members and stub shall be in conformity with IS: 4759-1984 and shall be done after all fabrication work has been completed except that the nuts may be tapped or return after galvanizing. Threads of bolts and nuts after galvanizing shall have a neat fit and shall be such that they can be turned with fingers throughout the length of the threads of bolts and they shall be capable of developing the full strength of the bolts. Spring washers shall be electro-galvanized as per Grade – 4 of IS: 1573 – 1986. Galvanizing for fasteners shall conform to IS: 1367 (Part-XIII) – 1978.

#### **7.11 Quantities and Weights:**

The quantities stated are only provisional. Final quantities will be informed by the employer to the supplier on completion of detailed survey. However, bids will be evaluated based on quantities

The employer reserves the right to order for the final quantities at the rates quoted in the bid, which shall be valid throughout the pendency of the contract.

The unit weight of each type of tower stubs, super structure and extension be furnished by the Bidder. The weight of tower shall mean the weight of tower calculated by using the black section (ungalvanized) weight of steel members including stubs, of the sizes indicated in the approved fabrication drawings and bills of materials, without taking into consideration the reduction in weights due to holes, notches, cuts, etc. but taking into consideration the weight of special fittings.

#### **7.12 Tower designs Superstructure:**

Wind Pressure

The wind pressure on towers, power conductors and earth wire shall be as per IS: 802 (Part-I/Sec-I) – 1995.

Design Temperatures

The following temperature range for the power conductor and ground wires shall be adopted for the line design confirming to IS: 802 (Part –I/Sec – I) – 1995.

- i) Minimum temperature 15°C.
- ii) Every day temperature 32°C

Maximum temperature of:

- a) Conductor 75°C for ACSR Zebra
- b) Ground wire 53°C

Exposed to Sun

#### **7.13 Factors of Safety & Span details:**

##### **a) Factory of safety:**

The factor of safety based on crippling strength of struts and elastic limit of tension members shall not be less than 2(two) under normal condition and 1.5(one and a half) under broken wire conditions for all the members of the towers and their cross arms.

**b) Normal Span:**

The normal span of the line shall be 300 meters for 400 kV and 220 kV and 250 meters for 132 kV.

**c) Wind and weight spans:**

The wind and weight spans to be adopted in the design of the structures shall be as follows:

**i) Wind Span:**

The wind span is the sum of the two half spans adjacent to the support under consideration. In case of towers located on a perfectly horizontal terrain, this shall be the normal span. For design purposes the wind on conductor shall be calculated on at least 1.1 times the normal

**ii) Weight Span:**

The weight span is the horizontal distance between the lowest point of the conductors on the two spans adjacent to the tower.

All C and D type towers shall be designed for uplift spans (minimum) weight spans in the following table also. These are applicable both for pointed and square cross arms.

For details of cross arms and towers, the span limits given below shall prevail.

### WEIGHT SPANS

Tower Type	Normal Condition		Broken Wire Condition	
	Max. (m)	Min. (m)	Max. (m)	Min. (m)
A&B	525	100	300	100
C & D	600	100	300	100

**7.14 Conductor and OPGW Configuration:**

For single circuit towers the three phases shall be Delta formation. One number of ACSR conductors shall be used for each phase. The ground wire OPGW fiber optic cable (24-core Dual Window single mode - DWSM) shall be continuous and shall be provided above the conductors at suitable elevation to offer effective shielding and safe clearances. The double circuit towers the phases shall be in vertical formation with phase to phase horizontal spacing of not less than 8.4 meters and vertical 4.9 meters for 220 kV.

**7.15 Loads on Towers:**

**i) Transverse Loads:**

Transverse load due to wind on towers conductors and under broken wire earth wire shall be calculated in accordance with IS: 802(Part-I/Sec-I)-1995.

**ii) Longitudinal Loads** due to wind on towers conductors and shield shall be calculated as per IS: 802 (Part-I/Sec-I)-1995.

**iii) Vertical Loads:**

The vertical load due to conductors and ground wire shall also include 150 kg. As weight of a Lineman with tools. These loads are in addition to the vertical loads due to insulator fittings and the dead weight of the structure. The weight of a Lineman with tool should not be considered in minimum vertical load calculation. An additional erection load of 3.5 KN shall also be considered for the design of the tower. The stringing

procedure shall ensure that the above vertical loads are not exceeded. For calculating vertical loads the following insulator weights may be considered.

Each single suspension insulator string	160 kg
Each double suspension insulator string	320 kg
Each double tension insulator string	420 kg
Pilot string for 60° tower	160 kg

**iv) Broken Wire condition:**

a) Suspension Tower Type A/DA

Breaking of any one power conductor in one phase only, resulting in instantaneous unbalance tension of 50% of conductor tension at 32°C without wind or breaking of one earth wire resulting in an unbalance tension equal to the maximum tension of the ground wire whichever is more stringent is to be considered for design along with appropriate impact factor.

b) Tower Type B & C

Breakage of two phases on the same side and on the same span or breakage of any one phase and any one ground wire on the same span whichever combination is more stringent along with appropriate impact factor for a particular member.

c) Tower Type D/DD

Breakage of all the three phases on the same side and on the same span or breakage of two phases and any one ground wire on the same span, whichever combination is more stringent along with appropriate impact factor for a particular member. Cross arms for angle tower shall be of equal length for both sides.

**v) Design Load:**

Employer's requirement for design longitudinal and transverse loads shall confirm to IS: 802 (Part-I/Sec-I)-1995

The Bidder shall furnish the details of design loads proposed to be adopted in the tower design in accordance with this specification.

The design criteria and other special requirements as stipulated for special towers shall be applicable for river crossing/special towers.

**7.16 Tower Steel Sections:**

Steel sections of tested quality in conformity with IS: 2062 GRA are to be used in towers, extensions and stub setting templates. No individual members shall be longer than 6000 mm.

For designing of towers only rationalized steel sections shall be used. During execution of the project, if any particular section is not available, the same shall be substituted by higher section at no extra cost. However, design approval for such substitution shall be obtained from the employer.

**7.17 Thickness of Members:**

The minimum thickness of angle sections used iron the design of towers shall be kept not less than the following values:

- a) Main corner leg members excluding the ground wire peak and main cross arm 6 mm.
- b) For all other main members 5 mm.
- c) Redundant members 4 mm.

**7.18 Bolt Arrangement:**

The minimum bolt spacing and rolled edge distance and sheared edge distances of sections from the centers of the bolt holes shall be provided as furnished in Table-1.



Dia of Bolts	Hole Dia	Min. bolt Spacing	Min. rolled Distance	Min. Sheared Edge distance
(mm)	(mm)	(mm)	(mm)	(mm)
12	13.5	30	16	19
16	17.5	40	20	23
20	21.5	50	25	27

Bolts sizes mentioned above shall only be used. The minimum width of flanges without bolt holes shall be 30 mm.

For the purpose of calculating stress and bearing stress for bolts refer clause 14.4 and 14.5 of IS: 802 (Part-I/Sec-2)-1992.

#### 7.19 Allowable Stress:

Structural steel angle section manufactured according to the latest ISL: 808(Part-V & VI) and tested according to the latest edition of IS: 2062 and having its yield strength not less than 255 N/mm. sq. shall be used in the fabrication of tower members.

##### i) Axial Stress in tension:

The estimated tensile stress in various members multiplied by the appropriate factors of safety shall not exceed the value given by the formula specified in Clause 9.2.1 of IS: 802 (Part-I/Sec- 2)-1992.

##### ii) Axial Stress in Compression

The estimated compressive stress in various members multiplied by the appropriate factors of safety shall not exceed the value given by the formula specified in Clause 9.2.1 of IS: 802(Part-I/Sec-2)-1992.

##### iii) Slenderness ratio:

Slenderness ratio for members shall be computed in accordance with IS: 802(Part-I/Sec- 2)-1992. Slenderness ratio for compression and tension members shall not exceed the values specified therein. The following maximum limits of the slenderness ratio shall be adopted i.e. the ratio of unsupported length of the section in any place to the appropriate radius of gyration.

1.	For main corner leg member including the corner members of earth wire peak and the lower corner members of the arms	150
2.	For other members having calculated stresses	200
3.	For redundant members	250
4.	For members having tensile stress only	375

##### iv) Erection Stress:

Where erection stresses combined with other permissible co-existent stresses could produce a working stress in any member appreciably above the specified working stress, then additional materials shall be added to the member or such other provision made so as to bring the working stress within the specified limit. For the purpose of this clause the specified working stress shall be the ultimate stress divided by the factor of safety of 2.0.

#### 7.20 Design calculation and Drawings:

The bidder has to execute the things as per the furnished design calculations and drawings by the PTC.

#### 7.21 Statutory Electrical Clearances:

**i) Ground Clearances:**

The minimum ground clearance from the bottom conductor shall not be less than 7.00 meters for 220 kV at the maximum sag conditions i.e. at maximum temperature and in still air. However, to achieve the above clearance the height of the tower shall be increased in the following manner:

- a) An allowance of 4% of the maximum sag shall be provided to account for errors in stringing.
- b) Conductor creep shall be compensated by over tensioning the conductor for a temperature Of 26°C lower than the stringing temperature

In case of railway track crossings the minimum height above rail level of the lowest portion of any conductor under conditions of maximum sag, in accordance with the regulations for Electrical Crossing of Railway Tracks are given in Table – 5.

Type of work	Inside stn.Limits(mm)	Outside stn. Limits(mm)
a) For non-electrified track and tracks electrified on 1500 V.DC		
i) For meter/narrow gauge	10,000	17,600
ii) For broad gauge	11,200	8,800
b) Tracks electrified on 25 kV AC for meter, narrow and broad gauge	15,300	13,300

Minimum clearance between the subject power line and any other power line crossing shall not be less than 7000 mm.

**ii) Live Metal Clearance:**

The minimum live metal clearance to be provided between the live parts and steel work of superstructure shall be as given in IS: 5613 (Part-2/Sec-I).

The Bidder may adopt separate cross arm design and length for 'D' type towers under dead end conditions provided adequate live metal clearance is available with at least 15° angle and also provided that all the other specified conditions of this specifications are fulfilled. In case pilot insulator strings are proposed to be used, the angle of swing to be considered shall be minimum of 15°.

In computing live metal clearances, the dimensions of suspension and tension string shall be taken as given in drawings attached herewith. The design of the towers shall be such that it should satisfy all the above conditions when clearances are measured from any live point of the insulator strings.

**iii) Angle Shielding:**

The angle shielding, defined as the angle formed by the line joining the center lines of the ground wire and outer conductor in still air, at tower supports, to the vertical line through the center line of the ground wire shall not be more than 30°. The drop of the ground wire clamp which is employer supplied item should be considered while calculating the minimum angle of protection. For estimating the minimum angle of protection the drop of ground wire suspension clamp along with U-bolt may be taken as 150 mm.

**iv) Mid Span Clearance:**

The minimum vertical span clearance between any of the earth wire and the nearest power conductor under all temperatures and in still air condition in the normal ruling span shall be 8.10 meters for 220 kV. Further the tensions of the earth wires and power conductors shall be so co-ordinate that the sag of earth wires shall be at least 10% less than that of the power conductors under all temperatures and loading conditions.

**7.22 Packing:**

Angle sections shall be wire bundled, cleat angles, gusset plates, blackets, filler plates, hanger and similar other loose items shall be netted and bolted together in multiples or securely wired together through holes.

Bolts, nuts, washers and other attachments shall be packed in double gunny bags, accurately tagged, in accordance with the contents.

The packings shall be properly done to avoid losses/damages during transit. Each bundle or package shall be appropriately marked.

**7.23 Special Towers:**

Special towers are to be used for Major River crossing requiring very long spans. These Towers shall form part of the Bidder's scope

Unit rates for design, fabrication, galvanizing, testing and supply for such towers shall be quoted in the appropriate schedule of Annexure-1.

Anchoring of major river crossing towers, shall be with 'D' or DD type towers.

All the requirements as meant for standard towers shall apply for such special towers except those noted in the following clauses.

**i) Shielding Angle:**

The shielding angle shall not be greater than 30°.

**ii) Clearances:**

The minimum clearance of lowest point of power conductor from the highest flood level in navigable rivers for crossing towers shall be obtained from the navigation authority.

The minimum electrical clearances between live parts and tower body and cross arm member shall be the same as for normal towers.

**iii) Stub Location:**

The approximate height of foundation on which stub for river cross towers are to be set, over the highest flood level of the river shall be fixed only after employer's approval.

**iv) Angle of Deviation:**

The minimum angle of deviation to be considered for special towers is 2° and all live material clearances are to be computed considering double suspension insulator strings as per drawing enclosed

**v) Factors of Safety:**

Towers:

The minimum factors of safety for towers shall be:

- a) Under normal conditions 2.0
- b) Under broken wire conditions 1.5

**vi) Conductor and Earth wire:**

The minimum factor of safety for conductors and ground wire shall be 2.5 maximum tension corresponding

to 2/3rd full wind pressure at minimum temperature or full wind pressure at the mean annual temperature such that the initial unloaded tension at the mean annual temperature do not exceed 30% of the ultimate strength of conductor and ground wire respectively.

**vii) Wind Loads:**

- a) The procedure for wind load calculation on conductor and ground wire shall be the same as for normal structures.
- b) The wind pressure values on tower shall be based on IS: 802(Part-I/Sec-I)-1995.

**viii) Longitudinal Loads:**

- a) The longitudinal loads due to power conductors and earth wires for suspension towers shall be nil under normal conditions and 100% of the maximum tension of bundled conductors or earth wire under broken wire conditions.
- b) Under normal conditions, unbalanced longitudinal pull due to difference in tension in ruling span for river crossing towers on one side and span of the line on the other wise shall also be considered for the design of anchor towers.

**8.0 TESTS:**

**8.1 General:**

- a) All standard tests including quality control tests in accordance with IS: 802(Part-III)-1978 shall be carried out.
- b) A galvanized tower of each type complete with 6 meters extension shall be subjected to design and destruction test. The tower shall be tested with nuts and bolts of the same make and type which are proposed to be used on the line. The supplier shall submit to the employer for approval, a detailed programme and proposal for testing the towers showing the method of carrying out the tests and the manner of applying the loads. The supplier on receipt of such approval shall intimate the employer about carrying out of the tests at least 30 days in advance of the scheduled date of tests during which time the employer will arrange to depute his representatives to witness the tests. Six copies of the test reports thereof shall be submitted to the employer for approval.
- c) In case of premature failure, the tower shall be retested and steel already used in the earlier test shall not be used again. The supplier shall provide facilities to the employer for inspection of materials during manufacturing stage and also during testing of the same.
- d) No part of any tower subject to test shall be allowed to be used in the work. The prices to be quoted for such type tests shall be after allowing rebate for the scrap value of the tested tower which is to be retained by the supplier
- e) The supplier shall ensure that the specification of materials and workmanship of all towers actually supplied conform strictly to the towers which have successfully undergone the tests. In case any deviation is detected the supplier shall replace such defective towers free of cost of the employer. All expenditure incurred in erection, to and fro transportation, any other expenditure or losses incurred on this account shall be fully borne by the supplier. No extension in delivery time shall be allowed on this account. The employer, however, reserves the right to waive off the testing of the towers, provided the supplier had earlier successfully tested, erected and commissioned similar towers and certificates for such tests carried out earlier are furnished duly certified by the employer and is found acceptable.
- f) Each type of tower to be tested shall be a full scale prototype galvanized tower and shall be erected vertically on rigid foundation with the stub protruding above ground level as provided in the design/drawing between ground level and concrete level.
- g) The suspension tower to be tested shall be with hanger and 'U' Bolt as per approved

design/drawings. The tension tower to be tested shall similarly be with the strain plate as per approved design/drawings.

h) In case of any premature failure even during waiting period, the tower shall be retested with rectified members. However, if the failures are major in nature and considerable portion of tower is to be re-erected then in such cases all the tests which have been carried out earlier are to be reconducted to the entire satisfaction of the employer.

i) The sequence of testing shall be at the discretion of the employer.

## **8.2 Test for Galvanization:**

Galvanization of the members of the tower shall withstand tests as per IS: 2633.

## **9.0 INSPECTION:**

9.1 The supplier shall keep the employer informed well in advance of the commencement of manufacture, progress of manufacture thereof and fabrication of various tower parts at various stages. So that arrangements could be made for inspection by the employer.

9.2 The acceptance of any batch of items shall in no way relieve the supplier of any his responsibilities for meeting all the requirements and intent of this specification and shall not prevent subsequent rejection if any item of that batch is later found defective.

9.3 The employer or his authorized representatives shall have free access at all reasonable time to all parts of the supplier's works connected with the fabrication of the material covered under the contract for satisfying themselves that the fabrication is being done in accordance with the provisions of this specification.

9.4 Unless specified otherwise, inspection shall be made at the place of manufacture prior to dispatch and shall be conducted so as not to interfere unnecessarily with the operation of the work.

9.5 Should any member of the structure be found not to comply with the approved design, it shall be liable for rejection. No member once rejected shall be resubmitted for inspection except in cases where the employer or his authorized representative considers that the defects can be rectified.

9.6 Defects which occur during fabrication shall be made good with the consent of and according to the procedure to be laid down by the employer.

9.7 All gauges and templates necessary to satisfy the employer for conducting tests shall be made available at the test site by the supplier.

9.8 The correct grade and quality of steel shall be used by the supplier. To ascertain the quality of steel the employer may at his discretion get the material tested at an approved laboratory.

## **10.0 SCHEDULE OF REQUIREMENTS:**

10.1 The schedule of requirements of different types of towers is indicated in Annexure-I. The quantities indicated therein are tentative and based on preliminary survey conducted by the employer. The exact quantity will be informed to the supplier on completion of detailed survey.

10.2 The time frame for executing the work is also indicated in this schedule. The supplier has to match the supply and delivery of stubs, tower-parts etc. to complete the work within the time schedule desired by the employer.

10.3 The supplier shall, as far as possible, dispatch the tower material as completed towers in order to enable erection of complete tower structures at site. Payment for the initial dispatches, to the extent of 30% of the total ordered quantity will be released on the basis of weight (i.e. Metric tons of steel supplied). Beyond this limit, however, payment will be released only for material supplied to complete towers.

### 11.0 SCHEDULE OF PRICES:

The prices for supply of materials shall be furnished in the relevant schedule in the manner specified.

### 12.0 GENERAL TECHNICAL REQUIREMENTS OF FOUNDATION:

#### General Description:

Design, construction and other relevant drawings shall be furnished by the tower designer for all types of towers (including special towers) for different kinds of soil as detailed below. According to the locations foundations for towers shall be normally of the following types:

Soft/Loose Soil

- a) Mud
- b) Hard/Dense soil
- c) Hard/Disintegrated rock

For rock foundations the holes in rocks shall be made in an approved manner so as to eliminate the possibility of serious cracking of the rock. The concrete block shall be properly secured to rock base by adequate no. of anchor bolts and further secured by concrete lodge section by the sides.

Line voltage – 220kV

No. of circuits - Double

- a) Properties of soil for bidding purpose only

However, soil investigation has to be done afresh by the successful Bidder. Type of foundation shall be provided by the successful bidder as per the new soil investigation report i.e.. isolated footing or Pile foundation. No cost implication shall be allowed in future if any variations are found in new soil report.

Sl. No.	Details	Soft loose	Mud	Hard Soil	Soft rock	Hard rock
1	Angle of repose of soil(in degree)	30	15	0	0	0
2	Ultimate bearing strength of earth (T/M <sup>2</sup> )	10	5	20.0	50.0	125.0

- b) Properties of concrete M25 design mix

All concrete shall be RCC with ratio (1:1:2).

- c) Factor of safety for foundation against overturning due to up-lift and thrust.

- i) Normal condition 2.2
- ii) Broken wire condition 1.65

- d) Concrete Mixture

- i) Pad 1:1:2
- ii) Pyramid or stepped part of foundation 1:1:2
- iii) Chimney 1:1:2

- e) Minimum thickness of chimney 300 mm.

- f) Minimum thickness of concrete over stub

Dry soil 100 mm

Wet & WBC 150 mm

- g) Minimum length of stub in concrete 2000 mm

Distance above ground level of

Tower stub and super structure

450 mm

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**TECHNICAL SPECIFICATION**

**ERECTION OF**

**220KV D.C. TRANSMISSION LINES**

**CONSTRUCTION OF TOWER FOUNDATION AND**

**ERECTION OF TOWER**



## **1.0 ERECTION OF TOWER AND TOWER FOUNDATION:**

### **1.1 SCHEDULE OF ERECTION PROGRAMME:**

After due approval of the detailed and check survey, the bidder shall submit to the employer a complete detailed schedule of erection programme with a Bar-Chart for construction of the lines indicating there in the target date of completion.

### **1.2 DRAWINGS FOR TOWER AND FOUNDATIONS:**

The same shall be supplied by the bidder.

### **1.3 TAKING OVER:**

Tower and tower accessories received at site stores are to be stored item-wise and mark- wise to facilitate joint inspection of the materials (with reference to packing list and detailed order).

If the materials/equipment or any part thereof is damaged or lost during the transit, the replacement of such materials shall be effected by the bidder timely so as to maintain programme of work. However, the line under erection shall be taken over by the purchaser only when the entire line is completed in all respect and made ready for commissioning at rated voltage. Partly erected line will not be taken over.

Taking over of the line shall be in no way relieve the bidder from his responsibility for satisfactory operation of the erected line in terms of the guarantee clause of the specification.

### **1.4 MATERIALS HANDLING AND INSURANCE:**

The bidder shall deliver all equipment/materials against this contract to his site stores under cover of Transit Insurance to be taken in his name. Cost of such insurance is to be borne by the bidder.

Cost of transportation of materials from bidder's store to the site of work shall be borne by the bidder irrespective of mode of transportation and site condition.

The bidder has to bear the cost of premiums for all materials, tower accessories, total erection cost of the line including cement, torsteel for foundation.

It will be the responsibility of the bidder to report to the concerned Police Station about all incidents of thefts and lodge, pursue and settle all claims with Insurance Company in case of damage/loss due to theft, pilferage, flood and fire etc. and the employer of the work shall be kept informed promptly in writing about all such incidents. The loss, if any, on this account shall be recoverable from the bidder if the claims are not lodged and properly pursued in time or if the claims are not settled by the insurance company due to lapses on the part of the bidder. The bidder shall have to replenish promptly damaged, stolen tower members and accessories conductors, earth wire, hardwares etc. and repair/re-erect the damaged lines, free of cost to the employer so as to maintain the programme of work. The employer will not be responsible in any way for such loss of materials.

### **1.5 EXCAVATION FOR FOUNDATION PITS, DE-WATERING AND SHORING SETS:**

The bidder shall execute the open excavation job in the foundation pits in all type of soil including latterite and or boulder mixed soil as detailed below including removing, spreading and/or stacking the excess spoils (as directed by the employer). The item includes the necessary trimming of the sides, leveling, dressing and ramming (as necessary) the bottom of the pits including bailing out water, dewatering by manual and/or mechanical means by emptying water pumps including removing of slushes from foundation pits and nominal open plank shoring with vertical poling boards placed at suitable intervals as

directed with required runners, struts, battens for framing as required complete. While quoting the unit rate for foundation as per the activity schedule, the bidder shall include cost of design, all cost of labour, materials, tools, plants, incidentals for earth excavation, dewatering, cement, water, sand, coarse and fine aggregates, steel reinforcement, steel angles, forms, mixing, finishing, protection and curing of concrete, back-filling with carried earth, if necessary, disposal of surplus, spoils, stub setting and template. The bidder shall also include in the quoted unit rate for foundation, all charges/costs for preparing the pit marking and foundation layout drawing, grounding of towers including supply of pipe/concrete pipe, earthing, measurement of ground resistance before often growing etc.

#### **1.6 CEMENT CONCRETE:**

##### **A) Materials**

All materials whether to be consumed in the work or used temporarily shall conform to relevant IS specification, unless stated otherwise, and shall be of the best approved quality.

##### **B) Cement**

Cement to be used in the work under the contract shall generally conform to IS: 269/455-1989. Cement bags shall be stored by the bidder in water tight well ventilated store sheds on raised wooden platform/dunnage (raised at least 150 mm above ground level) in such a manner as to prevent deterioration due to moisture or intrusion of foreign matter. Sub-standard or partly set cement shall not be used and shall be removed from the site by the bidder at his cost on receipt of approval from the Engineer.

##### **C) Coarse Aggregates Stone chips or stone ballast**

D) Reinforcement: Different size of reinforcement (HYSD CRS MS bar FE 500 D) as per latest IS 456-2000.

**Remarks: All foundation of tower shall be of RCC: M25 Grade (1:1:2) design mix**

## General Technical Particulars

### APPENDIX 1 - Span Lengths

<b>Normal span (m)</b>	350m
<b>Tower design spans:</b>	
<b>Wind spans:</b>	
Suspension towers	350m
Tension towers	350m
<b>Maximum weight spans:</b>	
Suspension towers	525m
Tension towers	525m
<b>Minimum weight spans:</b>	
Suspension towers	100m
Tension towers (uplift net)	-200m

### APPENDIX-2 Line Conductor (220 kV Construction)

<b>Complete line conductor:</b>	
Actual area (total) per single conductor	484.5 mm <sup>2</sup>
Number of conductors per phase	ONE
Horizontal distance between conductor centers of one phase	-
<b>Each single conductor:</b>	
Equivalent to ACSR conductor of code name	ACSR ZEBRA
IEC STANDARD No	IEC 1089
INDIAN STANDARD No	IS 398 (Pt 4) 1994
Material of conductor	Aluminium
Number and diameter of wires: Aluminium	54/3.18 No./m
Total area of conductor	428.9 mm <sup>2</sup>
Overall diameter of stranded conductor	28.62 mm
Mass of conductor per kilometer	1621 kg
Ultimate strength of conductor	130320 Newton
Assumed equivalent modulus of elasticity of conductor	81580 N/mm <sup>2</sup>
Assumed equivalent coefficient of linear expansion of conductor	19.3 x 10 <sup>-6</sup> per °C
Maximum length of conductor supplied on one drum	1.8 +/- 5% km

### APPENDIX 3 - Earth Wire (220 kV Constructions)

		GSW
<b>Complete earth conductor:</b>		
Appropriate Indian Standard No		398(Part-2)
Appropriate British Standard No		183
Material of conductor		galvanized steel
Number and diameter of wires	No./m m	7/3.15
Overall diameter of conductor	mm	9.45
Mass of conductor per kilometer	kg	428
Ultimate strength of conductor	Newton	56000
Lay length	mm	160 +/- 15
Direction of the lay of the outer layer		Right hand
Chemical composition of the steel wire	%	
Carbon		not more than 0.55
Manganese		0.4 to 0.9
Phosphorous		not more than 0.04
Sulphur		not more than 0.04
Silicon		0.15 to 0.35
Purity of Zinc for galvanizing	%	99.95
Galvanizing after stranding		
a) Minimum weight of Zinc coating per sq. m. of the uncoated wire surface	gms	240
b) Minimum no. of one minute dips that the galvanized wire can withstand in Standard Preece Test		3 and 1/2
Maximum length of conductor on drum #	km	4 +/- 5%
D.C. resistance at 20 °C	ohms/km	3.375

**APPENDIX 4 \* - Disc Insulator Units (A n t i -Fog Type)**

		<b>70kN</b>	<b>90kN</b>	<b>120kN</b>	<b>160kN</b>
Size and designation of the ball pin shank	mm	16	16	20	20
Diameter of the disc***	mm	280/305	280/305	280/305	280/305
Ball to ball spacing between disc	mm	145	145	145	170
Tolerance on ball to ball spacing	+/-mm	4	4	4	5
Minimum creepage distance of a single disc **	mm	430	430	430	475
Steepness of the impulse voltage which the disc unit can withstand in Steep Wave Front Test	kV per micro sec.	2500	2500	2500	2500
Purity of Zinc used for galvanizing	%	99.95	99.95	99.95	99.95
Purity of Zinc used for sleeve	%	99.7	99.7	99.7	99.7
No. of dips in Standard Preece Test					
1) Cap socket		6	6	6	6
2) Ball pin		6	6	6	6

**\*The parameters specified are for disc insulator unit only. For the Bids offering composite insulator units, the parameters may be suitably selected by the Bidder so as to meet the overall requirements of the respective strings and same shall be guaranteed at Schedules 13A and 14A of the Technical Data Requirement Schedules, Section X.**

**\*\* The minimum creepage distance of single composite insulator unit shall be such that it matches with the total creepage distance of the respective strings with disc insulator units.**

**\*\*\* The tolerance limit on the diameter shall be +/- 13/15 mm**

**APPENDIX 5 - Insulator Strings (Suspension Sets For 220 kV Lines)**

		Single "I" Suspension on Strings	Double "I" Suspension Strings	Pilot Suspension Strings
Power frequency withstand voltage of the string with arcing horns and corona control rings / grading rings under wet conditions	kV(rms)	460	460	460
Impulse withstand voltage (peak) under dry conditions				
1) Positive	kV	1050	1050	1050
2) Negative	kV	1050	1050	1050
Minimum corona extinction voltage under dry conditions	kV(rms)	154	154	154
Radio interference voltage under dry conditions at 1MHz, at 154kV	Micro Volts	not more than 1000	not more than 1000	not more than 1000
Mechanical strength of the complete insulator string along with all hardware fittings	kN	70	2x70	70
Maximum voltage (in percentage) across any disc in the complete insulator string under phase to earth voltage *	%	13	13	13
Number of insulator units in each string**		14	2x14	14

Purity of Zinc used for galvanizing	%	99.95	99.95	99.95
Minimum No. of one minute dips the ferrous parts can withstand in Standard Preece Test	No.	6	6	6

**\* Voltage distribution criteria is not applicable for strings with composite insulator units.**

**\*\* It is preferable to have single piece composite insulator unit for each limb of the string. In case, more than one unit is used per limb, same shall be indicated by the bidder.**



**APPENDIX 6 - Insulator Strings (Tension Sets For 220 kV Lines)**

		Single TensionStrings	Double TensionStrings
Power frequency withstand voltage of the string with arcing horns and corona control rings / grading rings under wet conditions	kV(rms)	460	460
Impulse withstand voltage (peak) under dry conditions			
1) Positive	kV	1050	1050
2) Negative	kV	1050	1050
Minimum corona extinction voltage under dry conditions	kV(rms)	154	154
Radio interference voltage under dry conditions at 1MHz, at 105kV	Micro Volts	not more than 1000	not more than 1000
Mechanical strength of the complete insulator string along with all hardware fittings	kN	120	2x120
Maximum voltage (in percentage ) across any disc in the complete insulator string under phase to earth voltage *	%	14	14
Number of insulator units in each string **		15	2x15
Purity of Zinc used for galvanizing	%	99.95	99.95
Minimum No. of one minute dips the ferrous parts can withstand in Standard Preece Test	No.	6	6

\* Voltage distribution criteria are not applicable for strings with composite insulator units.

\*\* It is preferable to have single piece composite insulator unit for each limb of the string. In case, more than one unit is used per limb, same shall be indicated by the bidder.

## APPENDIX 7 - Tower Design Particulars (220 kV Construction)

Minimum clearance between live metal and tower steelwork:		
i.	with suspension insulator set swing 0°	mm      2130
	with suspension insulator set swing 15°	mm      1980
	with suspension insulator set swing 30°	mm      1830
	with suspension insulator set swing 45°	mm      1675
	with suspension insulator set swing 60°	mm      -
ii.	with jumper loop swing 0°	mm      2130
	with jumper loop swing 10°	mm      1675
	with jumper loop swing 20°	mm      1675
	with jumper loop swing 30°	mm      -
	with jumper loop swing 40°	mm      -
Insulator suspension set, unobstructed transverse swing angle from vertical		
		degrees      0 - 45
Earth conductor suspension clamps, unobstructed transverse swing angle from vertical		
		degrees      0 - 50
Earth conductor maximum shielding angle from vertical at tower attachment point over outer line conductors		
		degrees      30

### APPENDIX 8 - Particulars of Double Circuit Towers (220 kV Construction)

Type Of Tower		DA	DB	DC	DD
Type of insulator sets		Suspension	Tension	Tension	Tension
Maximum angle of deviation	degree	0 - 2	0 - 15	15 - 30	30 - 60
Normal span length	m	350	350	350	350
Minimum ground clearance of line conductor at 85 °C, normal ground	m	7.23	7.23	7.23	7.23
Minimum height of earth conductors above upper line conductor at mid-span	m	8.5	8.5	8.5	8.5
Vertical spacing between line conductors at tower (minimum)	m	4.9	4.9	4.9	4.9
Minimum Clearance between conductors of one circuit and tower climbing leg of the other Circuit.	m	5.5	5.5	5.5	5.5

## APPENDIX 9 - Foundation Design Particulars

Assumed density of Plain Cement Concrete (PCC) for foundation in dry soil	kg/m <sup>3</sup>	2240
Assumed density of Plain Cement Concrete (PCC) for foundation in presence of sub-soil water	kg/m <sup>3</sup>	1240
Assumed density of Re-in forced Cement Concrete (RCC) for foundation in dry soil	kg/m <sup>3</sup>	2400
Assumed density of Re-in forced Cement Concrete (RCC) for foundation in presence of sub-soil water	kg/m <sup>3</sup>	1400
28 day concrete cube strength (characteristic strength for M-20 concrete)	N/mm <sup>2</sup>	20
28 day concrete cube strength (characteristic strength for M-15 concrete)	N/mm <sup>2</sup>	15
Minimum proportion of stub load to be allowed for in the design of stub cleats	%	100
Density of all type of soils :		
1) under dry conditions	kg/m <sup>3</sup>	1440
2) in presence of surface water	kg/m <sup>3</sup>	1440
3) in presence of sub-soil water	kg/m <sup>3</sup>	840
Ultimate bearing capacity of the soil :		
1) normal soil under dry condition	kN/m <sup>2</sup>	214
2) normal soil in presence of surface as well as sub-soil water	kN/m <sup>2</sup>	107
3) wet black cotton soil	kN/m <sup>2</sup>	107
4) fissured rock ( both for dry and wet )	kN/m <sup>2</sup>	400
5) hard rock	kN/m <sup>2</sup>	750
Angle of repose for :		
1) dry soil	Degree	30
2) wet soil due to presence of surface/ sub-soil water	Degree	15
3) wet black cotton soil	Degree	0
4) dry fissured rock	Degree	20
5) wet fissured rock	Degree	10
Ultimate bond between steel and concrete	kN/m <sup>2</sup>	0.147

**Note:** All the soil parameters furnished above are subject to verification by actual soil investigations. The Bidder shall be required to carry-out field test for each type of foundation, as per the quoted rates in Price

Schedules, to prove the design parameters considered.

The foundation classification criteria shall be as given below, depending upon type of soil and sub-soil water level / presence of surface water:

**Normal Dry:** To be used for locations where normal dry cohesive or non-cohesive soils are met without encountering sub-soil water table within the depth of foundation.

**Wet:** To be used for locations,

- a) where sub-soil water is met at 1.5 m. or more below the ground level;
- b) Which are in surface water for long periods with water penetration not exceeding one meter below the ground level e.g. , the paddy field.

**Partially Submerged:** To be used for the locations where sub-soil water table is met between 0.75 to 1.5 m. below the ground level;

**Fully Submerged:** To be used for locations where sub-soil water table is met at less than 0.75 m. below the ground level;

**Black Cotton Type:** To be used at locations where soil is clayey type, not necessarily black in colour, which shrinks when dry and swells when wet, resulting in differential movement. For designing the foundation for such locations, the soil is to be considered as fully submerged.

**Fissured Rock:** To be used at locations where decomposed or fissured rock, hard gravel, kankar, lime-stone, laterite or any other soil of similar nature is met. Under-cut type foundation is to be used for such locations. In case of fissured rock locations where water table is met at 1.5 m. or more below ground level, wet type fissured rock foundations shall be adopted.

**Hard Rock:** To be used for the locations where chiseling, drilling or blasting is required for excavation. For these locations rock anchoring is to be provided to resist the uplift forces.

## Technical specification for Conductor

### TECHNICAL SPECIFICATION OF ACSR “MOOSE”, “ZEBRA”, AND “PANTHER” CONDUCTORS

#### 1. SCOPE :

This specification provides for the manufacture, testing, supply and delivery at destination of the steel core aluminum conductors as per Appendix-I attached.

#### 2. STANDARDS :

The conductors shall comply in all respects to the clauses of this specification as indicated below & with the Indian Standard Specification, International standards with latest amendments. Some of the standards are:-

- IS 398 - Specification for Aluminium Conductors for overhead transmission
- IS 398, Part-II-Aluminium conductors for overhead Specification Transmission purpose - specification
- IS 1521, 1972 - Method of tensile testing of steel
- IS 1778 -1989 – Reel & drums for bare conductors.
- IEC - 1098

#### 3. MATERIALS :

The material offered shall be of best quality and workmanship. The steel Cored Aluminum conductor strands will consist of hard-drawn aluminum wire manufactured from 99.5% pure electrolytic aluminum rods of E.C. Grade. The steel wire shall be made from materials produced either by the acid or basic open hearth process or by electric process. No steel wire drawn from pressmen process shall be used. The steel wire shall not contain sulphur or phosphorus exceeding 0.05 percent, and the total of sulphur and phosphorus shall not exceed 0.085 percent.

The steel wires shall be evenly and uniformly coated with zinc complying with Indian Standard 4826-1979 specification for galvanized coatings on round steel wires. The uniformity of zinc coating and the weight of coating shall be in accordance with Appendix-II. The coating on the galvanized steel wires may be applied by the hot process or the electrolytic process.

#### 4. SIZES :

The size of steel-cored Aluminum Conductors shall be as given in Appendix-I. The resistance and weights shall be in accordance with the values given in the same appendix.

#### 5. TOLERANCES:

The following tolerances shall be permitted on standard diameter of aluminum wires.

Tolerance on standard diameter of aluminum wire is  $\pm 1$  percent.

Note: - The cross-section of any wire shall not depart from circularity by more than an amount corresponding to a tolerance of 2 percent on the standard diameter.

A tolerance of + 2 percent shall be permitted on the standard diameter of the galvanized steel wires. The variation from the approximate weights shall not be more than plus or minus 5 percent.

**6. MECHANICAL PROPERTIES:**

The value of the final modules of elasticity for steel core aluminum conductor in the average of values obtained from actual stress strain tests. The co-efficient of linear expansion for steel Cored Aluminum Conductors has been calculated on the basis of co-efficient of linear expansion of  $23.0 \times 10^{-6}$  per degree centigrade of aluminum and  $11.5 \times 10^{-6}$  per degree centigrade for steel and represents only the average values. These values shall however, be given by the bidder under the guaranteed technical particulars.

**7. SURFACE CONDITIONS:**

The wires shall be smooth and free from inequalities, spills and splits. The surface conductor shall be free from points, sharp-edges, abrasions or other departures from smoothness or uniformity of surface contour that would increase radio interference and corona losses. When subjected to tension up to 50% of the ultimate strength of the conductor, the surface shall not depart from its cylindrical form nor any part of the component, parts or strands, move relative to each other in such a way as to get out of place and disturb the longitudinal smoothness of the conductor.

**8. JOINTS IN WIRES:**

Aluminium wires: No joints shall be permitted in the aluminium wires in the outermost layer of the ACSR conductor. Joints in the inner layers are permitted, in addition to those made in the base rod or wire before final drawing, but no two such joints shall be less than 15 meter apart in the complete stranded conductor. Such joints shall be made by cold pressure butt-welding.

Joints are not permitted in the outermost layer of the conductor in order to ensure a smooth conductor finish and reduce radio interference levels and corona losses on the extra high voltage lines.

Galvanized steel wires: - There shall be no joints except those in the base rod or wire before final drawing, in steel wires forming the core of the steel-reinforced aluminum conductor.

Joints have not been permitted in the steel wires after final drawing in order to avoid reduction in the breaking strength of the conductor that may occur as a result of failure of the joints.

**9. STRANDING:**

The wires used in construction of a stranded conductor shall before stranding, satisfy all requirements of IS-398/ (part-II) 1976 with latest amendments. For steel-cored aluminum conductors the lay ratio of the different layers shall be within the limits given under Appendix-I.

For all, constructions, each alternate layer shall be stranded in opposite directions. The wires in each layer shall be evenly and closely stranded round the under laying wire or wires. The final layer of wires shall have a right hand lay.

**10. PACKING AND MARKING:**

The conductor shall be wound in non-returnable reels or drums conforming to Indian Standard 1978-1961 specification for Reels and Drums for Bare Wire, or any other authoritative standard and marked with the following:

- a) Trade name, if any
- b) Contract/Award Number
- c) Name of Manufacturer
- d) Name & Address of Consignee
- e) Drum Number
- f) Length of conductor
- g) Size of conductor
- h) Gross weight of drum with conductor
- i) Weight of empty drum
- j) Net and gross of conductor
- k) Arrow marking of un-winding.

The reel shall be of such construction as to assure delivery of conductor in the field from displacement and damage and should be able to withstand all stresses due to handling and the stringing operations so that conductor surface is not dented, scratched or damaged in any way during manufacture, transport and erection. The conductor shall be properly lagged on the drums and the method of lagging to be employed may be clearly stated in the tender. It should be stocked to suit the reel and held in place by steel strapping. Lagging shall not be nailed or bolted in place.

The conductor drum should be suitable for wheel mounting. Before reeling, the card-board or other suitable material shall be secured to the drum and inside flanges of the drums. After reeling the conductor, the exposed surfaces should be wrapped with suitable soft material to prevent the conductor from dirt and grit. Any space between the drum lagging and conductor should be suitably filled with soft filler material compactly packed. The conductor drum shall be made as per the relevant IS.

**11. LENGTH:**

The conductor shall be supplied in the standard lengths as below with a permitted variation of 5%. Not less than 90% of the total quantity of the conductor shall be supplied in the standard lengths. Thus the quantity of the conductor in lengths shorter than standard ones shall not exceed 10% of the total quantity to be supplied. Further no single conductor lengths in respect of such 10% (Maximum supply) in random lengths shall be shorter than 50% of the standard lengths.

<u>Type of conductor</u>	<u>Length per drum</u>
MOOSE ACSR	1.1 K.M
ZEBRA ACSR	1.1 K.M
PANTHOR ACSR	2.2 K.M

**12. TESTS AND TEST CERTIFICATES:**

The following type tests, (& any other tests if purchaser decides to do), shall be conducted on the conductor at any Govt. approved laboratory or CPRI, in presence of the representatives of OPTCL/TFL, on the samples collected and sealed by the representative of OPTCL/TFL from the manufactured & offered drums of conductor at random at free of cost to OPTCL/TFL or firm may quote their test charges which will be taken in to account during bid price evaluation. If test charges will not be quoted by the firm, it will be treated as nil during bid price evaluation & firm have to do the type tests at free of cost to OPTCL/TFL. Also the tenderer shall furnish valid type test reports, the tests are as per the IS 398 (part-2) conducted in any govt. approved laboratory or CPRI.



Individual wire and finished steel core Aluminum Conductor shall be subjected to before dispatch from the works, to the tests as per the provision of the Indian standard Specification 398 (Part-II-1976) with the latest amendments & as per the tests indicated in this specification below.

Samples for individual wires for test shall be taken before stranding form not less than 10 percent of the spools in the case of aluminum wire and ten percent of the wire coils in the case of steel wires. If samples are taken after stranding, they shall be obtained by cutting 5 meters from the outer end of the finished conductor from not more than 10 percent of the finished reels.

The mechanical tests shall be carried out on single wires only.

The Tensile test shall apply to wires of all diameters forming part of steel cored aluminum conductors. If it is not possible to test the component wires before stranding the test may be made on wires taken from stranded conductors. The tensile strength of any of the wires shall not be less than the minimum values given in Appendix-II.

A suitable tensile testing machine shall be used the accuracy of which can easily be checked and the machine adjusted if necessary. The test sample before being placed in the machine shall be straightened, if necessary in such a way as to cause the minimum alteration in its physical properties.

The load shall be applied gradually and rate of separation of the Jaws of the testing machine shall not be greater than 10cm/min. and less than 2.5cm/min.

#### **TYPE TESTS:**

##### **Wrapping Test:**

Samples of aluminium wires shall be wrapped round a wire of its own diameter to form a close helix of eight turns. Six turns shall then be unwrapped and again clearly wrapped in the same direction as before. The wire shall not break.

Samples of steel wires shall be closely wrapped eight times round a mandrel of diameter equal to four times the wire diameter. Six turns shall then be unwrapped and again closely wrapped in the same direction as before. The wire shall not break.

##### **Galvanizing Test:**

The uniformity of zinc coating and the weight of coating shall be as given in Appendix-II and shall be determined according to Indian Standard Specification 4826-1979. with latest amendments.

This test shall be made whenever practicable, on wires before stranding and before the specimen has been bent, straightened or tested in any other way.

##### **Ductility Test:**

This test shall be made on galvanized steel wires only by any of the proceedings given in this specification.

##### **Torsion Test:**

One specimen cut from each of the sample shall be gripped at its ends in two vices, one of which shall be free to move longitudinally during the test. A small tensile load not exceeding 2% of the breaking load of the wire, shall be applied to the sample during testing. The specimen shall be twisted by consisting one of the vices to revolve until fracture occurs and the number of twists shall be indicated by a counter or other suitable device. The rate of twisting shall not exceed 60rev/min.

When tested before stranding, the number of complete twists before fracture occurs shall not be less than 18 on a length equal to 100 times the diameter of the wire. The fracture shall show a smooth surface at right angles, to the axis of the wire.

When tested after stranding, the number of complete twists before fracture occurs shall be not less than 16 on a length equal to 100 times the diameter of the wire. The fracture shall show a smooth surface at right angles to the axis of the wire.

#### **Elongation Test:**

The elongation of one specimen cut from each of the samples shall be determined. The specimen shall be straightened by hand and on original gauge length of 200 mm shall be marked on the wire. A tensile load shall be applied as described in 12.5 and the elongation shall be measured after the fractured ends fitted together. If the fracture occurs outside the gauge marks, or within 25mm of both mark and the required elongation is not obtained, the test shall be disregarded and another test made. When tested before stranding, the elongation shall be not less than 4 percent. When tested after stranding, the elongation shall be not less than 3.5 percent.

#### **Surface Condition Test:**

A sample of the finished conductor having a minimum recommended length of 5 meters with compression type dead end clamps compressed on both ends in such a manner as to permit the conductor to take its normal straight line shape, shall be subject to a tension of 50% of the UTS of the conductor. The surface shall not depart from its cylindrical shape nor shall the strands move relative to each other so as to get out of place or disturb the longitudinal smoothness of conductor. The measured diameter at any place shall be not less than the sum of the minimum specified diameters of the individual aluminum and steel strands.

#### **Ultimate Strength (UTS) Test on Stranded Conductor:**

Circles perpendicular to the axis of the conductor shall be marked at two places on a sample of conductor of minimum 5 m length suitably compressed with dead end clamps at either end. The load shall be increased at a steady rate up to specified 50% of UTS and held for one minute. The circles drawn shall not be distorted due to Relative movement of strands. Thereafter the load shall be increased at a steady rate to the minimum UTS specified in Appendix-I and held for one minute. The applied load shall then be increased until the failing load is reached and the value recorded.

#### **Corona Extinction Voltage Test:**

One sample of conductor of 5m length shall be strung. In case of twin conductor, two samples shall be arranged with the actual sub-conductor spacing between them. This sample assembly when subjected to power frequency voltage shall have a corona extinction voltage of not less than 176 KV (rms) for 220 KV system line to ground under dry condition. There shall be no evidence of corona on any part of sample when all possible sources of corona are photographed in a darkened room. The test shall be conducted without corona control rings. The voltage shall be corrected for standard atmospheric conditions.

#### **Radio Interference Voltage Test:**

The conductor samples shall have a radio interference voltage level below 1500 micro volts at one MHZ when subjected to 50HZ AC voltage of 1.1 times maximum line to ground voltage under dry condition. This test may be carried out with corona control rings and arcing horns.

#### **D.C. Resistance Test on Stranded Conductor:**

On a conductor sample of minimum 5 m length two contact clamps shall be fixed with a pre-determined bolt torque. The resistance shall be measured by a Kelvin double bridge by placing the clamps initially zero meter and subsequently one meter apart. The test shall be repeated at least five times and the average value recorded. The value obtained shall be corrected to the value at 20 degree centigrade. The resistance corrected at 20 degree centigrade shall conform to the requirements of this specification.

#### **Stress-Strain Test:**

This test is contemplated only to collect the creep data of the conductor from the supplier. A sample of conductor of minimum 10 meters length shall be suitably compressed with dead end clamps.

#### **Test Set-up:**

- a) The test sample shall be supported in a trough over its full length and the trough adjusted so that the conductor will not be lifted by more than 10 mm under tension. This shall be ascertained by actual measurement.
- b) The distance between the clamp and the sleeve mouth shall be monitored with callipers during the test to ensure that, after the test, it does not change by more than 1 mm +/- 0.1mm from the value before the test.
- c) The conductor strain shall be evaluated from the measured displacements at the two ends of the gauge length of the sample. The gauge reference targets shall be attached to the clamps which lock the steel and aluminum wires together. Target plates may be used with dial gauges or displacement transducers and care shall be taken to position the plates perpendicular to the conductor. Twisting the conductor, lifting it and moving it from side-to-side by the maximum amounts expected during the test should introduce no more than 0.3mm error in the reading.

#### **Test Loads for Complete Conductor:**

The loading conditions for repeated stress-strain tests for complete conductor shall be as follows:

- (a) 1 KN load shall be applied initially to straighten the conductor. The load shall be removed after straightening and then the strain gauges are to be set at zero at zero tension.
- (b) For non-continuous stress-strain data, the strain reading at 1 KN intervals at lower tensions and 5KN intervals above 30% of UTS shall be recorded.
- (c) The sample shall be reloaded to 50% of UTS and held for 1 hour. Readings are to be noted after 5, 10, 15, 30, 45 and 60 minutes during the hold period. The load shall be released after the hold period.
- (d) Reloading up to 70% of UTS shall be done and held for 1 hour. Readings are to be noted after 5, 10, 15, 30, 45, and 60 minutes and then the load shall be released.
- (e) Reloading up to 85% of UTS shall be done and hold for 1 hour. Readings are to be noted after 5, 10, 15, 30, 45 and 60 minutes and then the load shall be released.
- (f) Tension shall be applied again and shall be increased uniformly until the actual breaking strength is reached. Simultaneous readings of tension and elongation shall be recorded up to 90 % of UTS at the intervals.

#### **Test Loads for Steel core only:**

The loading conditions for repeated stress-strain tests for the steel core of ACSR shall be as follows:

- (a) The test shall consist of successive application of load applied in a manner similar to that for the complete conductor at 30%, 50%, 70% and 85% of UTS

(b) The steel core shall be loaded until the elongation at the beginning of each hold period corresponds to that obtained on the complete conductor at 30%, 50%, 70% and 85% of UTS respectively.

**Stress Strain Curves:**

The design stress-strain curve shall be obtained by drawing a smooth curve through the 0.5 and 1 hour points at 30%, 50%, and 70% of UTS loadings. The presence of any aluminum slack that can be related to any observed extrusion entering the span from the compression dead ends shall be removed from the lower ends of the design curves. Both the laboratory and design stress-strain curves shall be submitted to the purchaser along with test results. The stress-strain data obtained during the test shall be corrected to the standard temperature i.e. 20 degree centigrade.

**Chemical Analysis of Zinc:**

Samples taken from the Zinc ingots shall be chemically/ spectrographically analyzed. The same shall be in conformity to the requirements stated in this specification.

**Chemical Analysis of Aluminum and Steel:**

Samples taken from the Aluminum ingots/ coils/ strands shall be chemically/ spectrographically analyzed. The same shall be in conformity to the requirements stated in this specification.

**ROUTINE/ACCEPTANCE TESTS:**

**Visual and Dimensional Check on Drums:**

The drums shall be visually and dimensionally checked to ensure that they conform to the requirements of this specification. Drum dimensions should conform to IS: 1778. The flange diameter, traverse width, barrel diameter and flange thickness are to be as per relevant standard.

**Visual Check for Joints, Scratches etc:**

Conductor drums shall be rewound in the presence of the inspector. The inspector shall visually check for scratches, joints, etc. and that the conductor generally conforms to the requirements of this specification.

**Dimensional Check of Steel and Aluminum Strands:**

The individual strands shall be dimensionally checked to ensure that they conform to the requirements of this specification.

**Check for Lay-ratios of various Layers:**

The lay-ratios of various layers shall be checked to ensure that they conform to the requirements of this specification.

**Breaking load test on welded Aluminum strand & Individual wires:**

Two Aluminum wires shall be welded as per the approved quality plan and shall be subjected to tensile load. The welded point of the wire shall be able to withstand the minimum breaking load of the individual strand guaranteed by the supplier.

Ductility Test

Wrapping test

Resistance test  
Galvanizing Test

**RETEST AND REJECTION:**

Each coil or spool selected for testing shall be tested for compliance with the requirements of Indian Standard Specification 398 (part-II) 1976 with latest amendment if any selected coil or spool not fulfills any of the test requirements, that particular coil or spool shall be withdrawn. In respect of each failure, two test pieces shall be selected from two different coils in the lot and subjected to the test under which the failure occurred. If either of the two retest pieces fails to pass that test, the lot concerned shall be rejected.

If samples are taken for test after stranding and if any selected reel fails in the retest, the manufacturer may test each and every reel and submit them for further inspection. All rejected materials shall be suitably marked and segregated.

**GUARANTEED TECHNICAL PARTICULARS:**

The bidder shall fill in the guaranteed technical particulars in the Performa attached with this document and submit the same with his tender, without which bid will not be considered.

**SAG TENSION CHARTS AND SAG TEMPLATES:**

The bidder shall supply each six copies of sag tension charts and sag templates in respect of each type of the steel core aluminum conductor. The Bidder shall also supply sag template in celluloid which shall be subject to the approval by the purchaser and without involving any extra charges.

**Technical Parameters:**

Sl. No.	Description	ACSR MOOSE
1	Stranding and wire diameter	54Al /3.53 mm+7 Steel/3.53 mm
2	Number of Strands	
	Steel centre	1
	1st Steel Layer	6
	1st Aluminium Layer	12
	2nd Aluminium Layer	18
	3rd Aluminium Layer	24
3	Sectional area of aluminium	528.5 mm <sup>2</sup>
4	Total sectional area	597.00 mm <sup>2</sup>
5	Overall diameter	31.77 mm
6	Approximate weight	2004 kg/km
7	Calculated DC resistance at 20 deg C	0.05596 Ω/km
8	Minimum UTS	161.2 kN
9	The details of aluminium strand are as follows:	
	Minimum breaking load of strand before stranding	1.57 kN
	Minimum breaking load of strand after stranding	1.49 kN

	Maximum DC resistance of strand at 20 °C		2.921Ω/km
10	The details of steel strand are as follows		
	Minimum breaking load of strand before stranding		12.86 kN
	Minimum breaking load of strand after stranding		12.22 kN
11	Minimum number of twist to be with stood in torsion test when tested on a gauge length of 100 times diameter of wire		18 - before stranding
			16 - after stranding
12	Tolerances		
12a	Diameter of aluminium strands	Standard	3.53 mm
		Maximum	3.55 mm
		Minimum	3.51 mm
	Diameter of steel strands	Standard	3.53 mm
		Maximum	3.60 mm
		Minimum	3.46 mm
13	Lay ratio of Conductor		
13a	Steel - 6 wire layer	Maximum	18
		Minimum	16
13b	Aluminium - 12 wire layer	Maximum	14
		Minimum	12
13c	Aluminium - 18 wire layer	Maximum	13
		Minimum	11
13d	Aluminium - 24 wire layer	Maximum	12
		Minimum	11
14	Materials composition		
14a	Aluminium		99.5% with copper content less than 0.4%
14b		Steel Carbon	0.50 to 0.85 %
		Manganese	0.50 to 1.10 %
		Phosphorous	not more than 0.035 %
		Sulphur	not more than 0.045 %
		Silicon	0.10 to 0.35 %
14c	Zinc for galvanising		electrolytic high grade zinc of 99.95% purity conforming to IS 209-1979.

APPENDIX-1:

ACSR CONDUCTOR:	MOOSE	ZEBRA
1. Size of conductor:	54/7/3.53 mm	54/7/3.18 mm
2. Stranding and wire diameter		
Aluminum	54/3.53 mm	54/3.18 mm
Steel	7/3.53 mm	7/3.18 mm
3. Sectional area of Aluminum (in mm <sup>2</sup> )	528.5	428.9
4. Approximate total mass (in Kgs/KM)	2004	1622
5. Calculated resistance at 20°C Max.: ( in Ohms/Km.)	0.05552	0.06868
6. Calculated breaking load of: composite conductor (in KN) (U.T.S.) (Min)	161.20 KN	130.32 KN.
7. <u>Lay Rating</u> :-		
Steel core	Max – 18 Min - 16	Max- 28 Min-13
<u>Aluminium Layers</u>		
12 Wire Layer (Innermost Layer)	Max – 14 Min – 12	Max-17 Min - 10
18 Wire Layer (Lay immediately beneath outside Layer)	Max -13 Min – 11	Max - 16 Min - 10
24 wire layer (outside layer)	Max -12 Min -10	Max - 14 Min - 10
8. Modulus of elasticity (in Kg / mm <sup>2</sup> ):	6860	8158
Co-efficient of linear expansion of conductor per degree centigrade.	0.7036 x 106 Kg x CM2 ( 69 GN per Sq. meter ) -----19.3 x 10-6 -----	
10. Standard area of Cross Section in Sq. mm of conductor.	597.0 mm <sup>2</sup>	484.5 mm <sup>2</sup>
11. Diameter of complete conductor in	31.77 mm	28.62 mm

APPENDIX-2:

	Solid Steel and Aluminum Wires used in Steel cored Aluminum Conductors			
	ZEBRA		MOOSE	
1. Diameter	Steel	Aluminum	Steel	Aluminium
Standard (in mm)	3.18	3.18	3.53	3.53
Maximum (in mm)	3.24	3.21	3.6	3.55
Minimum (in mm)	3.12	3.15	3.46	3.51
2. Cross Sectional Area of nominal Diameter Wire (in mm <sup>2</sup> )	7.942	7.942	9.791	9.791
3. Weight (in Kg/KM)	61.95	21.47		
4. Minimum tensile strength	As per relevant IS			
5. Minimum breaking load before stranding (in KN)	10.43	1.29	12.86	1.57
6. Minimum breaking load after stranding (in KN)	9.91	1.23	12.22	1.49
7. Zinc coating of steel strands				
Number and duration:	3 (1 Min. dip)		3 dips of 1min of dips	
Minimum Weight of : Coating(in gm/ m <sup>2</sup> ) (A s per IS-4826 –1979)	260		260	
8.Maximum resistance at °C of Aluminum strands ( in Ohms / KM)	3.626	2.974	2.921	
9.Minimum Purity of aluminum rod:	-----99.5 %-----			



<b>ACSR CONDUCTOR:</b>	<b>ZEBRA</b>	<b>MOOSE</b>
1. Conductor	-----Steel cored Aluminium-----	
(a) Copper equivalent: mm <sup>2</sup>		
(b) Stranding (in mm)	54/7/3.18	54/7/3.53
2. Normal Span.	320 Meters	
Wind Span.	320 Meters	
Weight Span.		
(a) Max.	500 Meters	
(b) Min.	50 Meters	
3. Wind Pressure on full project area.	52 Kgf per M <sup>2</sup>	
4. Temperature		
(a) Minimum	5 ° C	

APPENDIX-3

(b) Maximum	67 ° C
(c) Every day	32°C
5. Factors of safety : Minimum	
(i) Every day temperature and no wind.	4
(ii) Minimum temperature and 2/3 maximum wind :	2
(iii) Every day Temperature and full wind	2
This is as per Indian Electricity Rules, 1956.	
6. Relative Humidity.	
Maximum.	100 Percent
Minimum.	60 Percent
7. Isoceramic level.	100/Years
8. Number of rainy days per year.	100 days
9. Average rainfall per year	1150 mm. approx.
10. Altitude.	Less than 350 Metres.

#### APPENDIX-4:

1. Size of conductor	30/7/3.00 mm
2. Stranding and wire diameter	
Aluminum	30/3.00 mm
Steel	7/3.00 mm
3. Sectional Area of Aluminum	212.10 mm <sup>2</sup>
4. Approximate total mass	974 Kgs/KM
5. Calculated resistance at 20° C Max.	0.139 Ohm/KM
6. Calculated breaking load of composite conductor (U.T.S) (Min)	89.67 KN
7. <u>Lay Ratio</u> :-	

Steel Core	Max - 28
	Min - 13
<u>Aluminum Layers</u>	
12 Wire layer (Layer below outside layer)	Max - 16
	Min - 10
18 Wire layer (Outside layer)	Max - 14
	Min - 10
8. Modulus of elasticity	$0.815 \times 10^6 \text{Kg/CM}^2$ (80GN/M <sup>2</sup> )
9. Co-efficient of Linear expansion of conductor.	$17.8 \times 10^{-6} / ^\circ\text{C}$
10. Standard area of cross Section in sq. mm of conductor	261.50 Sq. mm
11. Diameter of complete	21 mm conductor in mm

APPENDIX-5:

1. Diameter	Steel	Aluminum
Standard	3.00 mm	3.00 mm
Maximum	3.06 mm	3.03 mm
Minimum	2.94 mm	2.97 mm
2. Cross Sectional Area of nominal Diameter Wire	7.069 mm <sup>2</sup>	7.069 mm <sup>2</sup>
3. Weight	55.13 Kg/KM	19.11Kg/Km
4. Minimum tensile strength	134Kg/mm <sup>2</sup>	16.87Kg/mm <sup>2</sup>
5. Minimum breaking load before stranding	9.29 KN	1.17 KN
6. Minimum breaking load after stranding	8.83 KN	1.11 KN
7. Zinc coating of steel strands		

No and duration of dips	3 (1 Min. dip)	
Minimum Weight of coating	As per IS 4826-1979	
8. Maximum resistance at 20°C of Aluminum strands		4.079 Ohms/KM
9. Purity of aluminium rod		99.50%

#### APPENDIX-6

1.	Conductor	Steel cored Aluminum
(a)	Copper equivalent	130 mm <sup>2</sup>
(b)	Stranding	30/7/3.00 mm
2.	Normal Span.	320 Meters
	Wind Span.	320 Meters
	<u>Weight Span.</u>	
(a)	Max.	500 Meters
(b)	Min.	50 Meters
3.	Wind Pressure on full projected area.	52 Kgf per M <sup>2</sup>
4.	Temperature	

(a) Minimum	5 °C
(b) Maximum	67°C
(c) Every day	32°C
5. Factors of safety : Minimum	
(i) Every day temperature and no wind.	4
(ii) Minimum temperature and 2/3 maximum wind :	2
(iii) Every day Temperature and full wind	2
This is as per Indian Electricity Rules, 1956.	
6. Relative Humidity.	
Maximum.	100 Percent
Minimum.	60 Percent
7. Isoceramic level	100/years
8. Number of rainy days per year.	100 days
9. Average rainfall per year	1150 mm. approx.
10. Altitude.	Less than 350 Meters

## TECHNICAL SPECIFICATION FOR LONG ROD INSULATORS FOR TRANSMISSION LINE WORK

The insulator shall consist of standard-discs for a three-phase 50 Hz effectively earthed 220 KV transmission system heavily polluted atmosphere. The insulator shall be ball and socket type.

The size of long rod insulator, minimum creepage distance, the number to be used in different type of strings, their electromechanical strength and mechanical strength of insulator string along with hardware shall be as follows:

Sl. No.	Type of string.	Size of long rod insulator (mm)/(Unit) (220 KV)	Minimum creepage distance (mm)(220 KV)	No.of unit (220 KV)	Electromechanical strength of insulator(KN) (220 KV)

1.	Single suspension	210X2030	7595	2	90 KN
2.	Double suspension	-do-	-do-	4	90 KN
3.	Single tension.	215X2550	7595	2	160 KN
4.	Double Tension.	-do-	-do-	4	160 KN

**GENERAL TECHNICAL REQUIREMENT:**

**PORCELAIN:**

The porcelain used in the manufacture of the shell shall be ivory white, nonporous of high dielectric, mechanical and thermal strength free from internal stress blisters and thermal strength from internal stresses blisters, laminations, voids, foreign matter. Imperfections or other defects might render it in any way unsuitable for insulator shells. Porcelain shall remain unaffected by climatic conditions, ozone, acid alkalis, and zinc of dust. The manufacturing shall be by the wet process and impervious character obtained by through vetrification.

**PORCELAIN GLAZE:**

Surfaces to come in contact with cement shall be made rough by stand glazing. All other exposed surfaces shall be glazed with ceramic materials having the same temperature coefficient of expansion as that of the insulator shell. The thickness of the glaze shall be uniform throughout and the colour of the glaze shall be brown. The glaze shall have a visible luster and smooth on surface and be capable of satisfactory performance under extreme tropical climatic weather conditions and prevent ageing of the porcelain. The glaze shall remain under compression on the porcelain body throughout the working temperature range.

**METAL PARTS:**

**Cap and Ball pins:**

Twin Ball pins shall be made with drop forged steel and caps with malleable cast iron. They shall be in one single piece and duly hot dip g galvanized. They shall not contain parts or pieces joined together, welded, shrink fitted or by any other process from more than one piece of material. The pins shall be of high tensile steel, drop forged and heat malleable cast iron and annealed. Galvanizing shall be by the hot dip process with a heavy coating of zinc of very high purity with minimum of 6 dips. The bidder shall specify the grade, composition and mechanical properties of steel used for caps and pins.

**SECURITY CLIPS:**

The security clips shall be made of phosphor bronze or of stainless steel.

**FILLER MATERIAL:**

Cement to be used as a filler material shall be quick setting for curing Portland cement. It shall not cause fracture by expansion or loosening by contraction. Cement shall not react chemically with metal parts in contact with it and its thickness shall be as small and as uniform as possible.

#### **MATERIAL DESIGN AND WORKMANSHIP:**

##### **GENERAL:**

- i) All raw materials to be used in the manufacture of these insulators shall be subject to strict raw materials quality control and to stage testing quality control during manufacturing stage to ensure the quality of the final end product. Manufacturing shall conform to the best engineering practices adopted in the field of extra high voltage transmission. Bidders shall therefore offer insulators as are guaranteed by them for satisfactory performance on Transmission lines.
- ii) The design, manufacturing process and material control at various stages be such as to give maximum working load, highest mobility, best resistance to corrosion good finish, elimination of sharp edges and corners to limit corona and radio interference voltage

##### **INSULATOR SHELL:**

The design of the insulator shell shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to deterioration. Shells with cracks shall be eliminated by temperature cycle test followed by temperature cycle test followed by mallet test. Shells shall be dried under controlled conditions of humidity and temperature.

##### **METAL PARTS:**

- i) The twin ball pin and cap shall be designed to transmit the mechanical stresses to the shell by compression and develop uniform mechanical strength in the insulator. The cap shall be circular with the inner and outer surfaces concentric and of such design that it will not yield or distort under loaded conditions. The head portion of the insulator or is under tension the stresses are uniformly distributed over the pinhole portion of the shell. The pinball shall move freely in the cap socket either during assembly of a string or during erection of a string or when a string is placed in position.
- ii) Metal caps shall be free from cracks, seams, shrinks, air holes, blowholes and rough edges. All metal surfaces shall be perfectly smooth with no projecting parts or irregularities which may cause corona. All load bearing surfaces shall be smooth and uniform so as to distribute the loading stresses uniformly. Pins shall not show any macroscopically visible cracks, insulations and voids.

##### **GALVANIZING:**

All ferrous parts shall be hot dip galvanized six times in accordance with IS: 2629. The zinc to be used for galvanizing shall conform to grade Zn 99.5 as per IS: 209. The zinc coating shall be uniform, smoothly adherent, reasonably light, continuous and free from impurities such as flux ash, rust stains, bulky white deposits and blisters. Before ball fittings are galvanized, all die flashing on the shank and on the bearing surface of the ball shall be carefully removed without reducing the designed dimensional requirements.

##### **CEMENTING:**

The insulator design shall be such that the insulating medium shall not directly engage with hard metal. The surfaces of porcelain and coated with resilient paint to offset the effect of difference in thermal expansions of these materials.

**SECURITY CLIPS (LOCKING DEVICES):**

The security clips to be used as locking device for ball and socket coupling shall be „R“ shaped hump type to provide for positive locking of the coupling as per IS: 2486 (Part-IV). The legs of the security clips shall allow for sore adding after installation to prevent complete withdrawal from the socket. The locking device shall be resilient corrosion resistant and of sufficient mechanical strength. There shall be no possibility of the locking device to be displaced or be capable of rotation when placed in position and under no circumstances shall it allow separation of insulator units and fitting „W“ type security clips are also acceptable. The hole for the security clip shall be countersunk and the clip shall be of such design that the eye of the clip may be engaged by a hot line clip puller to provide for disengagement under energized conditions. The force required for pulling the clip into its unlocked position shall not be less than 50 N (5 Kgs.) or more than 500N (50 Kgs.)

**BALL AND SOCKET DESIGNATION:**

The dimensions of the balls and sockets for 80 KN long rod insulators shall be of 16mm and for 120 KN shall be of 20mm designation in accordance with the standard dimensions stated in IS: 2486 (Part-III).

**DIMENSIONAL TOLERANCE OF INSULATORS DISCS:**

It shall be ensured that the dimensions of the long rod insulators are within the limits as per relevant IEC/ISS.

**TESTS**

The following tests shall be carried out on the insulator string.

**TYPE TEST:**

This shall mean those tests, which are to be carried out to prove the design, process of manufacture and general conformity of the material and product with the intents of this specification. These tests shall be conducted on a representative number of samples prior to commencement of commercial production. The Bidder shall indicate his schedule for carrying out these tests.

**ACCEPTANCE:**

This shall mean these tests, which are to be carried out on samples taken from each lot offered for pre-dispatch inspection for the purpose of acceptance of the lot.

**ROUTINE TESTS:**

This shall mean those tests, which are to be carried out on each insulator to check the requirements, which are likely to vary during production.

**TESTS DURING MANUFACTURE:**

Stage tests during manufacture shall mean those tests, which are to be carried out during the process of manufacture to ensure quality control such that the end product is of the designed quality conforming to the intent of this specification.



**TEST VALUE:**

For all type and acceptance tests the acceptance values shall be the value guaranteed by the bidder in the guaranteed technical particulars of the acceptance value specified in this specification of the relevant standard whichever is more stringent for that particular test.

**TEST PROCEDURE AND SAMPLING NORMS:**

The norms and procedure of sampling for the above tests shall be as per the relevant Indian Standard or the internationally accepted standards. This will be discussed and mutually agreed to between the supplier and purchaser before placement of order. The standards and normal according to which these tests are to be carried out are listed against each test.

**TYPE TESTS:**

The following type test shall be conducted on a suitable number of individual unit components, materials or complete strings.

On the complete insulator string with hardware fittings

- a) Power frequency voltage withstand test with corona control rings and under wet condition. : BS:137(Part-I)
- b) Switching surge voltage withstand test under wet condition (400 only)
- c) Impulse voltage withstand test under dry condition. : IEC: 383
- d) Impulse voltage flashover test under dry condition.
- e) Voltage distribution test. : As per this specification.
- f) Corona & RIV test under dry condition. : As per this specification.
- g) Mechanical strength test. : As per this specification.
- h) Vibration

<u>ACCEPTANCE TESTS For insulator:</u>	
a) Visual examination	: IS:731
b) Verification of dimensions.	: IS:731
c) Temperature cycle test.	: IS:731
d) Galvanizing test.	: IS:731
e) Mechanical performance test.	: IEC:575
f) Test on locking device for ball and socket coupling.	: IEC:372
g) Eccentricity test.	: As per this specification.
h) Electro-mechanical strength test.	:
i) Puncture test.	: IS:731
j) Porosity test.	: IS:731

<u>ROUTINE TESTS For insulators:</u>	
a) Visual inspection.	IS:731
b) Mechanical routine test.	

c) Electrical routine test.	IEC:383
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<b>TEST DURING MANUFACTURE:</b>	
On all components as applicable.	
a) Chemical analysis of zinc used for galvanizing.	
b) Chemical analysis, mechanical and metallographic test and magnetic particle inspection for malleable castings.	
c) Chemical analysis, hardness test and magnetic particle inspection for forgings.	: As per this specification.
d) Hydraulic Internal Pressure tests on shell.	
e) Crack detection test for metal parts.	

**ADDITIONAL TEST:**

The purchaser reserves the right for carrying out any other tests of a reasonable nature at the works of the supplier/ laboratory or at any other recognized laboratory/ research institute in addition to the above mentioned type, acceptance and routine tests at the cost of the purchaser to satisfy that the material complies with the intent of this specification.

**CO-ORDINATION FOR TESTING:**

For insulator strings, the supplier shall arrange to conduct testing of their insulators with the hardware fittings to be supplied to the purchaser by other suppliers. The supplier is also required to guarantee overall satisfactory performance of the insulator with the hardware fittings.

**NOTE:**

In respect of electrical tests on a complete string consisting of insulators and hardware guarantee of values of responsibility of testing shall be with hardware manufacturer of RIV corona and voltage distribution test and with insulator manufacturer for all other tests.

**TEST CHARGES AND TEST SCHEDULE:**

**TYPE TEST:**

The insulator offered shall be fully type tested as per this specification. In case the equipment of the type and design offered, has already been type tested in an independent test laboratory. The successful bidder shall furnish four sets of type test reports for the approval from owner. The purchaser reserves the right to demand repetition of some or all type tests in the presence of purchasers" carrying representative. For this purpose the bidder may quote unit rates for carrying out each type test. These prices shall be taken into consideration for bid evaluation. For any change in the design/type already type tested and the design/type offered against this specification, purchaser reserves the right to demand repetition of tests without any extra cost.

**ACCEPTANCE AND ROUTINE TEST:**

All acceptance and routine tests as stipulated herein shall be carried out by the supplier in the presence of purchaser's representative.

Immediately after finalization of the programme of type/ acceptance/ routine testing, the supplier shall give sufficient advance intimation to the purchaser to enable him to depute his representative for witnessing the tests.

For type tests involving tests on a complete insulator string with hardware fittings, the purchasers will advise the supplier of the hardware fittings to provide the necessary fittings to the place of the test.

In case of failure of the complete string in any type tests, the supplier whose product has failed in the tests shall get the tests repeated at his cost. In case of any dispute, assessment of the purchaser as to the items that has caused the failure in any of the type tests shall be final and binding.

#### **INSPECTION:**

- i. Purchaser and its representative shall at all times be entitled to have access to the works and to all places of manufacturer where insulators are manufactured and the supplier shall afford all facilities to them for unrestricted inspection of the works, inspection of materials, inspection of manufacturing process of insulators and for conducting necessary tests as specified herein.
- ii. The supplier shall keep the purchaser informed in advance of the time of starting and of progress of manufacture of insulators in its various stages so that arrangements could be made for inspection.
- iii. No material shall be dispatched from its point of manufacture unless the materials has been satisfactorily inspected and tested.
- iv. The acceptance of any quantity of insulators shall in no way relieve the supplier of his responsibility for meeting all the requirement of this specification and shall not prevent subsequent rejection, if such insulators are later found to be defective.

#### **IDENTIFICATION MARKING:**

Each unit of insulator shall be legibly and indelibly marked with the trade mark of the supplier, the year of manufacture, the guaranteed combined mechanical and electrical strength in kilo-Newton's abbreviated by „KN“ to facilitate easy identification and proper use.

The marking shall be on porcelain for porcelain insulators. The marking shall be printed and not impressed and the same shall be applied before firing.

#### **QUALITY ASSURANCE PLAN:**

The successful bidder hereunder shall invariably furnish following information.

- i. Statement giving list of important raw materials, names of sub-suppliers for the raw materials, list of standards according to which the raw material are tested, list of tests normally carried out on raw materials in presence of bidder's representative, copies of test certificates.
- ii. Information and copies of test certificates as in (i) above in respect of bought out materials.
- iii. List of manufacturing facilities available.
- iv. Level of automation achieved and lists of area where manual processing exists.
- v. List of areas in manufacturing process, where stage inspections are normally carried out in quality control and details of such tests and inspection.
- vi. Special features provided in the equipment to make it maintenance free.
- vii. List of testing equipping available with the bidder for final testing of equipment specified and test plant limitation, if any, vis-à-vis the type, special, acceptance and routine tests specified in the relevant

standards. These limitations shall be very clearly brought out in schedule of deviations from specified test requirements.

The supplier shall within 30 days of placement of order submit the following information to the owner.

- i) List of raw material and the names of sub-suppliers selected from those furnished along with the offer.

## **Spacers:**

### **General:**

Spacers shall conform to IS 10162. Spacers are to be located at a suitable spacing to limit the short circuit forces and also to avoid snapping of sub conductors during short circuit conditions.

### **Constructional features:**

No magnetic material shall be used in the fabrication of spacers except for GI bolts and nuts. Spacer design shall be made to take care of fixing and removing during installation and maintenance. The design of the spacers shall be such that the conductor does not come in contact with any sharp edge.

## **TECHNICAL SPECIFICATION FOR HARDWARE FITTINGS**

### **SUITABLE FOR GALVANISED STEEL STRANDED GROUNDWIRE (7/3.15mm and 7/3.66 mm) ACCESSORIES AND POWER CONDUCTOR ACSR PANTHER, ACSR ZEBRA AND MOOSE.**

#### **SCOPE:**

This Specification covers design (if required), manufacture, testing at manufacturer's Works, supply and delivery of GSS), power conductor and ground wire accessories, insulator and hardware fittings for string insulators suitable for use in 220 KV Over-head transmission lines and sub- stations of OPTCL. The hard wares to be supplied shall be as per approved drawings of OPTCL. Any change there of shall be with due permission of Sr. G.M (CPC).The firm shall submit his drawings for approval of OPTCL and only after

which the manufacturing shall be started.

The materials/equipment offered, shall be complete with all components, which are necessary or usual for the efficient performance and satisfactory maintenance. Such part shall be deemed to be within the scope of contract.

### STANDARDS

The materials covered under this Specification shall comply with the requirement of the latest version of the following standards as amended up to date, except where specified otherwise.

i)	IS:2486 Part-II & III	Insulator fitting for overhead power lines with a nominal voltage greater than 1,000 volts.
ii)	IS:2121 Part I & II	Conductor & earth wire accessories for overhead power lines.
iii)	IS:9708	Stock Bridge Vibration Dampers on overhead power lines.
iv)	IS:2633	Method of testing of uniformity of coating on zinc coated articles
v)	IS:209	Specification for Zinc.
vi)	BS:916	Specification for Hexagonal bolts and nuts.

### MATERIALS AND DESIGN

Aluminium and aluminium alloys, malleable iron and forged steel, having required mechanical strength, corrosion resistance and machinability depending on the types of application for which accessories/fittings are needed, shall be employed.

In manufacturer of the accessories / fittings, the composition of the aluminium alloys used shall be made available to Employer if required for verification.

The materials offered shall be of first class quality, workmanship, well finished and approved design. All castings shall be free from blow-holes, flaws, cracks or other defects and shall be smooth, close grained and true forms and dimensions. All machined surfaces should be free, smooth and well finished. Metal fittings of specified material for conductor and earth wire accessories and string insulator fittings are required to have excellent mechanical properties such as strength, toughness and high resistance against corrosion. All current carrying parts shall be so designed and manufactured that contact resistance is reduced to the minimum.

All bolts, nuts, bolt-heads shall be the white worth's standard thread. Bolt heads and nuts shall be hexagonal. Nuts shall be locked in an approved manner. The treads in nuts and tapped holes shall be cut after galvanizing and shall be well fabricated and greased. All other treads shall be cut before galvanizing. The bolt treads shall be undercut to take care of increase in diameter due to galvanizing.

All nuts shall be made of materials to Clause 4.8 of IS: 1367 (latest edition) with regard to its mechanical properties.

The general design conductor and earth wire accessories and insulator fittings shall be such as to ensure uniformity, high strength, free from corona formation and high resistance against corrosion even in case of high level of atmosphere pollution.

All hooks, eyes, pins, bolts, suspension clamps and other fittings for attaching to the tower or to the line conductor or to the earth wire shall be so designed that the effects of vibration, both on the conductor and the fittings itself, are minimized.

Special attention must be given to ensure smooth finished surface throughout. Adequate bearing area between fittings shall be provided and point or line contacts shall be avoided.

All accessories and hardware shall be free from cracks, shrinks, slender air holes, burrs or rough edges. The design of the accessories and hardware shall be such as to avoid local corona formation or discharge likely to cause interference to tele-transmission signals of any kind.

**GALVANISING:**

All ferrous parts of conductor and ground wire accessories and insulator hardware shall be galvanized in accordance with IS: 2629-Recommended Practice for hot dip galvanizing of iron and steel or any other equivalent authorized standards. The weight of zinc coating shall be determined as per method stipulated in IS: 2633 for testing weights, thickness and uniformity of coating of hot dip galvanized articles or as per any other equivalent authoritative standards. The zinc used or galvanization shall conform to grade Zn 98 of IS: 209. The galvanized parts shall withstand four (4) dips of 1 minute each time while testing uniformity of zinc coating as per IS: 2633.

Spring washers shall be electro galvanized.

**ACCESSORIES FOR CONDUCTOR AND GROUND WIRE, MID SPAN COMPRESSION JOINTS: FOR ACSR-PANTHER, ZEBRA, MOOSE AND GROUNDWIRE OF 7/3.15 and 7/3.66 mm:**

The Mid-Span Joints for conductor and earthwire shall be of compression type. The conductor mid-span joints shall comprise of outer aluminium sleeve of extruded aluminium (99.5% purity) and inner sleeve HDG Steel. All filler plug shall also be provided. The ground wire mid-span joints shall be of HDG steel. The sleeves shall be of circular shape suitable for compression into hexagonal shape.

The compression type mid-span straight joints shall be suitable for making joints in the ACSR "PANTHER, ZEBRA & MOOSE" conductor or in the galvanized steel stranded ground wire.

The joints shall be so designed that when installed no air space is left within the finished joints. The joints shall have the conductivity as specified in relevant Clause.

The joints shall conform to IS: 2121 (latest edition) unless specified otherwise. The details of the joints both suitable for ACSR- Panther, Zebra & Moose and ground wire are given in the technical particulars.

The inner and outer diameters and lengths of the offered joints before and after compression shall be clearly shown in the drawings.

**VIBRATION DAMPER FOR ACSR PANTHER, ZEBRA MOOSE AND GROUND WIRE (7/3.15 and 7/3.66 mm)**

Vibration Damper having 4 resonance frequencies characteristic commonly called 4R Damper shall be offered. The Damper shall eliminate fatigue on the conductor due to vibration and damp out the vibration effectively so that no damage due to vibration is caused to conductor / ground wire / string.

The dampers are proposed to be used at all tension locations and also at suspension locations. One or more dampers are proposed to be used on tension/suspension locations depending upon the span.

Bidder shall also recommend the number of damper required to effectively damp out conductor or ground wire vibration for different values of span lengths and the distance of fixation.

Vibration dampers shall be of approved design. The clamps of the vibration dampers shall be made of aluminium alloy, so designed as to prevent any damage while fixing on the conductor during erection or in continued operation. The fastening bolts should be approved by the Employer. The spring washers should be electro galvanized and of minimum 2 mm thickness.

The messenger cable shall be made from high tensile strength steel strands in order to prevent subsequent

drop of weight in service.

Clamping bolts shall be provided with self-locking nuts as designed to prevent corrosion of the threads. All ferrous parts including the messenger cable shall be dip galvanized. The end of the messenger cable shall be effectively sealed to prevent corrosion.

The vibration dampers and its attachment shall have smooth surface so that no corona occurs on them.

The clamps of the stock bridge vibration dampers shall be so designed that in case of loosening of the bolt or changing free parts of the clamp, it does not allow the damper to disengage from the conductor.

#### **REPAIR SLEEVE FOR ACSR PANTHER, ZEBRA, MOOSE AND GROUNDWIRE:**

Compression type repair sleeves shall be offered to provide reinforcement for conductor with broken or damaged aluminium strands/galvanized steel ground wire broken in damaged steel strands. The repair sleeve shall be designed to make good a conductor of which not more than one-sixth (1/6th) of the strands in the outermost layer and damaged or severed. The repair sleeves after compression should present a smooth surface.

#### **SUSPENSION CLAMPS: FOR GROUND WIRE**

Suspension clamps of suitable size are required for holding the galvanized steel stranded ground wire at suspension points. The suspension clamps shall be suspended from the lower hanger or „D“ belt of 16 mm. dia. And should, therefore, be supplied with a suitable attached that would allow the clamps to swing freely both in the transverse and longitudinal direction. The clamps shall be so designed that the effect of vibration both on the ground wire and the fittings itself is minimum.

The clamps shall be manufactured and finished so as to avoid sharp radii of curvature, ridges which might lead to localized pressure and damage the ground wire in service.

The clamps shall be made of heat treat malleable iron one Eye hook made of forced steel. The entire assembly shall be hot dip galvanized.

The clamping surface shall be smooth and formed to support the ground wire on long easy curves to take care or required steel vertical and horizontal angles.

The clamps shall permit the ground wire to slip before the failure of the latter occurs. The leg of U- bolt holding the keeper piece of the clamps shall be kept sufficient long and shall be provided with threads, nuts and locking nuts for fixing the flexible earthing bond between the suspension clamps and tower structures.

#### **TENSION CLAMPS (DEAD AND ASSEMBLY) FOR GROUND WIRE:**

Compression type dead end assembly of G.S.S. ground wire shall be required for use on the tension towers. The dead end assembly shall be supplied with complete jumper terminals, nuts and bolts suitable link pieces between the steel clevis and tower strain plates so as to provide sufficient flexibility not less than that of G.S.S. ground wire and the tensile strength not less than 90% that of the G.S.S. ground wire.

The assemblies shall comprise of compression type dead end clamps and one anchor shackle made of forged steel. The entire assembly shall be hot dip galvanized.

One of bolt holding joint per terminal of dead end assemblies shall be kept sufficiently long and threaded and shall be provided with nuts, washers and locking nuts for fixing the flexible earthing bond between the dead-end clamp and tower structures.

#### **BONDING PIECES (FLEXIBLE COPPER EARTHING BOND FOR EARTH WIRE 7/3.15 and 7/3.66 mm):**

The tenderer shall offer flexible copper earthing bonding pieces for connecting the ground wire suspension and tension clamps and tower legs suitable for earthing.

Each bond piece shall have suitable compression type galvanizes steel lug or thimble on either and for making connections to clamp and tower legs. The size, strength, etc. of the bonding piece is given in this Specification.

### INSULATOR HARDWARES

The insulator hardware and string assemblies to be offered by the tenderer shall be suitable to meet the requirement given in the specific technical particulars as detailed hereinafter. Hardware for suspension and tension insulator shall be suitable for insulator with normal pin shank diameter of 20 mm. in case of tension string unit and 16mm. for suspension string unit. Each insulator string shall generally include the following hardware components.

<b>Single Suspension Set.</b>	<b>Double Suspension Set.</b>
a) Ball Hook	a) Ball Hook.
b) tower side arcing horn	b) Socket clevis with R-Type security clip-3 Nos.
c) Socket Eye with R-Type security clip.	c) Yoke Plate-2 Nos.
d) Line side arcing horn.	d) Tower side arcing horns- 2Nos.
e) Armour grip suspension clamps	e) Ball clevis – 2 Nos.
	f) Line side arcing horns-2 Nos.
	g) Clevis Eye.
	h) Armour Grip Suspension Clamp.
<b>Single Tension Set :</b>	<b>Double Tension Set :</b>
a) Anchor Shackle.	a) Anchor Shackle.
b) Ball Eye.	b) Chain Link
c) Tower side arcing horn.	c) Yoke Plate-2 Nos.
	d) Tower side arcing horns- 2Nos.
d) Socket Clevis with R-Type security clip.	
e) Line side arcing horn	e) Ball clevis – 2 Nos.
f) Compression type dead end clamp.	f) Socket clevis with R-type security clip - 2 Nos.
	g) Line side arcing horns.
	h) Compression type dead end clamps.

### ARMOUR GRIP SUSPENSION CLAMPS:

Armour Grip Suspension Clamp shall consist of 2 neoprene insert, one set of armour rods made of aluminium alloy, two aluminium housing having inner profile matching with the profile of the armour rods and supporting strap made of aluminium alloy. The A.G. Type suspension clamp shall be designed, manufactured and finished as to have a suitable shape without sharp edges at the end and to hold the respective conductor properly. It should, however, have sufficient contact surface to minimize damage due to fault current. The clamp shall be of Armour Grip Type.

The A.G. Type suspension clamp shall permit the conductor to slip before the occurrence of failure of the



conductor and shall have sufficient slip strength to resist the conductor tension under broken wire conditions. The clamp shall have slip strength of not less than 15 % of respective conductors.

#### **TENSION CLAMPS:**

The Tension Clamps shall be made out of aluminium alloy and of compression type suitable for PANTHER, ZEBRA & MOOSE conductor. The tension clamps shall not permit slipping or damage to failure of the complete conductor or any part thereof at a load less than 90% of the ultimate strength of conductor. The mechanical efficiency of tension / clamps shall not be affected by method of erection involving come / along or similar clamps or tension stringing operation during or after assembly and erection of tension clamp itself. The tension clamp shall be of a design that will ensure unrestricted flow of current without use of parallel groove clamps. The clamps shall be as light as possible.

#### **ARCING HORNS:**

Each hardware assembly shall have provision for attaching arcing horns of both adjustable and non/adjustable type across the suspension and tension strings or tower side. However each hardware assembly shall be provided with arching horn of fixed type on line side only.

#### **UNIVERSAL JOINTING COMPOUND:**

BENDEX-HV' Universal jointing compound which is a chemically inert compound to be used as filler for the compression joints and dead end clamps to be supplied.

#### **TESTS, TEST CERTIFICATE AND PERFORMANCE REPORTS:**

The fittings and accessories for the power conductor and G.S.S. ground wire, insulator and hardwares shall be tested in accordance with IS:2121, IS:2486, IS:9708 (For V Dampers), BS:916 for hexagonal bolts and nuts or any other authoritative equivalent standards. Six sets of type and routine test certificates and performance reports are to be submitted by the bidder.

The Employer however, reserves the right to get all the tests performed in accordance with the relevant I.S. Specification as Acceptance Test in presence of Employer-s representatives.

The tenderer shall clearly state the testing facilities available in the laboratory at his Works and his ability to carry out the tests in accordance with this Specification. All the specified tests shall be carried out without any extra cost.

#### **Acceptance Test for power conductor and G.S.S. ground wire accessories:**

- a) Visual examination
- b) Dimensional verification
- c) Failing load test
- d) Slip strength test (for clamps)
- e) Electrical resistance test
- f) Resonance frequency test (for vibration dampers)
- g) Fatigue test (for vibration dampers)
- h) Mass pull off test (for vibration dampers)
- i) Galvanizing test.

#### **ACCEPTANCE TEST FOR HARDWARES:**

- a) Dimensional verification.
- b) Ultimate tensile test.
- c) Slip strength test.
- d) Electrical resistance test.
- e) Heating cycle test
- f) Breaking strength of full string assembly.
- g) Galvanizing test.

**SPECIFIC TECHNICAL REQUIREMENTS FOR CONDUCTOR ACCESSORIES AND INSULATOR HARDWARES**

Conductor	Panther/zebra/Moose	GSS ground wire
a) Type	ACSR Panther/zebra/Moose	Ground wire.
b) Material	Aluminium conductor steel reinforced.	Galvanised stranded steel wire.
c) Strand & Wire diameter.	Panther/Zebra/Moose Aluminium 30/3mm Steel 7/3mm,/all.54/3.18mm steel- 7/3.18mm,/ all.54/3.53mm steel- 7/3.53mm resp.	7/3.15 mm. and 7/3.66 mm
d) Weight per Km.	974/1622 /2004Kg/Km.	426 Kg/Km.and 583Kg/Km
e) Overall diameter	21/28.62/31.7 mm	9.4mm. and 10.98 mm
f) D.C. Resistance at 20 deg. C when corrected to standard weight.	0.13750/0.06915/0.05552 Ohms/KM.	3.375 Ohms/KM
g) Minimum Breaking load/Ultimate tensile strength.	144/13289/16120 Kg	5710 Kg and 10580 Kg
h) Maximum working tension at minimum temperature & 2/3 full wind.	3806/4325 Kg.	1393 Kg.
i) Maximum Sag at maximum temperature & no wind.	6120/9240 mm.	5150mm.

**DISC Insulator (for suspension & tension Insulator strings):**

Disc Insulators	Suspension	Tension
a) Type	Ball & Socket	Ball & Socket.
b) Ball size	16mm. Alt. B (IS:2486 Pt.II)	20mm. Alt. B/20mm (IS:2486 Pt.II)
c) Diameter	254/255 mm.	255/280 mm
d) Spacing	146/145 mm.	145/170mm.
e) E.M. strength	90/120 KN,.	120/160 KN.

	Single Suspension	Single Tension	Double Suspension	Double Tension
String Arrangements :				
a) No. of insulator discs.	14	14	2X14	2X14
b) Length of string assembly (mm)	1672/2340	1851/3003	1837/2243	2132/3082

**GENERAL REQUIREMENT FOR POWER CONDUCTOR & GROUND WIRE:**

**I) ACCESSORIES.**

**a) Mid-span compression Joints:**

	Suitable for ACSR "Panther"/zebra/Moose	Suitable for G.S.S. ground wire 7/3.15 and 7/3.66 mm.		
i) Type	Compression	Compression		
ii) Material	Extruded	Extruded		
a) Outer sleeve	Aluminium	Aluminium		
b) Inner sleeve	Steel (Galvanized)	Steel (Galvanized)		
	Before Compression	After Compression	Before Compression	After Compression
iii) Dimension of Compression joint for Aluminium part.	Outer dia: 38mm Inner Dia: 23mm. Minimum length: 610mm. Minimum weight 1.2 kg. (approx)	Adjacent Size 32 mm. Diagonal Size: 37mm.		

iv) Dimension of compression joint for Steel Part	Outer dia: 18mm Inner dia. 9.3 mm Adjacent Size: 15.1mm Minimum Length: 203mm. Minimum weight 0.28 kg. (approx)	Adjacent size: 15.1mm. 10mm. Minimum	Outer dia.18mm. Inner dia : size : 17.4mm Length 203mm.	Adjacent Size Diagonal:
v) Minimum failing load.	95% of ultimate tensile strength of conductor		95% of ultimate tensile strength of ground wire	
vi) Electrical resistance 20 Deg. C	75% of measured resistance of the equivalent length of conductor.			
vii) Galvanizing :				
a) Ferrous Parts.	Hot-dip galvanized (HDG)		Hot dip galvanized.	
b) No. of dips 4 dips for 1 minute withstand.	4 dips		4 dips	
viii) Minimum Corona formation voltage	110% of maximum line to ground voltage			

**b) VIBRATION DAMPERS:**

(SUITABLE FOR ACSR CONDUCTOR: PANTHER/ZEBRA /MOOSE AND G.S.S. GROUND WIRE 7/3.15 and 7/3.66 mm)

- i) Type: 4R Stock Bridge Type
- ii) Distance between conductors: 74.5 mm. & axis of the Vibration Damper.
- iii) Messenger Cable: 130 Kg/mm sq. quality (19 strands)
- iv) Bolt size: 16 mm. (dia.)
- v) Slip strength of messenger Cable: 500 Kgs.
- vi) Mass pull-of: As per I.S.S.

**c) REPAIR SLEEVES:**

SUITABLE FOR ACSR PANTHER/ZEBRA/MOOSE CONDUCTOR AND G.S.S. GROUND WIRE.

	Suitable for ACSR panther/Zebra/Moose.	Suitable for G.S.S. Ground wire.
i) Type	Compression	Compression.

ii) Material	Extruded aluminium.	Steel
iii) Min. failing load	95% of UTS of conductor	95% of UTS of ground wire.
iv) Length	241/279 mm.	200 mm (150 mm. min.)
v) Electrical Resistance at 20 deg. C	Not more than 75% of the resistance of equivalent length of conductor.	
vi) Galvanizing :		
a) Ferrous parts	Hot – dip galvanized	Hot – dip galvanized
b) No. of dips for one-minute stand.	4 dips	4 dips

**d) SUSPENSION CLAMP:**

**FOR GROUND WIRE 7/3.15 and 7/3.66 mm**

i) Type	Envelop type
ii) Material	Forged Steel / NCL.
iii) Minimum slip strength :	25% of UTS of ground wire.
iv) Dimension :	
(a) Overall length	230mm
(b) Inner dia. (before compression).	10mm.
(c) Outer diameter (before compression).	18mm.
(d) After Compression :	
Adjacent	15.1 mm.
Diagonal side	17.4mm.
(e) Galvanizing :	
(i) Ferrous parts.	: Hot-dip galvanized.
(ii) No. of dips for one-minute withstand.	: 4 dips

**e) BONDING PIECES:**

a) Material	Flexible copper bond (37/7/0.417 mm. tinned copper flexible stranded cable).
b) Length	Not less than 750 mm.
c) Bolt size	16mm x 40 mm.
d) Copper area.	34 sq.mm.
e) Thickness of long	6 mm.
f) Material for connecting socket.	Tinned Brass

**f) INSULATOR HARDWARES:**

**String hardware's:**

**Material and strength**

Description of item.	Material	UTS.
i) Bolt hook	Forged Steel	11,500 Kgs (90 KN)
ii) Anchor Shackle	-do-	15,500 Kgs (120 KN)
iii) Socket Eye Horn Holder.	- do-	11,500 Kgs (90 KN)
iv) Socket Clevis.	-do-	15,500 Kgs.
v) Ball Clevis	-do-	15,500 Kgs.
vi) Clevis Eye	-do-	15,500 Kgs.
vii) Socket Eye.	-do-	15,500 Kgs.
vii) Bottom / Top Yoke plate :		
Double suspension	Mild Steel	11,500 kgs.
Double tension	-do-	15,500 Kgs.
ix) Arcing Horn	-do-	
x) Suspension Clamp.	Aluminium Alloy and Neoprene.	
xi) Tension Clamp.	All.Alloy & steel	11,500 Kgs.
xii) Ball Pin	High tensile forged steel. (hot dip galvanized)	90% of UTS of conductor
xiii) Security Clip Minimum failing load String (KN)	Brass (R-Type)	
	Single Suspension	: 11,500
	Single Tension	: 11,500/15,500
	Double Suspension	: 11,500
	Double Tension	: 11,500/15,500

**II) CLAMPS**

	Single suspension string	Single tension string	Double suspension string	Double tension string.
i) Type	AGS Type	Compression Type	AGS Type	Compression Type
ii) Material	Aluminium Alloy and neoprene	Aluminium Alloy and Steel	Aluminium Alloy and neoprene	Aluminium Alloy and Steel
ii) Minimum slip strength	Not less than 15%	90% of UTS of conductor	Not less than 15% of UTS of conductor	90% of UTS of conductor
iv) Minimum failing load (kg)	11,500	90% of UTS of conductor	11,500	90% of UTS of conductor

### III) Suspension assembly: armour grip clamp.

1. The armour grip suspension clamp shall comprise of retaining strap, support housing, elastomer inserts with aluminum reinforcements and AGS preformed rod set.
2. Elastomer insert shall be resistant to the effects of temperature up to 85 deg. C, ozone, Ultraviolet radiation and other atmospheric contaminants likely to be encountered in service. The physical properties of the elastomer shall be of approved standard. It shall be electrically shielded by a cage of AGS preformed rod set. The elastomer insert shall be so designed that the curvature of the AGS rod shall follow the contour of the neoprene insert.
3. The AGS preformed rod set shall be as detailed above in general except that the length of the AGS preformed rods shall be such that it shall ensure sufficient slipping strength and shall not introduce unfavorable stress on the conductor under all operating conditions.

### IV) Fasteners: bolts, nuts & washers.

1. All bolts and nuts shall conform to IS-6639 – 1972. All bolts and nuts shall be galvanized. All bolts and nuts shall have hexagonal heads, the heads being truly concentric, and square with the shank, which must be perfectly straight.
2. Bolts up to M16 and having length upto ten times the diameter of the bolt should be manufactured by cold forging and thread rolling process to obtain good and reliable mechanical properties and effective dimensional control. The shear strength of bolt for 5.6 grade should be 310 Mpa minimum as per IS-12427. Bolts should be provided with washer face in accordance with IS-1363 Part-I to ensure proper bearing.
3. Fully threaded bolts shall not be used. The length of the bolt shall be such that the threaded portion shall not extend into the place of contact of the component parts.
4. All bolts shall be threaded to take the full depth of the nuts and threaded enough to permit the firm gripping of the component parts but not further. It shall be ensured that the threaded portion of the bolt protrudes not less than 3 mm and not more than 8 mm when fully tightened. All nuts shall fit and be tight to the point where shank of the bolt connects to the head.
5. Flat washers and spring washers shall be provided wherever necessary and shall be of positive lock type. Spring washers shall be electro-galvanized. The thickness of washers shall conform to IS-2016-1967.
6. The bidder shall furnish bolt schedules giving thickness of components connected, the nut and the washer and the length of shank and the threaded portion of the bolts and size of holes and any other special details of this nature.
7. To obviate bending stress in bolt, it shall not connect aggregate thickness more than three time its diameter.

8. Bolts at the joints shall be so staggered that nuts may be tightened with spanners without fouling.
9. Fasteners of grade higher than 8.8 are not to be used and minimum grade for bolts shall be 5.6.

**Electrical Design:**

The normal duty and heavy duty suspension, light duty, normal duty and heavy duty tension insulator sets shall all comply with the technical requirements and satisfy the test requirements.

**Mechanical design:**

The mechanical strength of the insulators and insulator fittings shall be as stated In this specification. The design shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to the development of defects.

Insulating material shall not engage directly with hard metal. All fixing materials shall be of approved quality, shall be applied in an approved manner and shall not enter into chemical action with the metal parts or cause fracture by expansion in service. Where cement is used as a fixing medium, cement thickness shall be as small and even as possible and proper care shall be taken to correctly centre and locate the individual parts during cementing.

**Technical Specification for Design, Supply and Testing of Hard ware fittings**

**Type tests:**

The following type tests shall be conducted on hardware fittings.

**A. On suspension hardware fittings only.**

- (a) Magnetic power loss test.
- (b) Clamp slip strength Vs torque
- (c) Mechanical strength test.
- (d) On one test on elastomer.

**B. On Tension hard ware fittings only.**

- |     |   |                       |
|-----|---|-----------------------|
| (a) | Electrical resistance test for<br>Dead end assembly | IS 2486 (Part-I) 1971 |
| (b) | Heating cycle test for<br>dead end assembly         | -do-                  |
| (c) | Slip strength test for<br>dead end assembly         | IS 2486 (Part-I)      |
| (d) | Mechanical strength test.                           |                       |

**C. On both suspension and tension hardware fittings.**

- |     |  |                       |
|-----|--|-----------------------|
| (a) | Visual examination.  | IS-2486 (Part-I) 1971 |
| (b) | Verification of dimension.   | -do-                  |
| (c) | Galvanizing / electroplating test.   | -do-                  |
| (d) | Mechanical strength<br>test of each component<br>(including corona control |                       |



- ring/grading ring and arcing horn)
- (e) Mechanical strength test of welded joint.
- (f) Mechanical strength test for corona control ring/grading ring and arcing horn. BS-3288 (Part-I)
- (g) Test on locking device for ball and socket coupling. IEC – 3721984
- (h) Chemical analysis, hardness tests, grain size, inclusion rating and magnetic particle inspection for forging/casting.

**D. On suspension hardware fittings only.**

- (a) Clamp slip strength ver as torque test for suspension clamp.
- (b) Shore hardness test of elastomer cushion for AG suspension clamp.
- (c) Bend test for armour rod set. IS-2121 (Part-I)
- (d) Resilience test for armour rod set. -do-
- (e) Conductivity test for armour rod set. -do-

**E. On tension hardware fittings only**

	Unit.	37/4.00 mm <sup>2</sup>
<b>MID SPAN COMPRESSION JOINTS FOR CONDUCTORS.</b>		
Weight of the joint.	Kg.	1.27
Slipping strength.	KN	129.6
Resistance of the completed joint.	Ohms.	0.000027
Materials of the joints specify alloy type and its aluminum contents.		6201
Before compression dia of sleeve.	mm	
(a) Inner diameter.		31+/-0,5
(b) Outer diameter.		48+/-1.0
Dimensions after compression.	mm	
(a) Corner to corner.		46+/-0.5
(b) Surface to surface.		40+/-0.5
Length of the sleeve.	mm	
(a) Before compression.		500+/-5.0

(b) After compression.		540+/-5.0
Compression pressure.	Tone	100
Whether designed for intermittent or continuous compression.		Continuous compression
Minimum corona extinction voltage under dry condition.	Kv	154
Radio interference voltage under conditions.	Micro volt.	Below 1000
<b>REPAIR SLEEVE FOR CONDUCTOR</b>		
Weight of the sleeve.	Kgs.	0.63
Before compression dia of sleeve.		
(a) Inner diameter.	mm	31.05
(b) Outer diameter.	mm	48.1
Dimensions after compression.		
(a) Corner to corner.	mm	48.05
(b) Surface to surface.	mm	40.05
Length of sleeve.		
(a) Before compression.	mm	279.5
(b) After compression.	mm	300.5
Compression pressure.	Tone.	100
Minimum corona extinction voltage under dry condition.	Kv.	154
Radio interference voltage under condition.	Microvolt.	Below 1000

(a) Slip strength test for dead end assembly. IS-2121 (Part-I)

All the acceptance tests stated at clause shall also be carried out on composite insulator unit, except the eccentricity test at clause. In addition to these, all the acceptance tests indicated in IEC 1109 shall also be carried out without any extra cost to the employer.

#### F. For hardware fittings

Visual examination IS-2121 (Part-I)  
 Proof & test  
 Tests on conductor accessories  
 Type tests

#### G. Mid span compression joint for conductor and earthwire:

Chemical analysis of materials  
 Electrical resistance tests IS-2121 (Part-II) 1981 clause 6.5 & 6.6  
 Heating cycle test -do-  
 Slip strength test. -do-  
 Corona extinction voltage test (dry)

Radio interference voltage test (dry)

**H. Repair sleeve for conductor:**

(a) Chemical analysis of materials.

**VIBRATION DAMPER FOR CONDUCTOR:**

Vibration Damper for AAC 37/4.00 mm	Unit.	
Total weight of the damper.	Kgs.	4.5
Weight of each damper mass.	Kgs.	Left.      Right. 1.6        2.2
Resonance frequencies.		
1. First frequency.	Hz	12+/- 1      18+/- 2
2. Second frequency.	Hz	28+/- 2      36+/- 2
Dimension of each damper mass. Material of:	Mm	55 Ox165      60 Ox195
1. Damper miss.		
2. Messenger cable.		Cast iron hot dip galvanized. High tensile galvanized steel wire.
No. of strands in messenger cable strands.		19
Lay ratio of messenger cable strands.		9-11
Min tensile strength of messenger cable.	Kg./ Sq.mm	135
Miss pull-off strength.	KN	5
Clamping forque.	Kg.m	7
Slipping strength of the damper clamp.	KN	
1. Before fatigue test.		2.5
2. After fatigue test.		2.0
Magnetic power loss per vibration damper.	Watts.	1 watt at 500 amps.
Min. coronaextinction voltage under dry conditions.	kV	154
Radio interference voltage under dry condition 1MHz, at 154 KV.	Microvolt.	Below 1000
Percentage variation in reactance after fatigue test in compassion with that before the fatigue test.	%	20

## TECHNICAL SPECIFICATION FOR CLAMPS AND CONNECTORS

### SCOPE:

This specification covers design, manufacture, assembly, testing at manufacturer's works, supply and delivery at site of all terminal connectors of 220KV equipments (mainly breaker, isolator, CT,PT,CVT,BPI and LA) and all other clamps and dropper connectors required for the switch yard as per approved lay out and system design.

### STANDARDS:

The terminal connectors under this specification shall conform strictly to the requirements of the latest version of the following standards as amended up-to-date, except where specified otherwise.

- i) IS: 5561 Power Connectors.
- ii) IS: 617 Aluminium & Aluminium Alloy
- iii) IS: 2629 Recommended Practice for hot dip galvanizing of iron and steel.
- iv) IS: 2633 Method of testing uniformity of coating of zinc coated articles.

The materials conforming to any other authoritative standards which ensure equal or better performance shall also be acceptable. The salient point of these specifications and points of difference between these and the above specifications shall be clearly brought out in the bid.

### MATERIAL & WORKMANSHIP:

The terminal connectors shall be manufactured from Aluminium Silicon Alloy and conform to designation A6 of IS: 617 (latest edition)

The connectors shall be of best quality and workmanship, well finished and of approved design. Specific materials for clamps and connectors should have high current carrying capacity, high corrosion resistance and be free from corona formation.

All connectors or its components to be connected with ACSR conductor shall be of compression type having aluminium purity not less than 99.5%. All bus bar clamps shall be made preferably from forged aluminium of purity not less than 99.5%. The thickness and contact surface should be maintained in such a way that the clamp should conform to IS: 5561/1970 or any latest revision thereof.

### RATING:

The connector rating shall match with the rating of the respective equipments for the terminal connectors and the connectors for bus bar and dropper should be of the following rating. Minimum thickness at any part of connector shall be 10(ten) mm. Indicative ratings are given below:

RATING	220kV
1. Main bus bar connectors high level and	2000 low level (Amps)
2. High level bus sectionalisation	2000 isolator(Amps)
3. Connectors along the bay (Amps)	2000
4. Terminal connectors for CB(Amp.)	as per rating of CB
5. -do- for Isolator(Amps)	as per rating of ISO
6. -do- for CT	As per CT rating
7. -do- for PI	As per PI rating
8. -do- for LA	As per LA rating
9. -do- for PT	As per PT rating

10.-do- for CVT	As per CVT rating
11. -do- for WT	As per WT rating.

**EQUIPMENT CONNECTORS:**

Bimetallic connectors shall be used to connect conductors of dissimilar metal. The following bimetallic arrangement shall be preferred.

- i) Copper cladding of minimum 4 mm. thickness on the aluminium portion of connector coming in contact with the copper palm or stud of the equipment.
- ii) Alternatively, to provide cold rolled aluminium, copper strip between the aluminium portions of the connection, the sheet thickness shall not be less than 2 mm.

Sufficient contact pressure should be maintained at the joint by the provision of the required number of bolts or other fixing arrangements, but the contact pressure should not be so great as to cause relaxation of the joint by cold flow, the joint should be such that the pressure is maintained within this range under all conditions of service, to avoid excessive local pressure, the contact pressure should be evenly distributed by use of pressure plates, washers or suitable saddles of adequate area of thickness should be less than that of an equal length of conductor where measured individually test results showing the milli drop test and resistance should be enclosed with the bid.

All connectors shall be so designed and manufactured as to offer ease of installation as these are to be used in overhead installations, design shall be such that full tightening of nuts and bolts should be possible with the use of double wrench.

The connectors shall be such as to avoid local corona, sound or visible discharge.

**TEMPERATURE RISE:**

The temperature rise of connectors when carrying rated current shall not exceed 45° C above reference design temperature of 50° C.

- 1) Acceptance Tests
  - a) Tensile Test
  - b) Temperature rise test
  - c) Temperature rise test
- 2) Routine Test
  - a) Visual Inspection
  - b) Dimensional Check

Type test reports from a recognized laboratory shall have to be submitted.

**WEIGHT:**

Weights of different materials uses in manufacture, such as aluminium, silicon, copper etc. should be clearly indicated in the bid.

**INTERCHANGE ABILITY:**

Corresponding parts of similar clamps and connectors shall be made to gauge or jig and shall be interchangeable in every respect.

**SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS**

**LINE HARDWARE AND ACCESSORIES FOR 220 KV & GROUND WIRE 7/3.15mm**

<b>A</b>	<b>HARDWARES</b>	<b>Suspension</b>	<b>Tension</b>
i	Maker's name and Address		
ii	Size and designation of ball and socket with standard specification to which conforming	16mm B as per IS 2486	20mm as per IS 2486
iii	Material		
a	Anchor shackle	NA	Forged steel Galvanised
b	Chain Link	NA	Forged Steel galvanised
c	Ball hook / Ball Link (HH)	Forged Steel galvanised	Forged Steel galvanised
d	Socket Eye (HH)	Forged Steel galvanised	NA
e	Ball Clevis	Forged Steel galvanised	Forged Steel galvanised
f	Socket Clevis	Forged Steel galvanised	Forged Steel galvanised
g	Yoke Plate	Mild Steel Galvanised	Mild Steel Galvanised
h	Arcing Horn	Mild Steel Galvanised	Mild Steel Galvanised
i	Clamp Suspension	A.G.S. Clamp	NA
j	Dead End/Cross arm strap	NA	NA
k	Dead end clamp (Compression)	NA	Ext. Al. Alloy
iv	Standard specification to which the Hardwares conform	IS 2486, IS: 2004, IS:617, IS-2633, & IS-733	
v	Standard specification to which conforming	IS: 2486	
vi	Galvanizing		
a	Ferrous parts	Hot Dip Galvanised	
b	Spring washers	Electro Galvanised	
c	Quality of zinc used	99.5%	
d	Number of dips which the clamp can withstand	4/ 1 minute dips	
vii	Standard to which conforming	IS 2633	
viii	Reference to drawing No.	Drg. Attached	
ix	Minimum failing load in kg	For AAAC & ACSR Zebra (220 kv)	For AAAC & ACSR Moose (220 kv)
a	For Single Tension Hardwire Fittings	160 kN	160 kN
b	For Double Tension Hardwire Fittings	160 kN	160 kN
c	For Single Suspension Hardwire Fittings	70 kN	90/120 kN
d	For Double Suspension Hardwire Fittings	70 kN	120 kN
<b>B.</b>	<b>TENSION CLAMPS</b>	Suitable for Panther, Zebra & Moose (AAAC/ACSR)	
i	Type	Compression type tension clamp	
ii	Material	Ext. Al. Alloy/ Ext. Al.	
iii	Breaking Strength	95% of UTS of Conductor	
iv	Slipping strength	95% of UTS of Conductor	
v	Galvanizing		
a	Ferrous parts	Hot Dip Galvanised	
b	Spring washers	Electro Galvanised	
c	Quality of zinc used	99.5%	
d	Number of dips which the clamp can withstand	4/ 1 minute dips	
vi	Standard to which conforming	IS 2633	

vii	Electrical Conductivity				
	a. Results of heating cycle test carried out	T.C. Attached			
	b. Electrical resistance	Not more than 75% of equivalent length of conductor			
viii	Reference to type tests and other tests reports attached	T.C. Attached			
ix	Make of bolts and nuts used	Local Make			
<b>C</b>	<b>SUSPENSION CLAMPS</b>	<b>Panther (AAAC/ACSR)</b>	<b>Zebra (AAAC/ACSR)</b>	<b>Moose (AAAC/ACSR)</b>	
i	Type	AGS Type			
ii	Type of material used for retaining rod for AGS assembly giving reference of ISS	Aluminium Alloy 6061/ Equivalent	Aluminium Alloy 6061/ Equivalent	Aluminium Alloy 6061/ Equivalent	
iii	minimum tensile strength of retaining rod material	35 kg/mm <sup>2</sup>	35 kg/mm <sup>2</sup>	35 kg/mm <sup>2</sup>	
iv	Chemical composition of retaining rod material	As per IS:733	As per IS:733	As per IS:733	
v	Electrical conductivity of Armour Rod material (in percentage of the conductivity of IACS i.e. International Annealed Copper Standard	Not less than 40% of IACS	Not less than 40% of IACS	Not less than 40% of IACS	
vi	Slipping strength of cushioned suspension assembly	8% to 15% of UTS of Conductor	20 to 29 KN of UTS of Conductor	20 to 29 KN of UTS of Conductor	
vii	Breaking strength of suspension Clamp	7000kgf	7000kgf	9000kgf	
viii	Physical properties of neoprene cushion				
a	Minimum Tensile Strength	2000 psi	2000 psi	2000 psi	
b	Minimum ultimate Elongation	300%	300%	300%	
ix	Ageing (guaranteed life of the assembly)	40 years	40 years	40 years	
x	Hardness	65 to 80 A	65 to 80 A	65 to 80 A	
		Panther		Zebra	
<b>D</b>	<b>Midspan compressions joints for</b>	<b>AAAC</b>	<b>ACSR</b>	<b>AAAC</b>	<b>ACSR</b>
i	Type	Compression Type			
ii	Suitable for	AAAC Panther	ACSR Panther	AAAC Zebra	ACSR Zebra
iii	Materials				
a	Outer Sleeve	Ex. Al. Alloy	Ex. Al.	Ex. Al. Alloy	Ex. Al.
b	Inner Sleeve	N.A.	Galvanised Steel	N.A.	Galvanised Steel
iv	Outer Sleeve				
a	Outer Dia. Before compression (mm)	Ø38	Ø38	Ø48	Ø48
b	Flat to Flat After compression (mm)	32	32	40	40
v	Length of Outer Sleeve				
a	Before compression (mm)	610	610	711	711
b	After compression (mm)	655	660	760	768
vi	Inner Sleeve				
a	Outer Dia. Before compression (mm)	N.A.	Ø18	N.A.	Ø19.2

b	Flat to Flat After compression (mm)	N.A.	15.1	N.A.	16.1
vii	Length of Inner Sleeve				
a	Before compression (mm)	N.A.	203	N.A.	241
b	After compression (mm)	N.A.	230	N.A.	273
viii	Weight of Sleeve				
a	Aluminium (kg)	1.2	1.2	2.032	2.032
b	Galvanized Steel (kg)	N.A.	0.295	N.A.	0.410
ix	Galvanizing				
a	Ferrous parts	Hot Dip Galvanized			
b	Spring washers	Electro Galvanized			
c	Quality of zinc used	99.5%			
d	Number of dips which the clamp can withstand	4/ 1 minute dips			
x	Standard to which conforming	IS 2633			
xi	Slipping strength of mid span joint expressed as percentage of UTS of conductor	95%			
xii	Breaking strength of mid span joint expressed as percentage of UTS of conduct	95%			
xiii	Conductivity of Compression joint expressed as percentage of conductivity of cable	100% of equivalent length of conductor			
xiv	Resistance as percentage of measured resistance of equivalent length of conductor	Not more than 75% of equivalent length of conductor			
<b>E</b>	<b>Repair Sleeve</b>	<b>AAAC &amp; ACSR Panther</b>		<b>AAAC &amp; ACSR Zebra</b>	
i	Type	Compression type			
ii	Suitable for	AAAC Panther	ACSR Panther	AAAC Zebra	ACSR Zebra
iii	Outside diameter or length of sleeve				
a	Before compression (mm)	Ø38	Ø38	Ø48	Ø48
b	After compression Flat to Flat (mm)	32	32	40	40
iv	Length of Sleeve				
a	Before compression (mm)	241	241	279	279
b	After compression (mm)	270	270	310	310
v	Material	Ex. Al.Alloy	Ex. Al.	Ex. Al.Alloy	Ex. Al.
vi	Weight of sleeve in (kg)	0.450	0.453	0.810	0.810
vii	Breaking strength as percentage of UTS of conductor	95%			
viii	Conductivity as percentage of conductivity of conductor	100% of equivalent length of conductor			
ix	Resistance as percentage of measured resistance of equivalent length of conductor	Not more than 75% of equivalent length of conductors			
<b>F</b>	<b>Vibration Damper</b>	For AAAC & ACSR ZEBRA			
i	Total weight of the damper (Kg)	4.5 Approx			
		Left			Right



ii	Weigh of each damper mass (kgs.)	1.6	2.2
iii	Resonance frequencies		
	1. First frequency (Hz)	12+1	18 +2
	2. Second frequency (Hz)	28+2	36+2
iv	Dimensions of each damper mass	60Φx195	55Φx165
v	Material of :		
	1. Damper mass	Cast iron hot dip galvanized.	
	2. Messenger cable.	High tensile galvanized steel wire.	
vi	Galvanizing		
a	Ferrous parts	Hot Dip Galvanized	
b	Spring washers	Electro Galvanized	
c	Quality of zinc used	99.5%	
d	Number of dips which the clamp can withstand	4/ 1 minute dips	
vii	Standard to which conforming	IS 2486 and IS 2633	
viii	No of strands in messenger cable strands	19	
ix	Lay ratio of messenger cable strands	911	
x	Min tensile strength of messenger cable ( kg /sq. mm)	135	
xi	Mass pull – off strength (KN)	5	
xii	Clamping torque (Kg.m)	7	
xiii	Slipping strength of the damper clamp		
	1.Before fatigue test (KN)	2.5	
	2. After fatigue test (KN)	2	
xiv	Magnetic power loss per vibration damper (Watts)	1 watt at 500 amps	
xv	Min. corona extinction voltage under dry conditions (KV)	154	
xvi	Radio interference voltage under conditions 1 MHZ, AT 154 KV (Microvolt)	Below 1000	
xvii	Percentage variation in reactance after fatigue test in comparison with that before the fatigue Test (%)	20	
<b>G</b>	<b>Midspan compression joint For 7/3.15mm Galvanized Stranded Steel Wire</b>		
i	Material	Galvanized Steel	
ii	Size	OD 20.2 x Length 230	
iii	Suitable for ground wire	Yes (7/3.15)	
iv	Weight in kg	0.85	
v	Minimum failing load	50 KN	
vi	Galvanization		
a	Ferrous parts	Hot Dip Galvanized	
b	Spring washers	Electro Galvanized	
c	Quality of zinc used	99.5%	
d	Number of dips which the clamp can withstand	4 / 1 minute dip	

vii	Standard to which conforming	IS 2633
<b>H Suspension Clamps For 7/3.15mm Galvanized Stranded Steel Wire</b>		
i	Materials	Malleable Cast Iron / Galvanized Steel
ii	Size	As per Drawing
iii	Suitable for ground wire	Yes (7/3.15)
iv	Weight in kg	
v	Slip strength	12-17 KN
vi	Minimum failing load	70 KN
vii	Galvanizing	
a	Ferrous parts	Hot Dip Galvanized
b	Spring washers	Electro Galvanized
c	Quality of Zinc used	99.5%
d	Number of dips which the clamp can withstand	4/1 minute dips
viii	Standard to which conforming	IS 2486 and IS 2633
<b>I Compression type dead end assemblies For 7/3.15mm Galvanized Stranded Steel Wire</b>		
i	Materials	Forged steel
ii	Size	As per drawing
iii	Suitable for ground wire	Yes (7/3.15)
iv	Weight in kg	3.69
v	Minimum failing load	70 KN
vi	Galvanizing	
a	Ferrous parts	Hot Dip Galvanized
b	Spring washers	Electro Galvanized
c	Quality of zinc used	99.5%
d	Number of dips which the clamp can withstand	4/ 1 minute dips
vii	Standard to which conforming	IS 2486 and IS 2633
<b>J Flexible copper bond</b>		
i	Drawings enclosed	Yes
ii	Stranding	37/7/0.417
iii	Cross sectional area (Sq.mm)	75.6
iv	Minimum copper equivalent area (Sq.mm)	34 (each individual wire)
vi	Length of copper cable (mm)	500
vii	Material lugs	Tinned Copper
viii	Bolt Size	
	(i) Diameter (mm)	16
	(ii) Length (mm)	40
ix	Resistance (Ohm)	0.0004 ( as per IS:2121)
x	Total weight of flexible copper bond (kg)	0.45 (Approx)

**Technical Notes:**

- 1) Drawings to be Supplied by the Contractor
- The Bidder shall construct the LILO lines, with all associated Civil Works and additional work as required, under supervision of OPTCL. The quality of equipment/material to be used and construction standard shall confirm to the Technical Specifications being issued with this tender & OPTCL requirement.

Bidders have to procure materials/equipment strictly as per the approved vendor List provided with this tender.

The vendors for small items like cable tray, earth mat, flat, Tower accessories etc. if not provided, the same are to be bought from reputed manufactures preferably having ISI mark for such product, after ascertaining the quality and subject to confirmation of applicable IS/IEC specifications, The quality of these materials shall be assessed by the Employer's engineers at manufacturer's works and/or at site.

At every stage, Contractor must take approval from Employer through proper channel for Section Elevation drawing, detailed foundation drawing, structural drawings etc. The Contractor must coordinate with the Employer for obtaining the said approvals.

- 2) **Training of Employer's Personnel**
- The Contractor shall undertake to train, free of cost at least five (05) nos. personnel selected and sent by OPTCL at their works unless otherwise specified in the Technical Specifications. The period and the nature of training for the individual personnel shall be agreed upon mutually between the Contractor and Employer. These personnel shall be given special training in their shops and/or in their Collaborator's works and if that is not possible, in any other plant where equipment manufactured by the Contractor or his collaborator is under installation, operation, or testing to enable these personnel to become familiar with the equipment being furnished by the Contractor.

The OPTCL personnel, while undergoing training, shall be responsible to the Contractor for discipline.

- 3) **Metering, Protection & Communication**
- The Bidder shall abide by the provisions of Odisha Grid Code (OGC) Regulation 2006/Indian Electricity Grid Code (IEGC) and CEA Grid Connectivity regulations 2004, for protection, safety and communication requirements, CEA Regulation on Installation & Operation of Meters shall be the basis for implements of metering provision.

The Bidder shall abide by State Electricity Grid Code (SEGC)/Indian

Electricity Grid Code (IEGC) and CEA (technical standard for construction of electrical plants and electrical line) regulation 2010 and amendment in 2015 and latest version. CEA Regulation on Installation & Operation of Meters shall be the basis for implements of metering provision. Metering Code of SEGC shall also be the basis for implementation of metering provision. The target clearance time for any fault is 160 msec. (refer clause 4.8(3)(a) of OGC). Further, the Relay setting co-ordination shall be done at state level by the Protection Coordination Committee of OPTCL, as per the provisions of section 5.2 (8) and 9.4 of OGC.

0.2s class accuracy micro-processor based energy metering system shall be installed for main and check metering system. The metering system shall be provided as per OPTCL specification, which shall be installed and commissioned under OPTCL supervision.

- 4) **Supervision of all erection works by OPTCL officials:** All the survey, levelling, foundation, erection, stringing, installation, commissioning, civil and other works of EHT lines, and other associated works shall be inspected by OPTCL officials as and when required, in order to ensure the quality of the works. Prior intimation of works shall be given to the concerned SDO/DGM, EHT Construction Sub-division/Division for visiting the site. Notwithstanding above, all efforts should be made by the contractors to adhere to OPTCL standards and quality while executing different works.

- 5) **Statutory compliance** All statutory requirements like compliance of the applicable provisions of Standards on Grid Connectivity and Grid standards specified by CEA, IEGC, OGC and SEGC in force, PTCC approval, Inspection by the Electrical Inspectorate, Odisha and compliance of observations, OERC guidelines and norms and all other requirements as applicable under the law of the land shall be complied by the Contractor. Employer may assist for such compliance, as and when required.

- 6) **Spares** All the spares for the equipment under the contract will strictly conform to the specification and documents and will be identical to the corresponding main equipment / components supplied under the contract and shall be fully interchangeable.

All the mandatory spares covered under the contract shall be supplied along with the main equipment and the delivery would be completed by the respective dates for the various categories of equipment as per the agreed

#### Work Completion Schedule.

The quality plan and the inspection requirement finalized for the main equipment will also be applicable for the corresponding spares.

The contractor will provide Employer with the manufacturing drawings, catalogues, assembly drawings and any other document required by Employer so as to enable Employer to identify the recommended spares. Such details will be furnished to Employer as soon as they are prepared but in any case not later than six months prior to commencement of manufacture of the corresponding main equipment.

The contractor will provide Employer with all the addresses and particulars of his Vendors while placing the order on vendors for items / components /equipment covered under the contract and will further ensure with his vendors that Employer, if so desires, will have the right to place order(s) for spares directly on them on mutually agreed terms based on offers of such vendors.

#### Warranty for spares:

The contractor shall warrant that all spares supplied will be new and in accordance with contract documents and will be free from defects in design, materials and workmanship and shall guarantee for 24 months from the scheduled date of commercial operation of the last unit of main equipment under the contract. In case of any failure in the original component / equipment due to faulty designs, materials and workmanship, the corresponding spare parts, if any, supplied will be replaced without any extra cost to Employer unless a joint examination and analysis by Employer and the contractor of such spare parts prove that the defect found in the original part that failed, can safely be assumed not to be present in spare parts. Such replaced spare parts will have the same warranty as applicable to the replacement made for the defective original part/ component provided that such replacement for the original equipment and the spare replaced are again manufactured together. The discarded spare parts will become the property of the contractor as soon as they have been replaced by the contractor.

The contractor shall guarantee the availability of spares to Employer for the full life of the equipment covered under the contract.

Further in case of discontinuance of supply of spares by the contractor or his Vendors, the contractor will provide Employer with full information for replacement of such spares with other.

In case of emergency requirements of extra spares, the contractor would make every effort to expedite the manufacture and delivery of such spares on the basis of mutually agreed time schedule.

the contractor fails to supply the spares in accordance with the terms stipulated above, Employer shall be entitled to purchase the same from alternate sources at the risk and the cost of the contractor and recover from the contractor, the excess amount paid by Employer over the rated worked out on the above basis. In the event of such risk purchase by Employer, the purchases will be as per the works and procurement policy of Employer prevalent at the time of such purchases and Employer at his option may include a representative of the contractor in finalizing the purchases.

It is expressly understood that the final settlement between the parties in terms of the relevant clauses of the Bidding Documents shall not relieve the contractor of any of his obligations under the provision of availability of spares unless otherwise discharged in writing by Employer.

**7) PRE-COMMISSIONING TRIALS AND INITIAL OPERATIONS**

The pre-commissioning trials and initial operations of the equipment furnished and erected by the Contractor shall be the responsibility of the Contractor as detailed in relevant clauses in Technical Specifications. The contractor shall furnish a list of all commissioning spares within 60 days from the date of FOA/letter of award and such list shall be reviewed by Employer and agreed to. However such review and agreement will not absolve the contractor of his responsibilities to supply all commissioning spares so that initial operation do not suffer for want of commissioning spares. The Contractor shall provide, in addition, test instruments, calibrating devices, etc and labour required for successful performance of these trials. If it is anticipated that the above test may prolong for a long time, the Contractor's workmen required for the above test shall always be present at Site during such trials. The cost on account of all above shall be deemed to be included in the scope of the contractor at no extra cost to Employer. These spares will be received and stored by the contractor at least three month from the schedule date of commencement of trial operation of the respective equipment/ system utilized as and when required. The utilized spares and replaced parts, if any, at the end of successful completion of performance and guarantee test shall be the property of the contractor and the he will be allowed to take these parts back at his own cost with the permission of Engineer-In- Charge.

**TRIAL OPERATION:**

For Trial Operation, the system for a particular package, Sub-Station and Line shall be energized in presence of the representative of OPTCL and same shall be maintained in energized condition for a period of at least twenty-four (24) hours. In case of any defect is observed, then such mutually agreed defect shall be liquidated within a maximum period of one week by the bidder. Thereafter, the system shall be maintained in energized condition.

Getting electrical inspector to inspect the plant and equipment is the

responsibility of the Contractor.

- 8) Solving Right of Way** The contractor should adhere to policy & internationally recognized standards (Indian Standards, British Standards, IEEE and IEC standards) in design and construction of facilities, laying of transmission lines, support infrastructure and in selection of equipment.

i) Further, the contractor's endeavor should be to avoid habitations and densely populated areas while selecting route alignment.

ii) Moreover, the contractor should also adhere to clearance norms prescribed in Indian Electricity Rules for: (a) clearance above ground for lowest conductor; (b) vertical clearance from buildings; (c) horizontal clearance from buildings; (d) minimum clearance between lines crossing each other; and (e) minimum clearance prescribed for live equipment in outdoor sub stations.

iii) The key social and environmental aspects that are / may be associated with the Project relate to Employer's environment and social assessment, corporate environmental, social and health and safety management system and their implementation. In the context of the Project, the key social and environmental issues, which will have to be managed under environment and social management system include: impacts on households due to restrictions/constraints in the proposed ROW, crop damage and loss of trees during construction / maintenance; employee and community health and safety impact during construction and operation; community consultation and engagement; labor working conditions including employee and contract labor health and safety; impacts due to emissions to soil, air and water during construction and operation ; and potential impacts on biodiversity and cultural heritage. However, the project's impacts are mostly short term, limited to the Projects its, reversible and limited impact, if unavoidable, on environmentally sensitive areas. Further, it is possible to readily design and implement engineering and management measures to mitigate adverse impacts.

iv) The responsibilities of acquiring Right of Way (ROW) for Transmission Line lies with contractor at his risk and cost. However, Employer shall make all endeavors to facilitate process of securing the ROW. Employer shall assist the Contractor for getting clearances from Private/Govt./Statutory bodies.

- 9) License**
- i) HT/EHT LICENSE: HT/EHT license issued by the State Govt. Authority available with the Contractor is sufficient for the purpose of participation in the subject tender. In case the HT/EHT license is not from the ELBO Odisha, Contractor license for execution of works is to be obtained from the Office of the EIC-CUM-PCEI, Odisha. However, the contractor should furnish the documents as a proof to Employer, that they have applied to the issuing authority for issuing of Contractor License within 30 (thirty) days from the issue of FOA/LOA. In case the Contractor license application is not furnished within 30(thirty) Days

from the issue of FOA/LOA, Employer have the right to cancel the LOA.

ii) PROJECT LICENSE: All electrical jobs shall be carried out only through contractors possessing valid project licenses from Odisha State.

**10) OBTAINING  
OF  
STATUTORY  
APPROVAL**

i) Unless otherwise specified in the Bidding Document, it shall be the CONTRACTOR'S sole responsibility to obtain all approvals from any authority required under any statute, rule or regulation of the Central or Odisha State Government for the performance of the contract and / or the contractual work. The application on behalf of Employer for submission to relevant authorities along with copies of required certificates complete in all respects shall be prepared and submitted by the CONTRACTOR well ahead of time so that the actual construction / commissioning of the works is not delayed for want of the approval / inspection by the concerned authorities. The CONTRACTOR shall arrange for the inspection of the works by the authorities and will undertake necessary coordination and liaison required and shall not be entitled to any extension of time for any delay in obtaining such approvals.

ii) Statutory fees, if any, paid for all such inspection and approvals shall be reimbursed at actual to the CONTRACTOR by Employer on production of documentary evidence.

iii) Any deficiency (ies) as pointed out by any such authority shall be rectified by the CONTRACTOR within the scope of relative supply and / or work at no extra cost to Employer. The inspection and acceptance of the work by such authorities shall, however, not absolve the CONTRACTOR from any of its responsibilities under this contract.

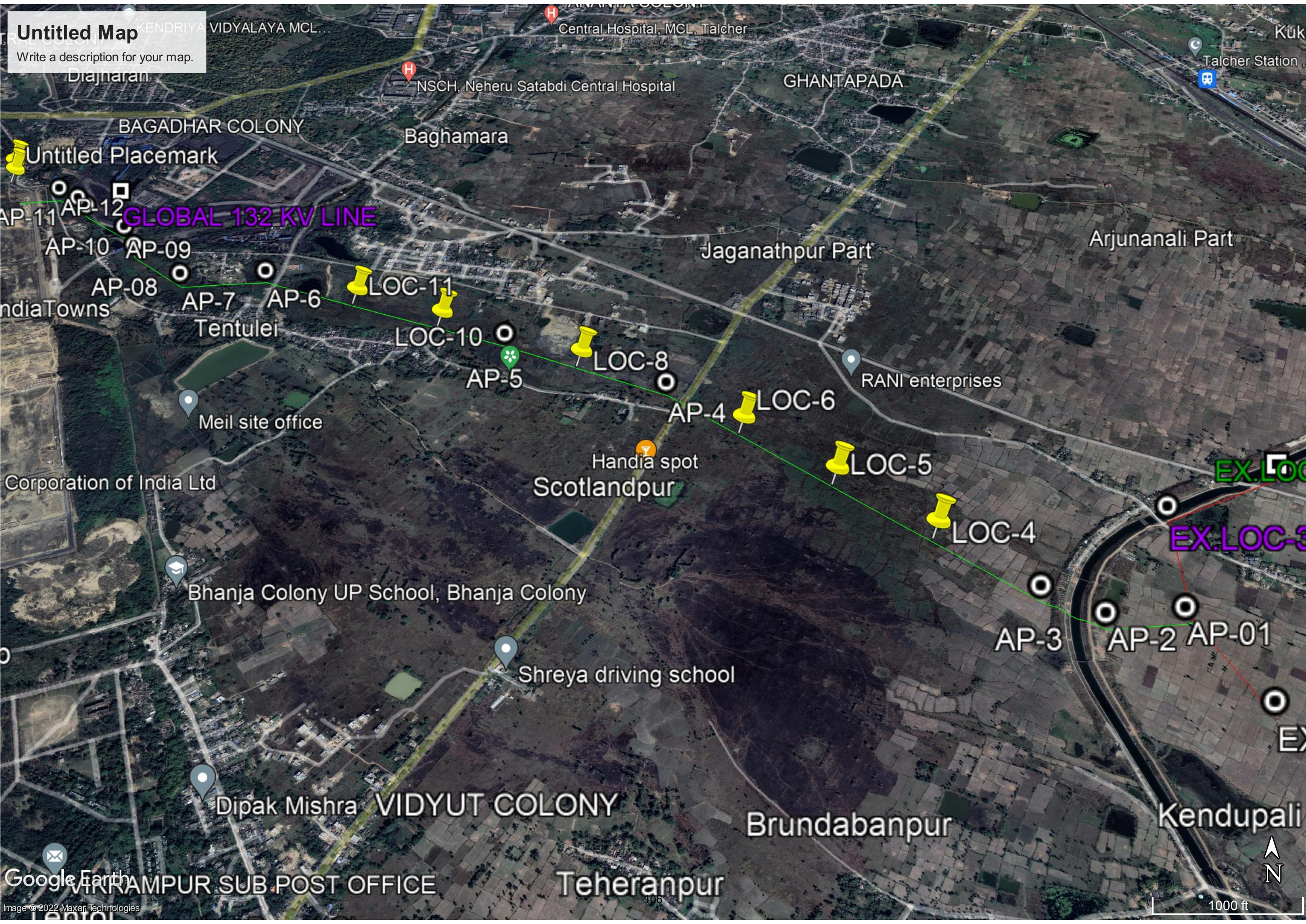


## **Annexures to Part-1 (220kV Transmission Line Specifications)**

- 1. Annexure 1 – Angle Schedule**
- 2. Annexure 2 – LILO Map**
- 3. Annexure 3 – Document related to Route Survey**
- 4. Annexure 4 – Gazette Notification**
- 5. Annexure 5 – Soil Testing Report (TL Route)**
- 6. Annexure 6 – Line Route (.kml File) \* Separately Attached**



Untitled Map  
Write a description for your map.







# ଓଡ଼ିଶା ବିଦ୍ୟୁତ ଶକ୍ତି ସଂଚାରଣ ନିଗମ ଲିଡ.

**ODISHA POWER TRANSMISSION CORPORATION LIMITED**

(A Government of Odisha Undertaking)

OFFICE OF THE SR. GENERAL MANAGER [ELECT.], CONSTRUCTION ZONE-I,

TECHNICAL BUILDING (1<sup>st</sup> FLOOR), BHOI NAGAR, BHUBANESWAR- 751 022

Tel- 0674-2546353; Fax- 0674-2547261, E Mail: sgm.con1.bbs@optcl.co.in

Our Ref.- SGM(C)Z-1/ 830/2019-20/

1593 (3)

Date: 31-08-21

To

The General Manager (Elect.)  
EHT(C) Circle, Jajpur road.

**Sub:- Approval of SLD, route alignment on topo sheet, special crossing profile, tower schedule, angle schedule of proposed 132kV line for drawal of 90MW power at 220KV by M/s Talcher Fertilizers Ltd. (TFL) Talcher, Angul through LILO arrangement from existing 220kV TTPS-Rengali line.**

Ref: (1) This office connectivity letter no-2403 dated 25.11.2020.  
(2) Your letter no-445 dated 18.08.2021.

Dear Sir,

With reference to the subject cited above, the route alignment map on topo sheet, single line diagram, special crossing profiles & tower schedule for drawal of 90MW power at 220KV by M/s Talcher Fertilizers Ltd. (TFL) Talcher, Angul through LILO arrangement from existing 220kV TTPS-Rengali line as per details below submitted vide your letter under reference are checked and hence approved. As proposed the route-1 is hereby approved.

1. Route alignment on topo sheet.-1 Set
2. Single line diagram.- 1 Set
3. Tower schedule for special crossing.- 1 Set
4. Angle schedule- 1 Set
5. Special crossing profiles- 1 Set
  - a) Loc No.16 to 17 - 132kV DC line of Global Coal & Mining (P) Ltd.

The above approved documents are enclosed herewith for your reference.

Encl: As above

Yours faithfully,

  
Sr. General Manager (Elect.) Zone-I

CC to :-

- 1) The DGM (Elect.), EHT (C) Division, Angul for information .
- 2) The CGM (Const.), OPTCL, Bhubaneswar for kind information.

## ANGLE SCHEDULE

OF 220KV DC LILO LINE CONNECTIVITY FROM RENGALI - NALCO 220 KV DC LINE (LOCATION -30 ) TO  
TALCHER FERTILIZER LIMITED SUB STATION .

SL. NO.	AP. NO.	ANGLE OF DEVIATION	AP TO AP	SPAN LENGTH IN MTR	REMARKS & CROSSING
1			LOC.NO -31 TO LOC. NO -30	320	MORUM ROAD ,PADDY FIELD
2			LOC.NO -29 TO LOC. NO -30	300	PADDY FIELD
3			LOC. NO -30 TO AP-01	20	PADDY FIELD
4	1	10°-25'-16"RT	AP- 01 TO AP-02	196	PADDY FIELD
5	2	34°-58'-11"RT	AP- 02 TO AP-03	166	MORUM ROAD ,11 KV LINE, PADDY FIELD
6	3	34°-58'-11"RT	AP- 03 TO AP-04	1150	TARROAD, PADDY FIELD
7	4	14°-10'-18"LT	AP- 04 TO AP-05	510	PADDY FIELD
8	5	02°-53'-31"LT	AP- 05 TO AP-06	790	11 KV LINE, 33 KV LINE, POND, CONCRETE ROAD, PADDY FIELD
9	6	25°-42'-57"LT	AP- 06 TO AP-07	260	WATER AREA
10	7	42°-20'-42"RT	AP- 07 TO AP-08	220	WATER AREA
11	8	25°-14'-26"RT	AP- 08 TO AP-09	116	MORUM ROAD, 11 KV LINE, DEFUNCT RLY LINE OF TFL,
12	9	28°-59'-14"LT	AP- 09 TO AP-10	200	GLOBAL BOUNDARY WALL
13	10	16°-24'-06"RT	AP- 10 TO AP-11	58	GLOBAL 132 KV DC LINE
14	11	16°-22'-09"LT	AP- 11 TO AP-12	96	BARREN LAND
15	12	48°-45'-22"LT	AP- 12 TO GANTRY	80	TARROAD, TFL BOUNDARY WALL
			<b>TOTAL LENGTH =</b>	<b>4482</b>	



## TOWER SCHEDULE

**OF 220KV DC LILO LINE CONNECTIVITY FROM RENGALI - NALCO 220 KV DC LINE (LOCATION -30 )  
TO TALCHER FERTILIZER LIMITED SUB STATION .**

Sl. No.	Loc. No.	Type of Tower	Span Length in Mtr.	Ap. No	Angle of Deviation	Stretch Length in Mtr.	WEIGHT SPAN			WIND SPAN			Remarks/ Crossing details.
							Left	Right	Total	Left	Right	Total	
1	2	3	4		5	6	7	8	9	10	11	12	13
1	EXIST. LOC-31	UR+0					0	184	184	0	160	160	
			320										MORUM ROAD, PADDY FIELD
2	EXIST. LOC-30	OC+0				320	136	12	148	160	10	170	
3	EXIST. LOC-29	OA+3					0	162	162		150	150	
			300										PADDY FIELD
4	EXIST. LOC-30	OC+0			00°-00'-00"	300	138	8	146	150	10	160	
			20										PADDY FIELD
5	PROP. LOC-01	OC+0		1	10°-25'-16"RT	20	12	64	76	10	98	108	
			196										PADDY FIELD
6	2	OC+3		2	34°-58'-11"RT	196	132	36	168	98	83	181	
			166										MORUM ROAD, CANAL, 11 KV LINE
7	3	OC+6		3	34°-58'-11"RT	166	130	170	300	83	150	233	
			300										PADDY FIELD
8	4	OA+0					130	118	248	150	150	300	
			300										PADDY FIELD

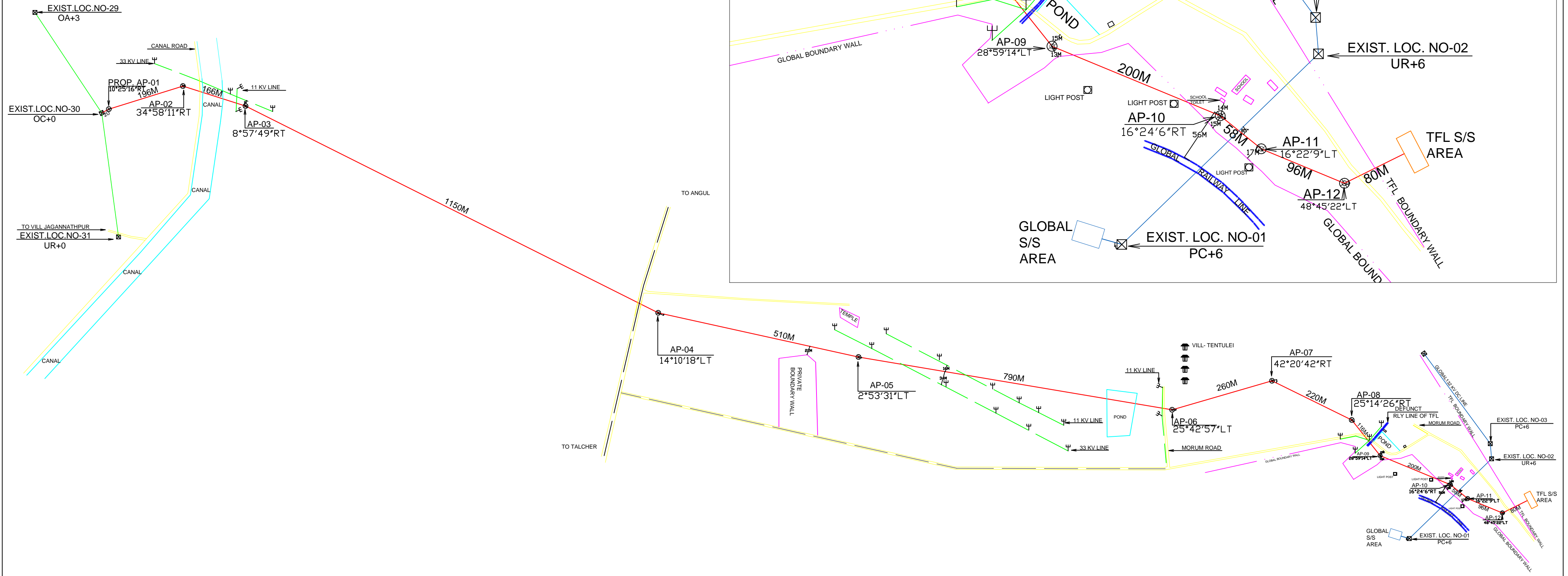


Sl. No.	Loc. No.	Type of Tower	Span Length in Mtr.	Ap. No	Angle of Deviation	Stretch Length in Mtr.	WEIGHT SPAN			WIND SPAN			Remarks/ Crossing details.
							Left	Right	Total	Left	Right	Total	
1	2	3	4		5	6	7	8	9	10	11	12	13
9	5	OA+6					182	156	338	150	150	300	
			300										PADDY FIELD
10	6	OA+3					144	86	230	150	125	275	
			250										TARROAD, PADDY FIELD
11	7	OB+6		4	14°-10'-18"LT	1150	164	166	330	125	140	265	
			280										PADDY FIELD
12	8	OA+0					114	104	218	140	115	255	
			230										PADDY FIELD
13	9	OB+0		5	02°-53'-31"LT	510	126	66	192	115	110	225	
			220										33 KV LINE, PADDY FIELD
14	10	OA+6					154	116	270	110	140	250	
			280										11 KV LINE, PADDY FIELD
15	11	OA+6					164	130	294	140	145	285	
			290										POND, CONCRETE ROAD, 11 KV LINE
16	12	OB+6		6	25°-42'-57"LT	790	160	158	318	145	130	275	
			260										WATER AREA
17	13	OC+0		7	42°-20'-42"RT	260	102	46	148	130	110	240	
			220										WATER AREA
18	14	OC+6		8	25°-14'-26"RT	220	174	38	212	110	58	168	
			116										MORUM ROAD, 11 KV LINE, DEFUNCT RLY LINE OF TFL
19	15	OC+6		9	28°-59'-14"LT	116	78	12	90	58	100	158	

Sl. No.	Loc. No.	Type of Tower	Span Length in Mtr.	Ap. No	Angle of Deviation	Stretch Length in Mtr.	WEIGHT SPAN			WIND SPAN			Remarks/ Crossing details.
							Left	Right	Total	Left	Right	Total	
1	2	3	4		5	6	7	8	9	10	11	12	13
			200										GLOBAL BOUNDARY WALL
20	16	OC+15		10	16°-24'-06"RT	200	188	22	210	100	29	129	
			58										GLOBAL 132 KV LINE
	17	OC+15		11	16°-22'-09"LT	58	36	172	208	29	48	77	
21			96										BARREN LAND
	18	OC+6		12	48°-45'-22"LT	96	-76	104	28	48	40	88	
22			80										TARROAD, TFL BOUNDARY WALL
	GANTRY					80			0			0	

TOTAL= 4482 MTR

# SINGLE LINE DIAGRAM



## ANGLE POINT COORDINATES

SL.NO	AP.NO	LATITUDE	LONGITUDE
01	01	20°54'37.97"	85°11'37.81"
02	02	20°54'36.20"	85°11'30.75"
03	03	20°54'38.91"	85°11'26.02"
04	04	20°55'2.29"	85°10'55.06"
05	05	20°55'8.94"	85°10'39.13"
06	06	20°55'18.18"	85°10'13.59"
07	07	20°55'17.70"	85°10'4.86"
08	08	20°55'22.22"	85°9'51.84"
09	09	20°55'25.26"	85°9'56.96"
10	10	20°55'28.84"	85°9'51.84"
11	11	20°55'30.24"	85°9'50.47"
12	12	20°55'31.90"	85°9'47.90"

## INDEX

EXISTING 220 KV LINE	
PROPOSED 220 KV LINE	
EXISTING 132 KV LINE	
BOUNDARY WALL	
RAILWAY LINE	
33/11 KV LINES	
CANAL & POND	
ROAD	



विक्रय के लिए नहीं NOT FOR EXPORT

**OPEN SERIES MAP**

**No. F45T1**  
Scale 1:50,000

1. Srinagar, ORISSA  
2. Raipur, ORISSA

भारतीय सर्वेक्षण विभाग SURVEY OF INDIA  
No. Edition 2015

**CONVENTIONAL SYMBOLS**

Boundaries: National, State, District, Taluk, Village	[Symbol]
Water: Rivers, Canals, Wells, Tanks, Ponds, Lakes, Reservoirs	[Symbol]
Vegetation: Forests, Cultivated Land, Pasture, Barren Land	[Symbol]
Buildings: Residential, Commercial, Industrial, Religious	[Symbol]
Infrastructure: Roads, Railways, Airways, Pipelines, Power Lines	[Symbol]
Topography: Contours, Spot Heights, Bench Marks	[Symbol]
Administrative: Police Stations, Government Offices, Schools, Hospitals	[Symbol]
Religious: Mosques, Churches, Temples, Gurdwaras	[Symbol]
Other: Cemeteries, Public Buildings, Public Works	[Symbol]

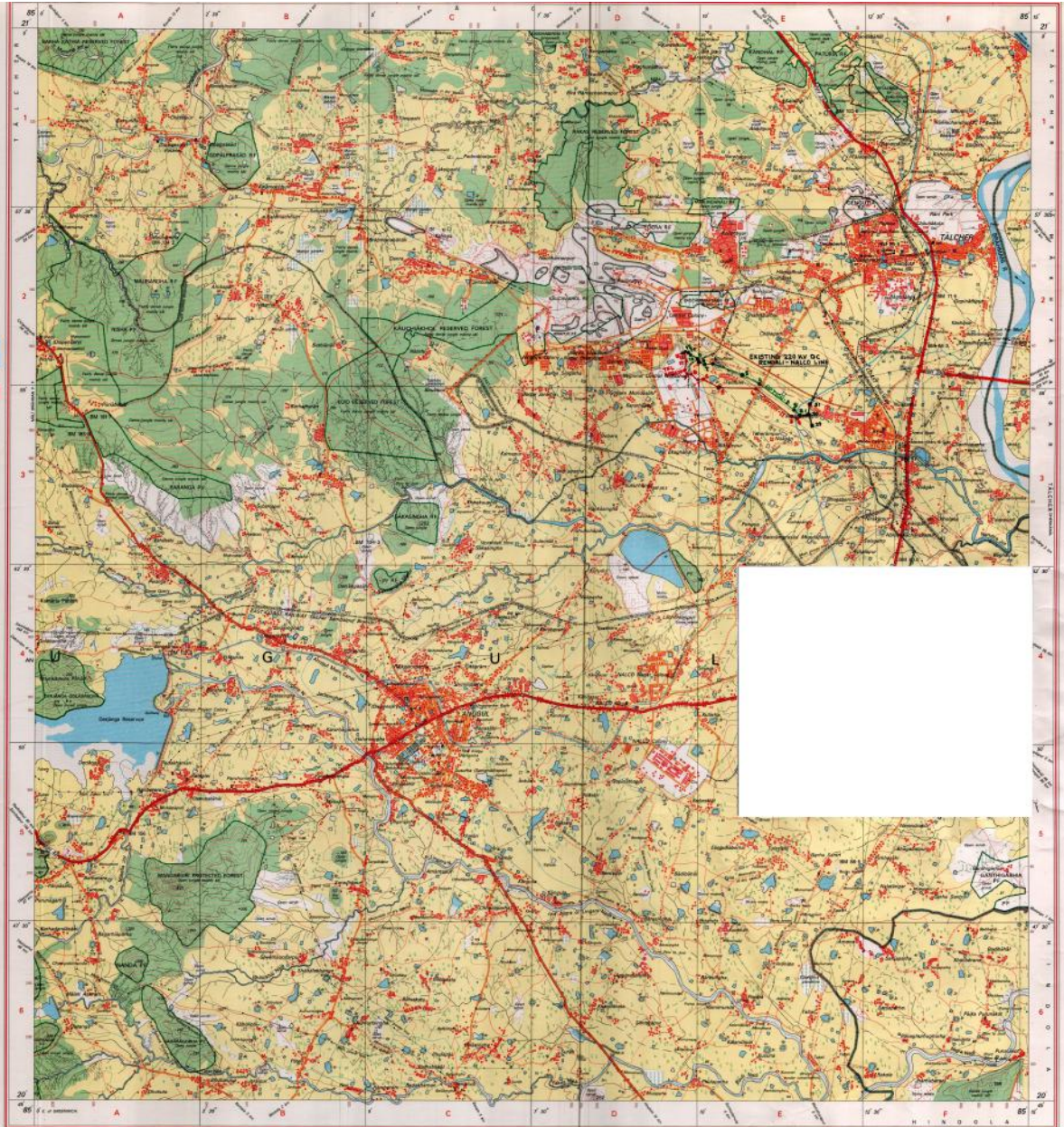
**REFERENCES**  
S.I. No. 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

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**COMPILED BY**  
A. Survey of India, Dehra Dun, India  
B. Survey of India, Dehra Dun, India

Projection - UTM Datum - WGS 84  
Magnetic Variation from True North about 4° West in 2020  
Scale 1:50,000  
CONVENTIONAL SYMBOLS  
For further details about the symbols used, please refer to the Survey of India Manual, Volume 1, Part 1, Chapter 1, Section 1.1.1.

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MS. No. 148/85 of 12-05-2015 (DC) (18.08.2015, 10.11.15)  
Printed by the Government Printing Press, Dehra Dun, India.  
Department of Science & Technology, Government of India.



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# ଓଡ଼ିଶା ବିଦ୍ୟୁତ ଶକ୍ତି ସଂଚାରଣ ନିଗମ ଲିଡ଼.

## ODISHA POWER TRANSMISSION CORPORATION LIMITED

(A Government of Odisha Undertaking)

OFFICE OF THE SR. GENERAL MANAGER [ELECT.], CONSTRUCTION ZONE-I,  
TECHNICAL BUILDING (1<sup>st</sup> FLOOR), BHOI NAGAR, BHUBANESWAR- 751 022  
Tel- 0674-2546353; Fax- 0674-2547261, E Mail: sgm.con1.bbs@optcl.co.in

No: Sr.GM(TP&C)\Publication\Gaz\08\Vol.V) 2408 / Dated: 31/12/2021

### NOTIFICATION

In accordance with Section-164 of Indian Electricity Act, 2003 and in exercise of the power conferred upon OPTCL vide Department of Energy, Government of Odisha Order No: R&R-II-10\2006\2353 dated 09.03.2006, the following transmission scheme, which are intended to be undertaken by the Odisha Power Transmission Corporation Limited for execution, are published for general information. It is also notified in the interest of general public that any person interested in making representation regarding the execution of the above scheme, may submit such representation in writing so as to reach the Senior General Manager, (Construction), Zone-I, Odisha Power Transmission Corporation Limited, Technical Building, 1<sup>st</sup> Floor, Bhoinagar, Bhubaneswar-751022 within two months from the date of publication of this notification. Full details of the scheme and plan may be seen in the office of the concerned Deputy General Manager (Elect.), as mentioned against the work, on any working day during office hours.

Sl. No.	Name of the Work & Scope	Name of the Village in which the line will pass	Tentative Estimated Amount in (Rs. Crs.)	Name of the Officer to be contacted	Perceived benefit, that may accrue
1.	Construction of 220kV LILO line from existing Loc no-30 of TTPS-Rengali Dc line to proposed MRSS of M/s Talcher Fertilizer Ltd.	<u>Tahasil: Talcher</u> R.I. Circle: Ghantapada Revenue Village: Jagannathpur, Ghantapada, Tentulei, Diajharan	Rs.6.37 Cr.	D.G.M (Elec.), EHT (C) Division, Angul	This will facilitate the un-interrupted power supply to the villages' covers under the Tahasil of Talcher, M/s Talcher Fertilizer Ltd, command area & overall development of Odisha State in general.

  
(Sakti Prasad Das)

Sr. General Manager (C), Zone-I



# The Odisha Gazette



EXTRAORDINARY  
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No. 2152 CUTTACK, WEDNESDAY, JUNE 29, 2022/ASADHA 8, 1944

## ODISHA POWER TRANSMISSION CORPORATION LIMITED

(A Government of Odisha Undertaking)

OFFICE OF THE SR. GENERAL MANAGER (ELECT.), CONSTRUCTION ZONE-I,  
TECHNICAL BUILDING (1ST FLOOR), BHOI NAGAR, BHUBANESWAR-751022

### NOTIFICATION

The 31st December 2021

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**SAKTI PRASAD DAS**  
Sr. General Manager (C), Zone-I

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## CERTIFICATE

This is to certify that the necessary samples has been collected by **M/s. Gayatri Consultant ,Bhubaneswar , Odisha** on behalf of **KRISHNA POWER CONSTRUCTION PVT. LTD for PTC INDIA LIMITED** from **Soil testing for construction of 220 Kv LILO line from existing loc no- 30 of TTPS-Rengali DC line to Proposed 220/33 kv Gis sub-station At M/s Talcher Fertilizer Ltd.** The necessary laboratory tests have been performed under the supervision of qualified personnel as per the Indian standards and The detail report is prepared on the basis of these various test results and expert experience.



**For. Gayatri Consultant.**

## **INTRODUCTION**

M/s. GAYATRI CONSULTANT, Bhubaneswar on behalf **Krishna power construction pvt. ltd for PTC INDIA LIMITED** , to conducting sub-soil Exploration & Testing of 5nos bore hole at specified locations upto suitable depth for suggesting the foundation types and the allowable bearing pressure etc. The scope of work comprised of sinking of suitable depth. Based on the above this report presents the Bore Logs, Soil Profile & Laboratory test Results. Based on the Laboratory Test results the bearing capacity & Type of foundation have been obtained

## **PREFACE**

Sub soil exploration plays an important role in the design of the foundation of any building and bridges. Before design the foundation for any civil Engineering structure Sub-soil exploration is essentially required to study the character of the Sub-soil strata as well as to determine the SBC of the foundation soil at different depths for **“Soil testing for construction of 220 Kv LILO line from existing loc no- 30 of TTPS-Rengali DC line to Proposed 220/33 kv Gis sub-station At M/s Talcher Fertilizer Ltd.** is decided to design the foundation of the proposed structure on the basis of the Sub-soil exploration and accordingly he entrusted the Sub-soil exploration work to M/S. Gayatri Consultant with a direction to explore the Sub-soil at the proposed site at five nos point.

Accordingly the geotechnical investigation was carried out both in the field and laboratory to know the Sub-soil character and different Engineering properties of the Sub-soil strata met at different depths. SPT collected at different depths were brought to the laboratory to determine its physical properties, as per its relevant IS codes.

Test result of all the soil samples collected at different depths have been presented in the Sub-soil investigation test result. Soil samples collected at different depths with its graphical representation have also been presented in the test report.



## **OBJECTIVES OF SUB SOIL EXPLORATION**

The objective of this Geo-technical investigation is to optimize the Foundation system for proposed Project within the safe bearing capacity of the soil and allowable settlement, it consists of the following: -

- Determination of type, size and depth of foundation- system by analyzing the soil properties.
- To suggest a conclusive recommendation for the type of foundation system to be adopted which would be economically viable and structurally safe for the proposed structures of the projects.

## **LIMITATIONS OF INVESTIGATION**

The scope of Geo-technical exploration is confined within limitations of the framework of agreement drawn between **Krishna power construction pvt. Ltd** All the field and laboratory experiments have been carried out as per the technical specification of the client and the relevant Indian Standard Code of practice. However the directions issued by Engineer-in charge in this respect has been given due emphasis during the sub soil exploration work.

## **SCOPE OF WORK**

The scope of work comprises of conducting detail soil investigation, laboratory testing, conducting and estimation of safe bearing capacity for the above proposed work on drilling boreholes as shown by the Engineer-in charge.

## **NATURE OF INVESTIGATION WORK**

- ☞ The over all investigation consists of the following: -
- ☞ Visual reconnaissance of the site.
- ☞ Field Work-Drilling of Bore Holes up to the required depth.
- ☞ Laboratory experiments, determination of soil parameters.
- ☞ Analysis of field and Laboratory data
- ☞ Arriving at the conclusive decision on foundation system to be adopted in the present case using our Engineering judgment, based on the current practice. The detailed Geo-technical investigation work that was carried out consists of two parts.



## **A. Field Investigation:**

It consists of

- ☞ Location of **5 nos (five)** of borehole with due consultation with the authority.
- ☞ Boring in up to suitable depth.
- ☞ Conducting standard penetration test at the locations pre fixed by the authority.
- ☞ Study of site condition and surroundings with regards to the need of the Project.
- ☞ Taking observation of surrounding structure to observe any deficiency in safety.
- ☞ Transportation of all soil samples to laboratory for analysis with proper care.

## **B. Laboratory Investigation:**

It consists of

### **(I) For Soil**

Sl. No.	Laboratory tests	IS Codes
1	Grain size analysis	IS: 2720(part-4)
2	Atterberg's limits	IS: 2720(part-5)
3	Specific gravity	IS: 2720(part-3)
4	DFS	IS: 2720(part-40)
5	Moisture Content by Oven Dry	IS: 2720(part-2)

## **DETAILS OF FIELD WORK**

### **BORING:**

It is the main part of sub soil investigation work as the soil samples were collected for different tests at different levels. The sub-soil exploration work at the proposed site was carried out mechanically using power operated Mechanical boring in hard strata & using diamond cutter as per IS: 1892 – 1979.

### **IN-SITU TESTS:**

Standard penetration tests (SPT) as per IS: 2131-1981 was carried out from ground level at every alternative 1.5M.interval in soil and bolder or gravels and 1.0m interval in rock stata. Standard split spoon sampler was used for the SPT test. The number of blows required to drive the sampler for the 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> 15cm depths were recorded. The total number of blows required to drive the split spoon sampler due to the free fall of a 63kg. Hammer through a distance of 75 cm for the 2<sup>nd</sup> and 3<sup>rd</sup> 15cm depth were taken together as the field 'N' value or the standard penetration resistance of the soil.

After the penetration to full depth, the sampler was carefully pulled out. The cutting shoe and the head were removed. The soil samples were then sealed in polythene bags and labeled properly by indicating the depths, borehole mark, and reference no. for visual inspection and identification of soil samples for logging of the boreholes. The samples were carefully transported to laboratory for testing purpose.

The 'N' values recorded at various depths have been reported in the summarized data sheet

### **INFORMATION ABOUT LABORATORY TEST**

The laboratory-tests were conducted on selected representative disturbed / SPT soil samples collected from different Boreholes drilled at the proposed site. The tests include Grain size analysis, Natural moisture content, D.F.S, Specific Gravity and Liquid limit, Plastic limit, Plasticity index and Particles size distribution tests on representative soil sample were also carried out. All the tests conducted confirming to the requirements of I.S specification. The results of all these tests have been annexed separately.

### **I. GRAIN SIZE ANALYSIS:**

The grain size analysis of different soil samples were done as per the requirement of IS: 2720 (Pt-IV) 1985 – method of test for soil, Grain size analysis. The details of the test results are shown test result sheet separately. The results of grain size analysis are used to classify the soil in various depths of boreholes. The results of all these tests have been annexed separately.

### **II. NATURAL MOISTURE CONTENT:**

The natural moisture content was determined from different undisturbed samples of different Boreholes at different depths, as per IS: 2720(Pt-II)-1973: Method of test for soil, determination of Water content. It is used for determining specific gravity, optimum moisture content, S.B.C, settlement of foundation system. The results of all these tests have been annexed separately.

### **III. DETERMINATION OF SPECIFIC GRAVITY:**

The specific gravity of the SPT / DS samples have been determined at different levels as per IS: 2720(Pt-III)-1980. It is used for determining void ratio, porosity, saturated density, S.B.C, settlement of foundation system. The results of all these tests have been annexed separately.

### **IV. DETERMINATION OF INDEX PROPERTIES:**

The liquid and plastic limits of soils were other index properties of soil have also been determined as per the relevant as per IS: 2720(Pt-v)-1985 Code of practice. The liquid and plastic limits of soil samples have been determined in the laboratory and it is used for determining S.B.C, settlement of foundation system etc. The results of all these tests has been annexed separately

### **V. D.F.S. TEST**

DFS test is conducted as per IS-2720(Pt-40)-1977. In this test the free swell index of a soil sample is determined which helps to identify the potential of a soil to swell.

## BORE - LOG DATA SHEET

<b>Name of the Work:-</b>	<b>BORE HOLE NO</b>	:-	<b>SUB-STATION AREA</b>
<b>SOIL TESTING FOR CONSTRUCTION OF 220 KV LILO LINE FROM EXISTING LOC NO- 30 OF TTPS-RENGALI DC LINE TO PROPOSED 220/33 KV GIS SUB-STATION AT M/S TALCHER FERTILIZER LTD.</b>	<b>Type of Boring</b>	:-	<b>ROTARY BORING</b>
	<b>DIA OF BORE HOLE</b>	:-	150 MM
<b>CLIENT:- PTC INDIA LIMITED</b>	<b>Date of Start</b>	:-	01/08/2022
<b>Name of Agency. :- KRISHNA POWER CONSTRUCTION PVT. LTD</b>	<b>Date of Completion</b>	:-	01/08/2022
	<b>Ground Water Table</b>	:-	2.0 MTR

Visual Description of soil Starta	R.L. in Mtr.	Thickness of Starts & Soil Profile	Indian standrad Classificati on	Number of Blows			SPT Value "N"	Depth in mtrs.	SPT Value "N" Depth Plot	Type of Sample	Core Recovery (%)	R.Q.D (%)
				1st 15cm	2nd 15cm	3rd 15cm						
Clayey Gravel		0.00 1.00										
Clayey sand			SC	4	5	4	9	1.5	9	SPT Sample		
				5	7	8	15	3.0	15	SPT Sample		
				5	8	9	17	4.5	17	SPT Sample		
				7	10	12	22	6.0	22	SPT Sample		
				8	12	15	27	7.5	27	SPT Sample		
Sandy stone particles ( D.I )		8.0 12.0	SP	11	16	19	35	9.0	35	SPT Sample		
				14	18	22	40	10.5	40	SPT Sample		
				18	20	21	41	12.0	41	SPT Sample		

<b>GW : Well Graded Gravels</b>	<b>SC : Clayey sand</b>	<b>OH : Organic Silty&amp;Clay with High Comp.</b>
<b>GP : Poor Graded Gravels</b>	<b>ML : In Organic Silty with Low Comp.</b>	<b>RL : Reduce Level</b>
<b>SW : Well Graded Sand</b>	<b>CL: In Organic Clay with Low Comp.</b>	<b>GW : Ground Water</b>
<b>SP : Poor Graded Sand</b>	<b>MI: In Organic Silt with Medium Comp.</b>	<b>DS : Distrubed Sample</b>
<b>GM : Silty Gravels</b>	<b>CI : In Organic Clay with Medium Comp.</b>	<b>UDS :Un Distrubed Sample</b>
<b>GC : Clayey Gravel</b>	<b>MH: In Organic Silty with High Comp.</b>	<b>SPT : Standard Penetration Test</b>
<b>SM : Silty Sand</b>	<b>CH: In Organic Clay with High Comp.</b>	<b>RQD : Rock Quality Designation</b>



**LABORATORY TEST RESULT SHEET:  
BORE HOLE NO-SUB-STATION AREA**

Sample Ref DEPTH IN MTR	Grain size analysis(% of mass retained)					Physical Properties					Index Properties Atterberg's limit			Shear Test Triaxial / Direct shear		DFS In %	Group of Soil  as per IS: 1498-1970	
	Gravel- sand		Coarse sand	Medium sand	Fine sand	Silt&clay	Moisture	Bulk	Dry	Specific	Void	Liquid	Plastic	Plasticity	C in Kg/cm <sup>2</sup>			Ø in Degree
	10- 4.75mm	4.75-2.0mm	2mm-425mic	425-75mic	75-1mic	content	density	density	gravity	ratio	limit	limit	index					
	10mm	4.75mm	2mm	425mic	75mic	in %	gm/cc	gm/cc	SG	e	in %	in %	in %					
SPT AT 1.50 MT	0.000	0.000	5.000	28.630	20.200	46.170	14.20	1.855	---	2.66	---	30.00	17.00	13.00	---	---	15.00	SC
SPT AT 3.00 MT	0.000	0.000	6.000	30.200	21.200	42.600	14.28	1.866	---	2.66	---	30.00	17.00	13.00	---	---	10.00	SC
SPT AT 4.50 MT	0.000	0.000	8.000	31.200	20.100	40.700	14.34	1.875	---	2.66	---	28.00	16.00	12.00	---	---	10.00	SC
SPT AT 6.00 MT	0.000	0.000	9.420	32.500	18.200	39.880	14.4	---	---	2.66	---	28.00	16.00	12.00	---	---	10.00	SC
SPT AT 7.50 MT	0.000	0.000	14.850	32.100	15.200	37.850	14.47	---	---	2.66	---	28.00	16.00	12.00	---	---	10.00	SC
SPT AT 9.00 MT	0.000	0.000	20.000	46.570	27.200	6.230	11.35	---	---	2.65	---	14.00	--	NIL	---	---	0.00	SP
SPT AT 10.50 MT	0.000	0.000	22.100	47.100	25.000	5.800	11.40	---	---	2.65	---	13.00	--	NIL	---	---	0.00	SP
SPT AT 12.00 MT	0.000	0.000	24.000	48.000	24.200	3.800	11.47	---	---	2.65	---	12.00	--	NIL	---	---	0.00	SP



## CALCULATION OF SBC FROM FIELD SPT VALUE AT 1.50m S/S

Field SPT value at 1.50m depth	N =	9
Bulk density g =		1.855 g/cc
Depth Df =		1.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.128	Kg/cm <sup>2</sup>
$Bg = (B \times g) / 1000$	0.371	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	9
After Dilatency correction	N'' =	9
Angle of shearing resistance	f =	29 <sup>o</sup>
	f' =	20.0 <sup>o</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
29	16.852	20.096
20	6.4	5.39

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.255$$

$$d_q = d_g = 1.127 \quad i_c = i_q = i_g = 1$$

$$w' = 1$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5BgNg'S_g d_g i_g W'$$

$$= 0.128 \times (6.400 - 1) \times 1.200 \times 1.127 \times 1.000 + 0.500 \times 0.371 \times 5.390 \times 0.800 \times 1.127 \times 1.000 \times 1.000$$

$$= 0.937 + 0.901 = 1.838 \text{ Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 1.838 \text{ Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 0.735 \text{ Kg/cm}^2$$

$$\text{NSBC} = 7.35 \text{ T/m}^2$$

$$\text{Safe Bearing capacity} = \text{SBC} = 8.63 \text{ T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 3.00m S/S

Field SPT value at 3.00m depth	N =	15
Bulk density g =		1.866 g/cc
Depth Df =		3 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.260	Kg/cm <sup>2</sup>
$Bg = (B \times g) / 1000$	0.373	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	15
After Dilatency correction	N'' =	15
Angle of shearing resistance	f =	28 <sup>0</sup>
	f' =	20.0 <sup>0</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
28	15.304	17.792
20	6.4	5.39

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.499$$

$$d_q = d_g = 1.25 \quad i_c = i_q = i_g = 1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5BgNg'S_g d_g i_g W'$$

$$= 0.260 \times (6.400 - 1) \times 1.200 \times 1.250 \times 1.000 + 0.500 \times 0.373 \times 5.390 \times 0.800 \times 1.250 \times 1.000 \times 0.500$$

$$= 2.104 + 0.503 = 2.607 \text{ Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 2.607 \text{ Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 1.043 \text{ Kg/cm}^2$$

$$\text{NSBC} = 10.43 \text{ T/m}^2$$

$$\text{Safe Bearing capacity} = \text{SBC} = 13.03 \text{ T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 4.50m S/S

Field SPT value at 4.50m depth	N =	17
Bulk density g =		1.875 g/cc
Depth Df =		4.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.394	Kg/cm <sup>2</sup>
$Bg = (B \times g) / 1000$	0.375	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correctior	N' =	17
After Dilatency correction	N'' =	16
Angle of shearing resistance	f =	27°
	f' =	19.0°

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
27	13.756	15.488
19	5.908	4.842

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.734$$

$$d_q = d_g = 1.367 \quad i_c = i_q = i_g = 1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for sqire footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5BgNg'S_g d_g i_g W'$$

$$= 0.394 \times (5.908 - 1) \times 1.200 \times 1.367 \times 1.000 + 0.500 \times 0.375 \times 4.842 \times 0.800 \times 1.367 \times 1.000 \times 0.500$$

$$= 3.17 + 0.496 = 3.666 \text{ Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 3.666 \text{ Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 1.466 \text{ Kg/cm}^2$$

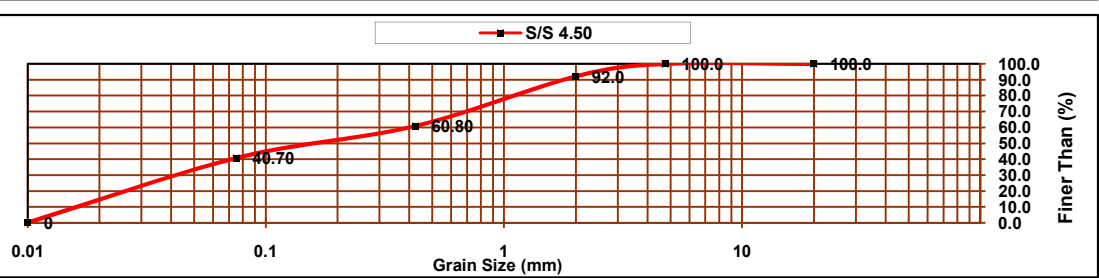
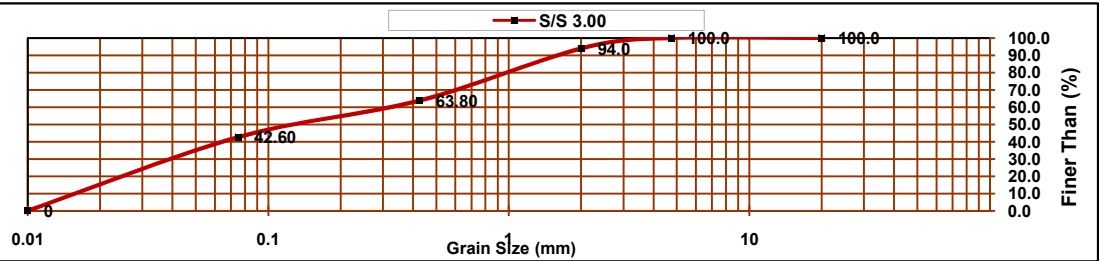
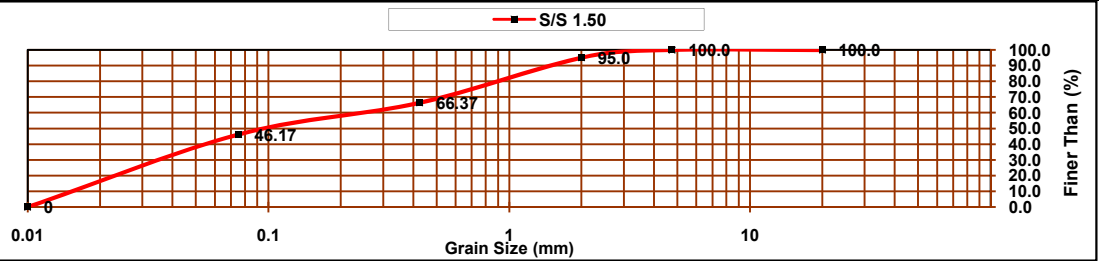
$$\text{NSBC} = 14.66 \text{ T/m}^2$$

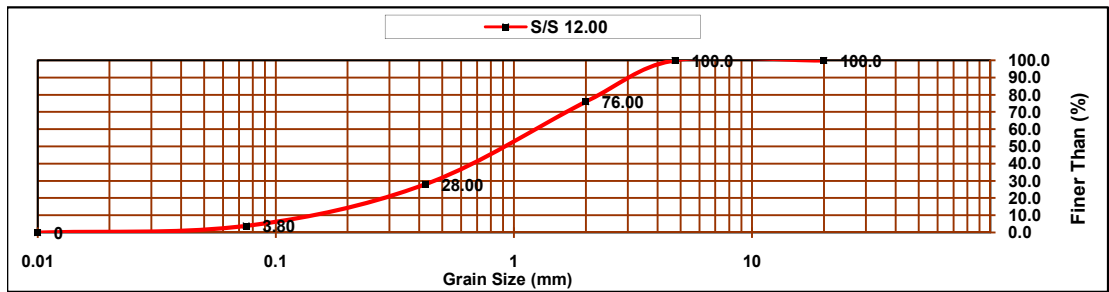
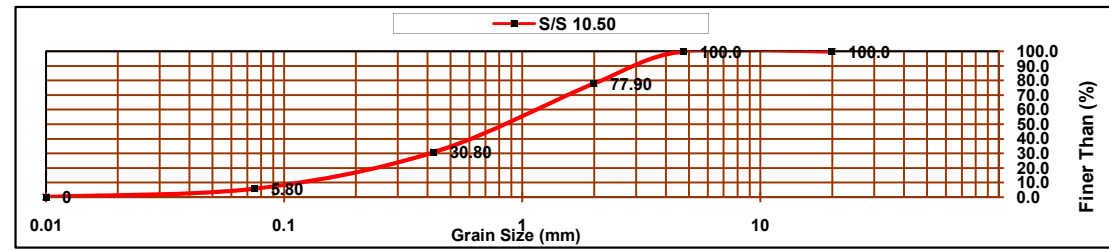
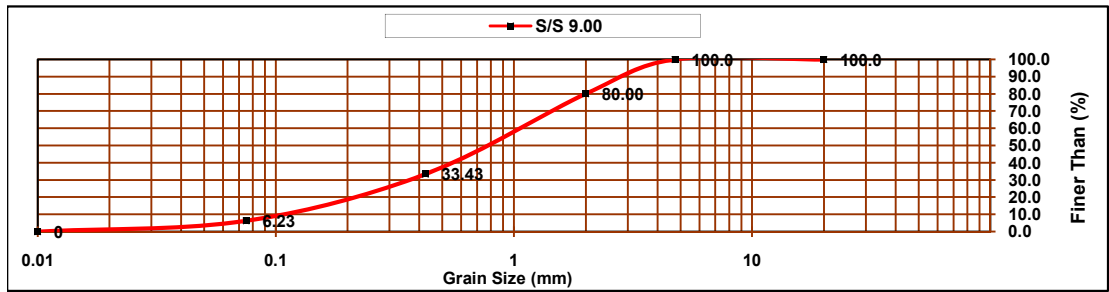
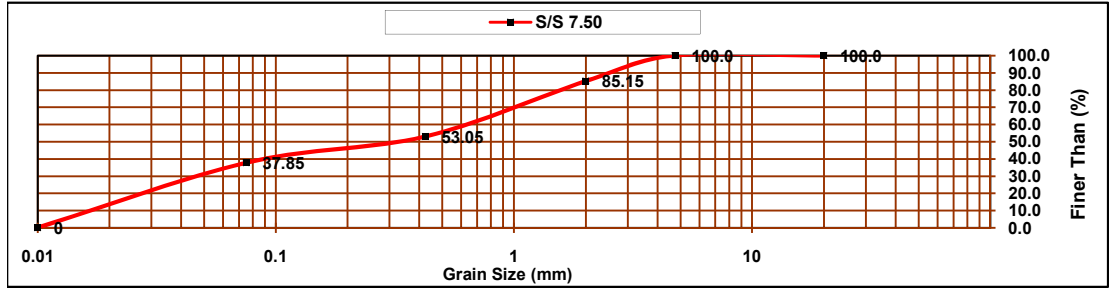
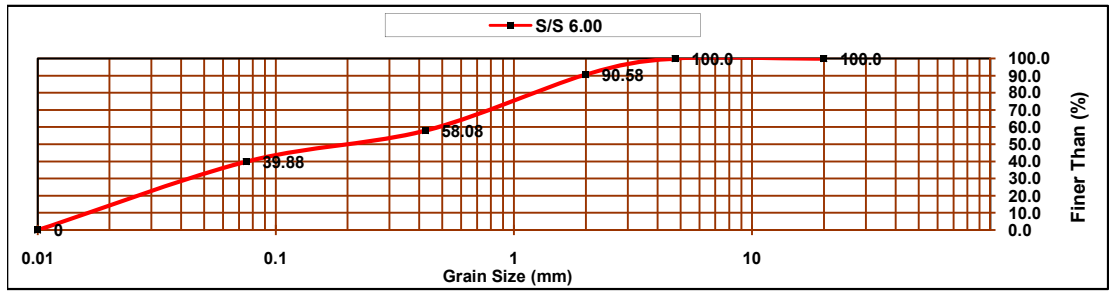
$$\text{Safe Bearing capacity} = \text{SBC} = 18.60 \text{ T/m}^2$$



**LABORATORY TEST RESULT OF GRAIN SIZE ANALYSIS OF S/S**

Sl.No.	Borehole Reference	Sample Depth in Mtr.	% of Passing through I. S. Sieve in mm					
			20.00	4.75	2.00	0.425	0.075	0.010
1	S/S	1.50	100.0	100.0	95.0	66.37	46.17	0
2	S/S	3.00	100.0	100.0	94.0	63.80	42.60	0
3	S/S	4.50	100.0	100.0	92.0	60.80	40.70	0
4	S/S	6.00	100.0	100.0	90.58	58.08	39.88	0
5	S/S	7.50	100.0	100.0	85.15	53.05	37.85	0
6	S/S	9.00	100.0	100.0	80.00	33.43	6.23	0
7	S/S	10.50	100.0	100.0	77.90	30.80	5.80	0
8	S/S	12.00	100.0	100.0	76.00	28.00	3.80	0





### **BRIEF GEOLOGY & ANALYSIS OF BORING DATA**

<b>Borehole Reference</b>	<b>Depth in mtr</b>	<b>Visual Description Of Soil</b>	<b>Water Table</b>
Sub-Station Area	0.00-1.00	Clayey Gravel	<b>2.00 mtr</b>
	1.00-8.00	Clayey sand	
	8.00-12.00	Sandy stone particles ( D.I )	

### **DETERMINATION OF SAFE BEARING CAPACITY:**

safe bearing capacity (SBC) has been calculated as per I.S. 6403: 1985 .

<b>Bore Hole Ref.</b>	<b>Depth in Mtr.</b>	<b>Type of sample</b>	<b>NSBC in (T/m<sup>2</sup>)</b>	<b>SBC in (T/m<sup>2</sup>)</b>
Sub-Station Area	1.50	SPT	7.35	8.63
	3.00	SPT	10.43	13.03
	4.50	SPT	14.66	18.60

### **CONCLUSION & RECOMMENDATION FOR FOUNDATION**

Based on all the engineering properties of soil from various field & laboratory testing report the Suitable foundation with respect to the type of structure is to be provided

For Gayatri Consultant



(Manager Q.C)

For Gayatri Consultant



( Sr. Manager QC/QA)

## BORE - LOG DATA SHEET

Name of the Work:-		BORE HOLE NO	:-	LOC-01
SOIL TESTING FOR CONSTRUCTION OF 220 KV LILO LINE FROM EXISTING LOC NO- 30 OF TTPS-RENGALI DC LINE TO PROPOSED 220/33 KV GIS SUB-STATION AT M/S TALCHER FERTILIZER LTD.		Type of Boring	:-	ROTARY BORING
		DIA OF BORE HOLE	:-	150 MM
CLIENT:- PTC INDIA LIMITED		Date of Start	:-	29/07/2022
Name of Agency. :- KRISHNA POWER CONSTRUCTION PVT. LTD		Date of Completion	:-	29/07/2022
		Ground Water Table	:-	1.00 MTR

Visual Description of soil Starta	R.L. in Mtr.	Thickness of Starts & Soil Profile	Indian standrad Classification	Number of Blows			SPT Value "N"	Depth in mtrs.	SPT Value "N" Depth Plot	Type of Sample	Core Recovery (%)	R.Q.D (%)	
				1st 15cm	2nd 15cm	3rd 15cm							
Clayey sand mixed with Gravel		0.00	SC										
				3	3	4	7	1.5		7	SPT Sample		
				4	4	5	9	3.0		9	SPT Sample		
				8	8	12	20	4.5		20	SPT Sample		
				8	11	13	24	6.0		24	SPT Sample		
		7.50		10	12	17	29	7.5	29	SPT Sample			

<p>GW : Well Graded Gravels                  GP : Poor Graded Gravels                  SW : Well Graded Sand                  SP : Poor Graded Sand                  GM : Silty Gravels                  GC : Clayey Gravel                  SM : Silty Sand</p>	<p>SC : Clayey sand                  ML : In Organic Silty with Low Comp.                  CL: In Organic Clay with Low Comp.                  MI: In Organic Silt with Medium Comp.                  CI : In Organic Clay with Medium Comp.                  MH: In Organic Silty with High Comp.                  CH: In Organic Clay with High Comp.</p>	<p>OH : Organic Silty&amp;Clay with High Comp.                  RL : Reduce Level                  GW : Ground Water                  DS : Distrubed Sample                  UDS :Un Distrubed Sample                  SPT : Standard Penetration Test                  RQD : Rock Quality Designation</p>
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**LABORATORY TEST RESULT SHEET:  
BORE HOLE NO-LOC-01**

Sample Ref DEPTH IN MTR	Grain size analysis(% of mass retained)						Physical Peroperties					Index Properties Atterberg's limit			Shear Test Triaxial / Direct shear		D F S In %	Group of Soil as per IS: 1498-1970
	Gravel- sand		Coarse sand	Medium sand	Fine sand	Silt&clay	Moisture	Bulk	Dry	Specific	Void	Liquid	Plastic	Plasticity	C in Kg/cm <sup>2</sup>	Ø in Degree		
	10- 4.75mm	4.75-2.0mm	2mm-425mic	425-75mic	75-1mic	content	density	density	gravity	limit		limit	index					
	10mm	4.75mm	2mm	425mic	75mic	in %	gm/cc	gm/cc	SG	in %	in %	in %						
SPT AT 1.50 MT	0.000	2.420	4.000	18.630	26.000	48.950	17.52	1.850	---	2.67	---	32.00	19.00	13.00	---	---	20.00	SC
SPT AT 3.00 MT	0.000	2.900	5.250	20.300	24.850	46.700	14.7	1.855	---	2.67	---	32.00	19.00	13.00	---	---	15.00	SC
SPT AT 4.50 MT	0.000	4.960	7.000	23.300	20.300	44.440	14.76	1.900	---	2.67	---	31.00	18.00	13.00	---	---	15.00	SC
SPT AT 6.00 MT	0.000	7.560	8.960	25.400	18.330	39.750	14.82	---	---	2.67	---	29.00	17.00	12.00	---	---	10.00	SC
SPT AT 7.50 MT	0.000	13.300	10.200	22.300	15.300	38.900	14.92	---	---	2.67	---	29.00	17.00	12.00	---	---	10.00	SC



## CALCULATION OF SBC FROM FIELD SPT VALUE AT 1.50m ( LOC-01 )

Field SPT value at 1.50m depth	N =	7
Bulk density g =		1.85 g/cc
Depth Df =		1.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.128	Kg/cm <sup>2</sup>
$B_g = (B \times g) / 1000$	0.370	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	7
After Dilatency correction	N'' =	7
Angle of shearing resistance	f =	31 <sup>0</sup>
	f' =	22.0 <sup>0</sup>

Bearing capacity factors		
f & f'	N <sub>q</sub> & N <sub>q</sub> '	N <sub>g</sub> & N <sub>g</sub> '
31	21.38	27.526
22	8.104	7.586

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.265$$

$$d_q = d_g = 1.133 \quad i_c = i_q = i_g = 1 \quad w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(N_q' - 1)S_q d_q i_q + 0.5 B_g N_g' S_g d_g i_g W'$$

$$= 0.128 \times (8.104 - 1) \times 1.200 \times 1.133 \times 1.000 + 0.500 \times 0.370 \times 7.586 \times 0.800 \times 1.133 \times 1.000 \times 0.500$$

$$= 1.231 \quad + \quad 0.636 \quad = \quad 1.867 \quad \text{Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 1.867 \quad \text{Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 0.747 \quad \text{Kg/cm}^2$$

$$\text{NSBC} = 7.47 \quad \text{T/m}^2$$

$$\text{Safe Bearing capacity} \quad \text{SBC} = 8.74 \quad \text{T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 3.00m ( LOC-01 )

Field SPT value at 3.00m depth	N =	9
Bulk density g =		1.855 g/cc
Depth Df =		3 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.257	Kg/cm <sup>2</sup>
$B_g = (B \times g) / 1000$	0.371	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	9
After Dilatency correction	N'' =	9
Angle of shearing resistance	f =	27°
	f' =	19.0°

Bearing capacity factors		
f & f'	N <sub>q</sub> & N <sub>q</sub> '	N <sub>g</sub> & N <sub>g</sub> '
27	13.756	15.488
19	5.908	4.842

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.49$$

$$d_q = d_g = 1.245 \quad i_c = i_q = i_g = 1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(N_q' - 1)S_q d_q i_q + 0.5B_g N_g' s_g d_g i_g W'$$

$$= 0.257 \times (5.908 - 1) \times 1.200 \times 1.245 \times 1.000 + 0.500 \times 0.371 \times 4.842 \times 0.800 \times 1.245 \times 1.000 \times 0.500$$

$$= 1.881 + 0.447 = 2.328 \text{ Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 2.328 \text{ Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 0.931 \text{ Kg/cm}^2$$

$$\text{NSBC} = 9.31 \text{ T/m}^2$$

$$\text{Safe Bearing capacity} = \text{SBC} = 11.88 \text{ T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 4.50m ( LOC-01 )

Field SPT value at 4.50m depth	N =	20
Bulk density g =		1.9 g/cc
Depth Df =		4.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.405	Kg/cm <sup>2</sup>
$Bg = (B \times g) / 1000$	0.380	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correctior	N' =	20
After Dilatency correction	N'' =	17.5
Angle of shearing resistance	f =	28 <sup>0</sup>
	f' =	20.0 <sup>0</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
28	15.304	17.792
20	6.4	5.39

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.749$$

$$d_q = d_g = 1.374 \quad i_c = i_q = i_g = 1 \quad w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for sqire footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5 B g N_g' S_g d_g i_g W'$$

$$= 0.405 \times (6.400 - 1) \times 1.200 \times 1.374 \times 1.000 + 0.500 \times 0.380 \times 5.390 \times 0.800 \times 1.374 \times 1.000 \times 0.500$$

$$= 3.606 + 0.563 = 4.169 \text{ Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 4.169 \text{ Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 1.668 \text{ Kg/cm}^2$$

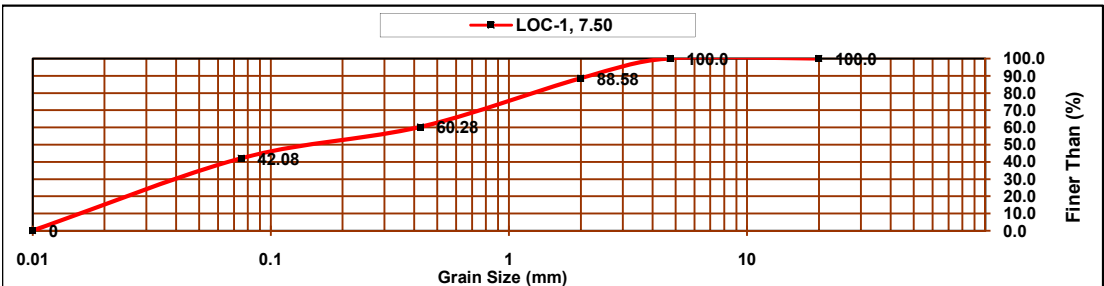
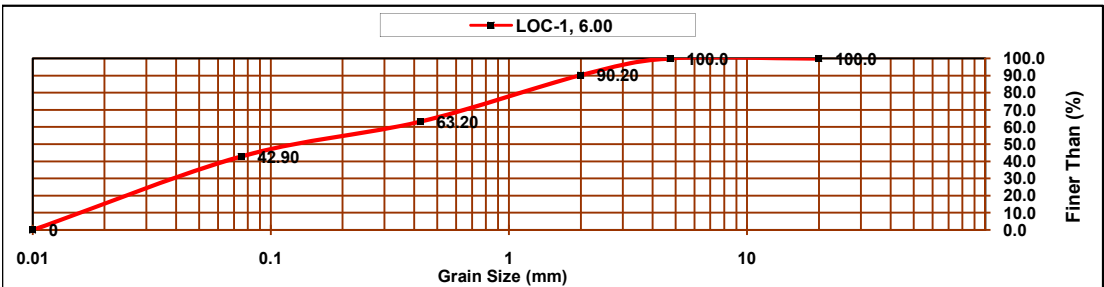
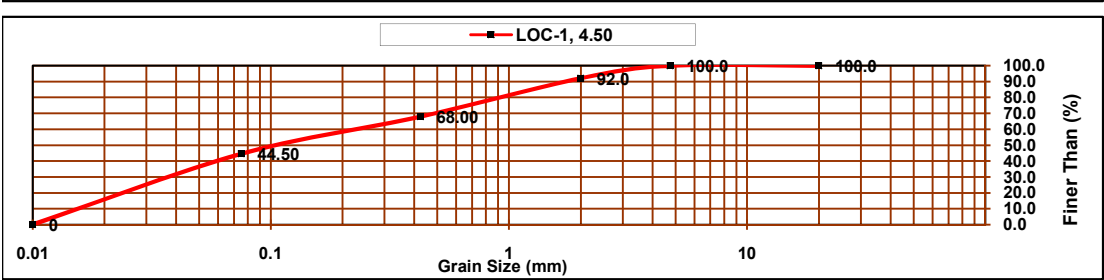
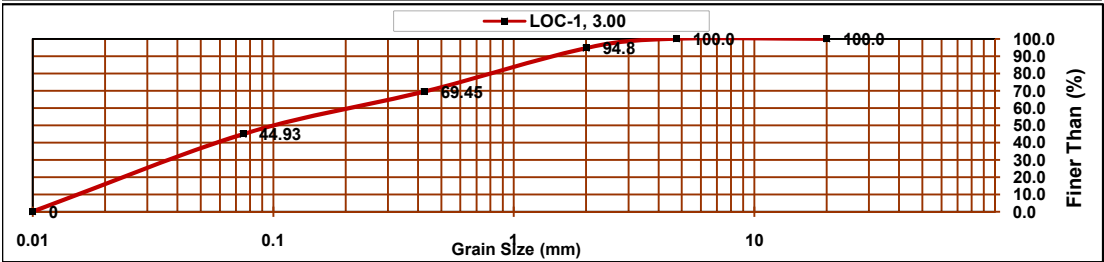
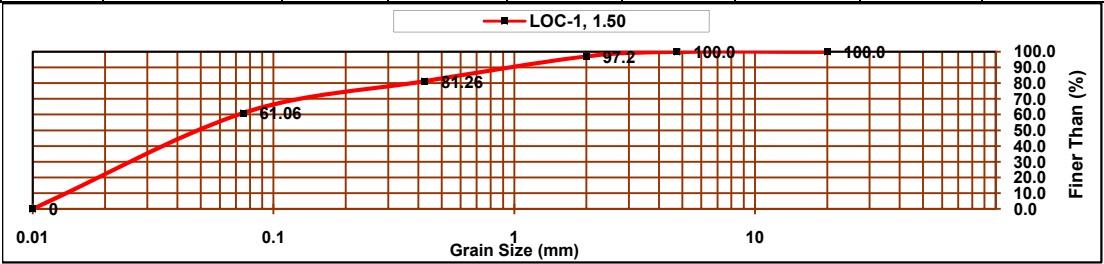
$$\text{NSBC} = 16.68 \text{ T/m}^2$$

$$\text{Safe Bearing capacity} = \text{SBC} = 20.73 \text{ T/m}^2$$



**LABORATORY TEST RESULT OF GRAIN SIZE ANALYSIS OF LOC-1**

Sl.No.	Borehole Reference	Sample Depth in Mtr.	% of Passing through I. S. Sieve in mm					
			20.00	4.75	2.00	0.425	0.075	0.010
1	LOC-1,	1.50	100.0	100.0	97.2	81.26	61.06	0
2	LOC-1,	3.00	100.0	100.0	94.8	69.45	44.93	0
3	LOC-1,	4.50	100.0	100.0	92.0	68.00	44.50	0
4	LOC-1,	6.00	100.0	100.0	90.20	63.20	42.90	0
5	LOC-1,	7.50	100.0	100.0	88.58	60.28	42.08	0



### **BRIEF GEOLOGY & ANALYSIS OF BORING DATA**

<b>Borehole Reference</b>	<b>Depth in mtr</b>	<b>Visual Description Of Soil</b>	<b>Water Table</b>
LOC-01	0.00-7.50	Clayey sand mixed with Gravel .	<b>1.00 mtr</b>

### **DETERMINATION OF SAFE BEARING CAPACITY:**

safe bearing capacity (SBC) has been calculated as per I.S. 6403: 1985 .

<b>Bore Hole Ref.</b>	<b>Depth in Mtr.</b>	<b>Type of sample</b>	<b>NSBC in (T/m<sup>2</sup>)</b>	<b>SBC in (T/m<sup>2</sup>)</b>
LOC-01	1.50	SPT	7.47	8.74
	3.00	SPT	9.31	11.88
	4.50	SPT	16.68	20.73

### **CONCLUSION & RECOMMENDATION FOR FOUNDATION**

Based on all the engineering properties of soil from various field & laboratory testing report the Suitable foundation with respect to the type of structure is to be provided

For Gayatri Consultant



(Manager Q.C)

For Gayatri Consultant

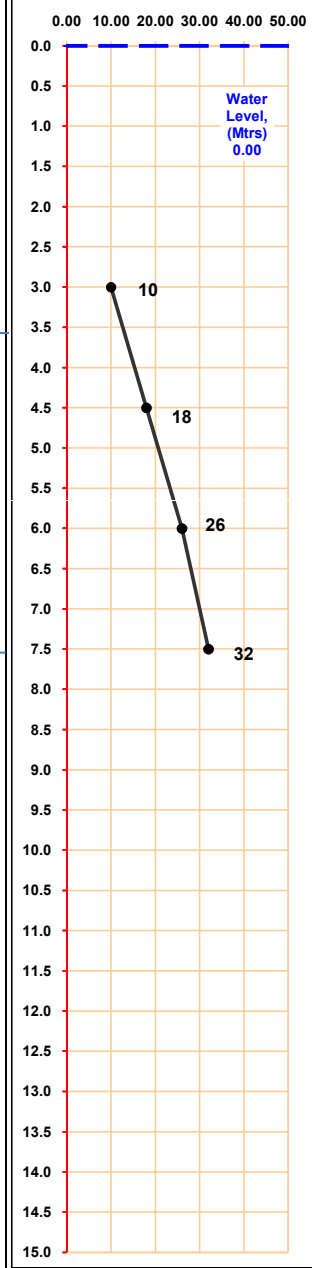


( Sr. Manager QC/QA)

## BORE - LOG DATA SHEET

Name of the Work:-	BORE HOLE NO :-	LOC-07
SOIL TESTING FOR CONSTRUCTION OF 220 KV LILO LINE FROM EXISTING LOC NO- 30 OF TTPS-RENGALI DC LINE TO PROPOSED 220/33 KV GIS SUB-STATION AT M/S TALCHER FERTILIZER LTD.	Type of Boring :-	ROTARY BORING
	DIA OF BORE HOLE :-	150 MM
CLIENT:- PTC INDIA LIMITED	Date of Start :-	30/07/2022
Name of Agency. :- KRISHNA POWER CONSTRUCTION PVT. LTD	Date of Completion :-	30/07/2022
	Ground Water Table :-	0.0 MTR

Visual Description of soil Starta	R.L. in Mtr.	Thickness of Starts & Soil Profile	Indian standrad Classificati on	Number of Blows			SPT Value "N"	Depth in mtrs.	SPT Value "N" Depth Plot	Type of Sample	Core Recovery (%)	R.Q.D (%)
				1st 15cm	2nd 15cm	3rd 15cm						
In Organic Clay with Low Comp.		0.00	CL							UDS Sample		
		3.50		4	4	6	10			SPT Sample		
Clayey sand		7.50	SC	6	8	10	18			SPT Sample		
				8	12	14	26			SPT Sample		
				12	14	18	32			SPT Sample		



<p><b>GW</b> : Well Graded Gravels</p> <p><b>GP</b> : Poor Graded Gravels</p> <p><b>SW</b> : Well Graded Sand</p> <p><b>SP</b> : Poor Graded Sand</p> <p><b>GM</b> : Silty Gravels</p> <p><b>GC</b> : Clayey Gravel</p> <p><b>SM</b> : Silty Sand</p>	<p><b>SC</b> : Clayey sand</p> <p><b>ML</b> : In Organic Silty with Low Comp.</p> <p><b>CL</b> : In Organic Clay with Low Comp.</p> <p><b>MI</b> : In Organic Silt with Medium Comp.</p> <p><b>CI</b> : In Organic Clay with Medium Comp.</p> <p><b>MH</b> : In Organic Silty with High Comp.</p> <p><b>CH</b> : In Organic Clay with High Comp.</p>	<p><b>OH</b> : Organic Silty&amp;Clay with High Comp.</p> <p><b>RL</b> : Reduce Level</p> <p><b>GW</b> : Ground Water</p> <p><b>DS</b> : Distrubed Sample</p> <p><b>UDS</b> :Un Distrubed Sample</p> <p><b>SPT</b> : Standard Penetration Test</p> <p><b>RQD</b> : Rock Quality Designation</p>
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**LABORATORY TEST RESULT SHEET:  
BORE HOLE NO-LOC-07**

Sample Ref DEPTH IN MTR	Grain size analysis(% of mass retained)						Physical Peroperties					Index Properties Atterberg's limit			Shear Test Triaxial / Direct shear		D <sub>ES</sub> In %	Group of Soil as per IS: 1498-1970
	Gravel- sand		Coarse sand	Medium sand	Fine sand	Silt&clay	Moisture	Bulk	Dry	Specific	Void	Liquid	Plastic	Plasticity	C in Kg/cm <sup>2</sup>	Ø in Degree		
	10- 4.75mm	4.75-2.0mm	2mm-425mic	425-75mic	75-1mic	content	density	density	gravity	ratio	limit	limit	index					
	10mm	4.75mm	2mm	425mic	75mic	in %	gm/cc	gm/cc	SG	e	in %	in %	in %					
UDS AT 1.50 MT	0.000	0.000	3.850	12.560	24.960	58.630	17.20	1.808	1.543	2.67	0.731	36.00	19.00	17.00	0.26	5.00	25.00	CL
SPT AT 3.00 MT	0.000	0.000	4.000	17.000	26.550	52.450	17.28	1.814	---	2.67	---	35.00	19.00	16.00	---	---	25.00	CL
SPT AT 4.50 MT	0.000	0.000	6.330	20.200	28.300	45.170	14.58	1.902	---	2.66	---	31.00	17.00	14.00	---	---	15.00	SC
SPT AT 6.00 MT	0.000	0.000	7.900	23.300	25.100	43.700	14.62	---	---	2.66	---	31.00	17.00	14.00	---	---	15.00	SC
SPT AT 7.50 MT	0.000	0.000	9.000	27.000	24.300	39.700	14.70	---	---	2.66	---	29.00	16.00	13.00	---	---	10.00	SC



## Calculation of safe bearing capacity from strength parameter UDS samples)

( AT 1.50 M)(Bore Hole No- LOC-07)

			Depth of foundation =1.50
Cohesion C =	0.26		Kg/cm <sup>2</sup>
Angle of shearing resistance $\phi =$	5.00		Degree <span style="border: 1px solid black; padding: 2px;">Ø &lt;10</span>
$\phi' =$	3		Degree
Void ratio	e = 0.731		Loose
Specific Gravity	Gs = 2.67		
Bulk density $\gamma =$	1.808		g/cc
Depth of foundation Df =	1.50		m
let us assume width of footing B=	2.00		m

### Over burden pressure

$$q = [Df \times (\gamma - 1)] / 1000 = 0.1212 \text{ Kg/cm}^2$$

$$B\gamma = (B \times \gamma) / 1000 = 0.3616 \text{ Kg/cm}^2$$

### Bearing capacity factors (From IS : 6403-1981, Table-1)

$\phi$ & $\phi'$	Nc & Nc'	Nq & Nq'	N $\gamma$ & N $\gamma'$
5	6.49	1.57	0.45
3	5.95	1.342	0.27

### Shape Factors ( From IS : 6403-1981, Table-2)

$$S_c = 1.3 \quad S_q = 1.2 \quad S_\gamma = 0.8$$

### Depth Factors & inclination Factors ( From IS : 6403-1981, Clause-5.1.2.2 & Clause-5.1.2.3)

$$d_c = 1 + 0.2 \times (Df/B) \times \tan(45 + \phi/2) = 1.164$$

$$d_q = d_\gamma = 1 \quad i_c = i_q = i_\gamma = 1$$

### Effect of water tables (From IS : 6403-1981 Clause -5.1.2.4)

$$w' = 0.5$$

(Water correction consider in worst condition)

### In case of General shear failure for square footing ( Clause-5.1.2)

$$Q_d = cN_c S_c d_c i_c + q(N_q - 1) S_q d_q i_q + 0.5 B \gamma N_\gamma S_\gamma d_\gamma i_\gamma W'$$

$$= 2.553 + 0.083 + 0.033$$

$$= 2.669 \text{ Kg/cm}^2$$

### In case of Local shear failure for Square footing ( Clause-5.1.2)

$$Q_d' = (2/3) cN_c' S_c d_c i_c + q(N_q' - 1) S_q d_q i_q + 0.5 B \gamma N_\gamma S_\gamma d_\gamma i_\gamma W'$$

$$= 1.561 + 0.05 + 0.02$$

$$= 1.631 \text{ Kg/cm}^2$$

$$\text{Net Safe bearing capacity considering factor of safety of 2.50} = \frac{Q_d - Q_d'}{2.50} = \frac{2.669 - 1.631}{2.50} = 0.414 \text{ Kg/cm}^2$$

$$\text{Safe bearing capacity} = (\text{NSBC} + \text{Surcharge wt at base level foundation}) = 0.814 \text{ Kg/cm}^2$$

$$\Rightarrow \text{SBC} = 0.814 + 0.414 = 1.228 \text{ Kg/cm}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 3.00m ( LOC-07 )

Field SPT value at 3.00m depth	N =	10
Bulk density g =		1.814 g/cc
Depth Df =		3 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.244	Kg/cm <sup>2</sup>
$Bg = (B \times g) / 1000$	0.363	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	10
After Dilatency correction	N'' =	10
Angle of shearing resistance	f =	27 <sup>o</sup>
	f' =	19.0 <sup>o</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
27	13.756	15.488
19	5.908	4.842

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.49$$

$$d_q = d_g = 1.245 \quad i_c = i_q = i_g = 1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(N_q' - 1)S_q d_q i_q + 0.5 B g N_g' S_g d_g i_g W'$$

$$= 0.244 \times (5.908 - 1) \times 1.200 \times 1.245 \times 1.000 + 0.500 \times 0.363 \times 4.842 \times 0.800 \times 1.245 \times 1.000 \times 0.500$$

$$= 1.791 + 0.437 = 2.228 \text{ Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 2.228 \text{ Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 0.891 \text{ Kg/cm}^2$$

$$\text{NSBC} = 8.91 \text{ T/m}^2$$

$$\text{Safe Bearing capacity} = \text{SBC} = 11.35 \text{ T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 4.50m ( LOC-07 )

Field SPT value at 4.50m depth	N =	18
Bulk density g =		1.902 g/cc
Depth Df =		4.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.406	Kg/cm <sup>2</sup>
$Bg = (B \times g) / 1000$	0.380	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correctior	N' =	18
After Dilatency correction	N'' =	16.5
Angle of shearing resistance	f =	27 <sup>0</sup>
	f' =	19.0 <sup>0</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
27	13.756	15.488
19	5.908	4.842

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.734$$

$$d_q = d_g = 1.367 \quad i_c = i_q = i_g = 1 \quad w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for sqire footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5BgNg'S_g d_g i_g W'$$

$$= 0.406 \times (5.908 - 1) \times 1.200 \times 1.367 \times 1.000 + 0.500 \times 0.380 \times 4.842 \times 0.800 \times 1.367 \times 1.000 \times 0.500$$

$$= 3.268 + 0.504 = 3.772 \text{ Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 3.772 \text{ Kg/cm}^2$$

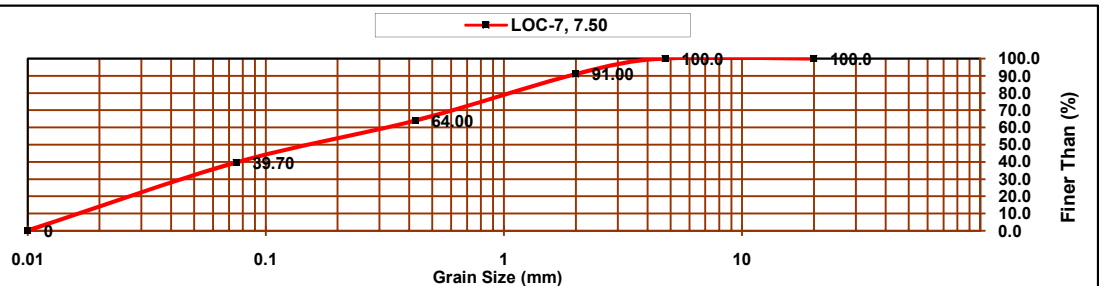
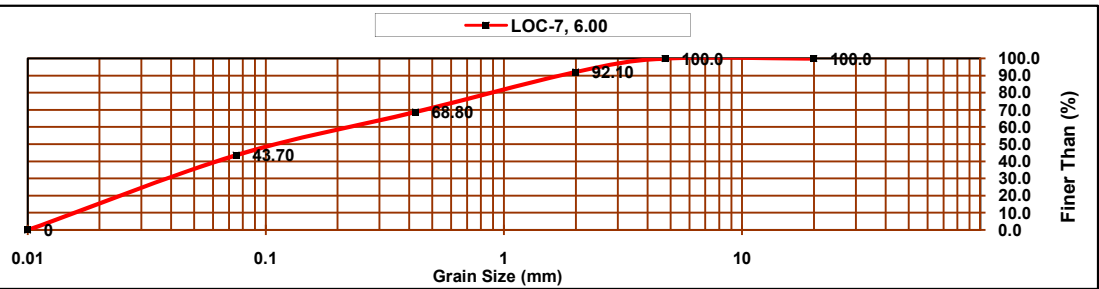
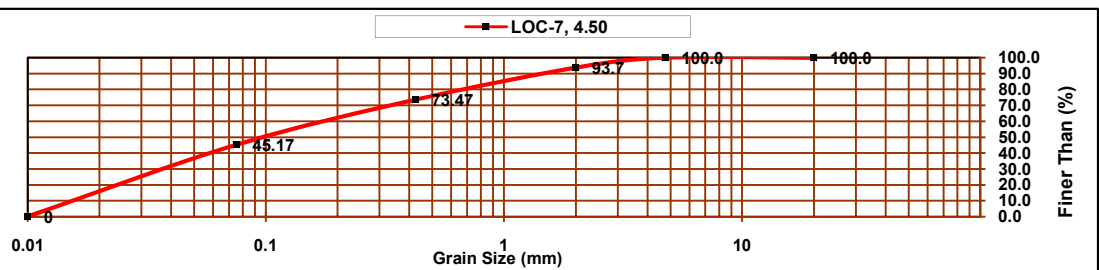
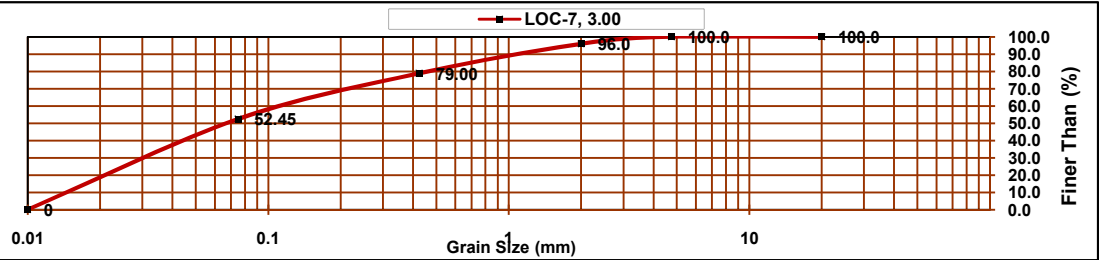
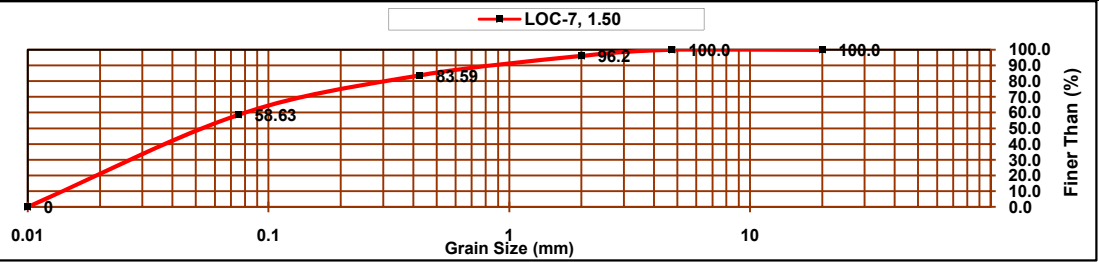
$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 1.509 \text{ Kg/cm}^2$$

$$\text{NSBC} = 15.09 \text{ T/m}^2$$

$$\text{Safe Bearing capacity} = \text{SBC} = 19.15 \text{ T/m}^2$$

**LABORATORY TEST RESULT OF GRAIN SIZE ANALYSIS OF LOC-7**

Sl.No.	Borehole Reference	Sample Depth in Mtr.	% of Passing through I. S. Sieve in mm					
			20.00	4.75	2.00	0.425	0.075	0.010
1	LOC-7,	1.50	100.0	100.0	96.2	83.59	58.63	0
2	LOC-7,	3.00	100.0	100.0	96.0	79.00	52.45	0
3	LOC-7,	4.50	100.0	100.0	93.7	73.47	45.17	0
4	LOC-7,	6.00	100.0	100.0	92.10	68.80	43.70	0
5	LOC-7,	7.50	100.0	100.0	91.00	64.00	39.70	0





### **BRIEF GEOLOGY & ANALYSIS OF BORING DATA**

<b>Borehole Reference</b>	<b>Depth in mtr</b>	<b>Visual Description Of Soil</b>	<b>Water Table</b>
LOC-7	0.00-3.50	In Organic Clay with Low Comp.	<b>0.00 mtr</b>
	3.50-7.50	Clayey sand	

### **DETERMINATION OF SAFE BEARING CAPACITY:**

safe bearing capacity (SBC) has been calculated as per I.S. 6403: 1985 .

<b>Bore Hole Ref.</b>	<b>Depth in Mtr.</b>	<b>Type of sample</b>	<b>NSBC in (T/m<sup>2</sup>)</b>	<b>SBC in (T/m<sup>2</sup>)</b>
LOC-7	1.50	UDS	6.92	8.14
	3.00	SPT	8.91	11.35
	4.50	SPT	15.09	19.15

### **CONCLUSION & RECOMMENDATION FOR FOUNDATION**

Based on all the engineering properties of soil from various field & laboratory testing report the Suitable foundation with respect to the type of structure is to be provided

For Gayatri Consultant



(Manager Q.C)

For Gayatri Consultant



( Sr. Manager QC/QA)

## BORE - LOG DATA SHEET

Name of the Work:-	BORE HOLE NO	:-	LOC-12
SOIL TESTING FOR CONSTRUCTION OF 220 KV LILO LINE FROM EXISTING LOC NO- 30 OF TTPS-RENGALI DC LINE TO PROPOSED 220/33 KV GIS SUB-STATION AT M/S TALCHER FERTILIZER LTD.	Type of Boring	:-	ROTARY BORING
	DIA OF BORE HOLE	:-	150 MM
CLIENT:- PTC INDIA LIMITED	Date of Start	:-	31/07/2022
Name of Agency. :- KRISHNA POWER CONSTRUCTION PVT. LTD	Date of Completion	:-	31/07/2022
	Ground Water Table	:-	2.20 MTR

Visual Description of soil Starta	R.L. in Mtr.	Thickness of Starts & Soil Profile	Indian standrad Classificati on	Number of Blows			SPT Value "N"	Depth in mtrs.	SPT Value "N" Depth Plot	Type of Sample	Core Recovery (%)	R.Q.D (%)
				1st 15cm	2nd 15cm	3rd 15cm						
In Organic Clay with Low Comp. Mixed with Gravels		0.00	CL						SPT Sample			
		3.0		3	4	3	7					
Clayey sand		7.50	SC	4	6	7	13	SPT Sample				
				6	9	12	21	SPT Sample				
				7	13	14	27	SPT Sample				
				9	16	16	32	SPT Sample				

<p><b>GW</b> : Well Graded Gravels</p> <p><b>GP</b> : Poor Graded Gravels</p> <p><b>SW</b> : Well Graded Sand</p> <p><b>SP</b> : Poor Graded Sand</p> <p><b>GM</b> : Silty Gravels</p> <p><b>GC</b> : Clayey Gravel</p> <p><b>SM</b> : Silty Sand</p>	<p><b>SC</b> : Clayey sand</p> <p><b>ML</b> : In Organic Silty with Low Comp.</p> <p><b>CL</b> : In Organic Clay with Low Comp.</p> <p><b>MI</b> : In Organic Silt with Medium Comp.</p> <p><b>CI</b> : In Organic Clay with Medium Comp.</p> <p><b>MH</b> : In Organic Silty with High Comp.</p> <p><b>CH</b> : In Organic Clay with High Comp.</p>	<p><b>OH</b> : Organic Silty&amp;Clay with High Comp.</p> <p><b>RL</b> : Reduce Level</p> <p><b>GW</b> : Ground Water</p> <p><b>DS</b> : Distrubed Sample</p> <p><b>UDS</b> :Un Distrubed Sample</p> <p><b>SPT</b> : Standard Penetration Test</p> <p><b>RQD</b> : Rock Quality Designation</p>
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**LABORATORY TEST RESULT SHEET:  
BORE HOLE NO-LOC-12**

Sample Ref DEPTH IN MTR	Grain size analysis(% of mass retained)					Physical Peroperties					Index Properties Atterberg's limit			Shear Test Triaxial / Direct shear		DES In %	Group of Soil  as per IS: 1498-1970	
	Gravel- sand		Coarse sand	Medium sand	Fine sand	Silt&clay	Moisture	Bulk	Dry	Specific	Void	Liquid	Plastic	Plasticity	C in Kg/cm <sup>2</sup>			Ø in Degree
	10- 10mm	4.75mm	4.75-2.0mm 2mm	2mm-425mic 425mic	425-75mic 75mic	75-1mic 1mic	content in %	density gm/cc	density gm/cc	gravity SG	ratio e	limit in %	limit in %	index in %				
SPT AT 1.50 MT	0.000	1.880	4.000	12.520	25.100	56.500	17.42	1.835	---	2.67	---	35.00	19.00	16.00	---	---	25.00	CL
SPT AT 3.00 MT	0.000	3.000	4.880	14.520	22.300	55.300	17.5	1.840	---	2.67	---	35.00	19.00	16.00	---	---	25.00	CL
SPT AT 4.50 MT	0.000	0.000	7.000	27.980	21.300	43.720	14.55	1.910	---	2.66	---	32.00	18.00	14.00	---	---	15.00	SC
SPT AT 6.00 MT	0.000	0.000	8.140	30.300	18.630	42.930	14.62	---	---	2.66	---	32.00	18.00	14.00	---	---	15.00	SC
SPT AT 7.50 MT	0.000	0.000	10.770	32.000	16.330	40.900	14.72	---	---	2.66	---	30.00	17.00	13.00	---	---	10.00	SC



## CALCULATION OF SBC FROM FIELD SPT VALUE AT 1.50m ( LOC-12 )

Field SPT value at 1.50m depth	N =	7
Bulk density g =		1.835 g/cc
Depth Df =		1.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.125	Kg/cm <sup>2</sup>
$Bg = ( B \times g ) / 1000$	0.367	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	7
After Dilatency correction	N'' =	7
Angle of shearing resistance	f =	28 <sup>0</sup>
	f' =	20.0 <sup>0</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
28	15.304	17.792
20	6.4	5.39

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan (45 + f/2) = 1.25$$

$$d_q = d_g = 1.125 \quad i_c = i_q = i_g = 1$$

$$w' = 1$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5BgNg' s_g d_g i_g W'$$

$$= 0.125 \times (6.400 - 1) \times 1.200 \times 1.125 \times 1.000 + 0.500 \times 0.367 \times 5.390 \times 0.800 \times 1.125 \times 1.000 \times 1.000$$

$$= 0.913 \quad + \quad 0.890 \quad = \quad 1.803 \quad \text{Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 1.803 \quad \text{Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 0.721 \quad \text{Kg/cm}^2$$

$$\text{NSBC} = 7.21 \quad \text{T/m}^2$$

$$\text{Safe Bearing capacity} \quad \text{SBC} = 8.46 \quad \text{T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 3.00m ( LOC-12 )

Field SPT value at 3.00m depth	N =	13
Bulk density g =		1.84 g/cc
Depth Df =		3 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.252	Kg/cm <sup>2</sup>
$Bg = ( B \times g) / 1000$	0.368	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	13
After Dilatency correction	N'' =	13
Angle of shearing resistance	f =	28 <sup>0</sup>
	f' =	20.0 <sup>0</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
28	15.304	17.792
20	6.4	5.39

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan (45 + f/2) = 1.499$$

$$d_q = d_g = 1.25 \quad i_c = i_q = i_g = 1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5BgNg' s_g d_g i_g W'$$

$$= 0.252 \times (6.400 - 1) \times 1.200 \times 1.250 \times 1.000 + 0.500 \times 0.368 \times 5.390 \times 0.800 \times 1.250 \times 1.000 \times 0.500$$

$$= 2.041 \quad + \quad 0.496 \quad = \quad 2.537 \quad \text{Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 2.537 \quad \text{Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 1.015 \quad \text{Kg/cm}^2$$

$$\text{NSBC} = 10.15 \quad \text{T/m}^2$$

$$\text{Safe Bearing capacity} = \text{SBC} = 12.67 \quad \text{T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 4.50m ( LOC-12 )

Field SPT value at 4.50m depth	N =	21
Bulk density g =		1.91 g/cc
Depth Df =		4.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.410	Kg/cm <sup>2</sup>
$Bg = (B \times g) / 1000$	0.382	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	21
After Dilatency correction	N'' =	18
Angle of shearing resistance	f =	29 <sup>o</sup>
	f' =	20.0 <sup>o</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
29	16.852	20.096
20	6.4	5.39

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan(45 + f/2) = 1.764$$

$$d_q = d_g = 1.382 \quad i_c = i_q = i_g =$$

$$1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5 B g N_g' S_g d_g i_g W'$$

$$= 0.410 \times (6.400 - 1) \times 1.200 \times 1.382 \times 1.000 + 0.500 \times 0.382 \times 5.390 \times 0.800 \times 1.382 \times 1.000 \times 0.500$$

$$= 3.667 \quad + \quad 0.569 \quad = \quad 4.236 \quad \text{Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 4.236 \quad \text{Kg/cm}^2$$

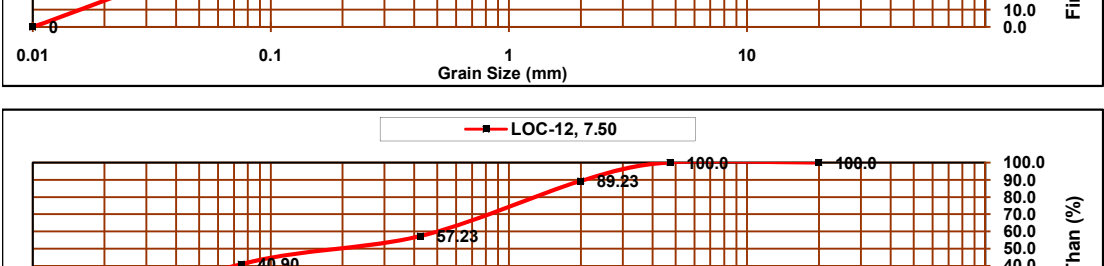
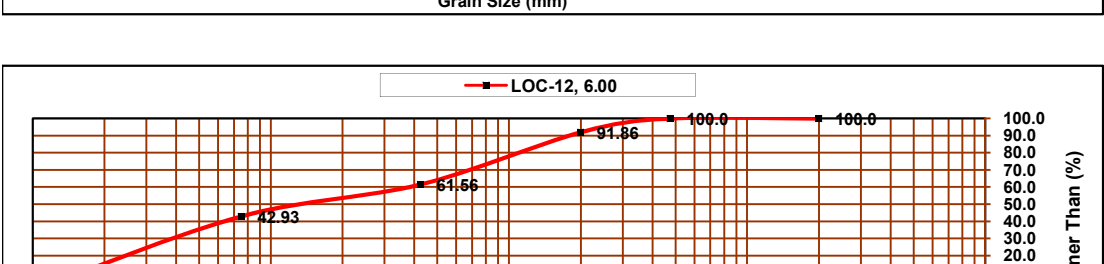
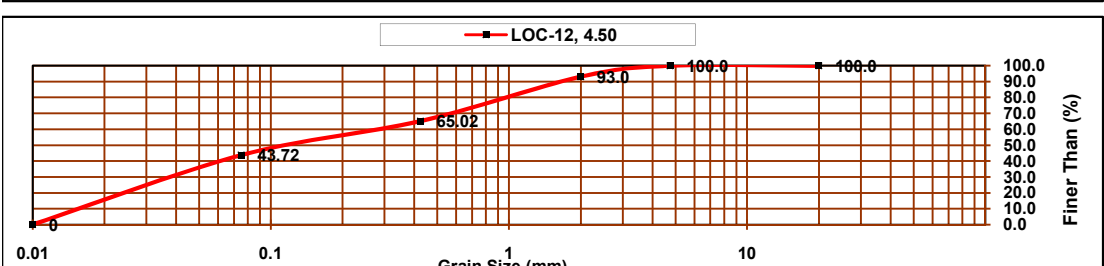
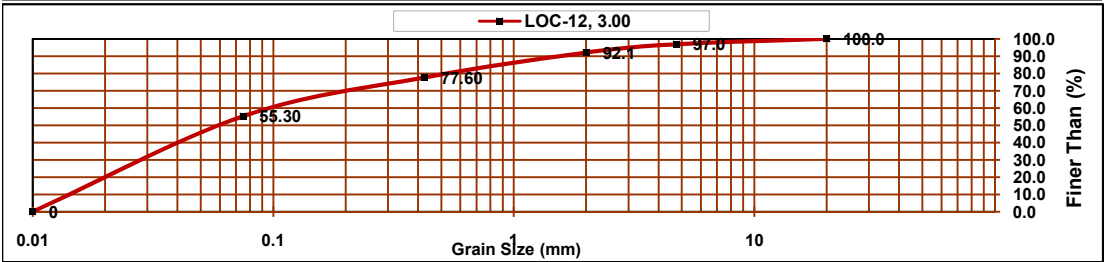
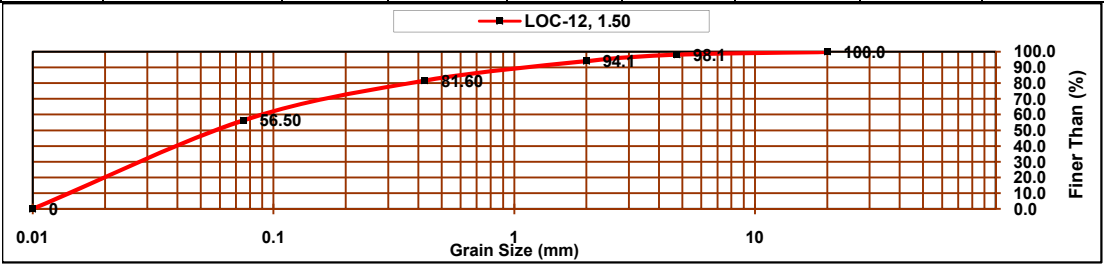
$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 1.694 \quad \text{Kg/cm}^2$$

$$\text{NSBC} = 16.94 \quad \text{T/m}^2$$

$$\text{Safe Bearing capacity} \quad \text{SBC} = 21.04 \quad \text{T/m}^2$$

LABORATORY TEST RESULT OF GRAIN SIZE ANALYSIS OF LOC-12

Sl.No.	Borehole Reference	Sample Depth in Mtr.	% of Passing through I. S. Sieve in mm					
			20.00	4.75	2.00	0.425	0.075	0.010
1	LOC-12,	1.50	100.0	98.1	94.1	81.60	56.50	0
2	LOC-12,	3.00	100.0	97.0	92.1	77.60	55.30	0
3	LOC-12,	4.50	100.0	100.0	93.0	65.02	43.72	0
4	LOC-12,	6.00	100.0	100.0	91.86	61.56	42.93	0
5	LOC-12,	7.50	100.0	100.0	89.23	57.23	40.90	0



### **BRIEF GEOLOGY & ANALYSIS OF BORING DATA**

<b>Borehole Reference</b>	<b>Depth in mtr</b>	<b>Visual Description Of Soil</b>	<b>Water Table</b>
LOC-12	0.00-3.00	In Organic Clay with Low Comp. Mixed with gravels	<b>2.20 mtr</b>
	3.00-7.50	Clayey sand	

### **DETERMINATION OF SAFE BEARING CAPACITY:**

safe bearing capacity (SBC) has been calculated as per I.S. 6403: 1985 .

<b>Bore Hole Ref.</b>	<b>Depth in Mtr.</b>	<b>Type of sample</b>	<b>NSBC in (T/m<sup>2</sup>)</b>	<b>SBC in (T/m<sup>2</sup>)</b>
LOC-12	1.50	SPT	7.21	8.46
	3.00	SPT	10.15	12.67
	4.50	SPT	16.91	21.04

### **CONCLUSION & RECOMMENDATION FOR FOUNDATION**

Based on all the engineering properties of soil from various field & laboratory testing report the Suitable foundation with respect to the type of structure is to be provided

For Gayatri Consultant



(Manager Q.C)

For Gayatri Consultant



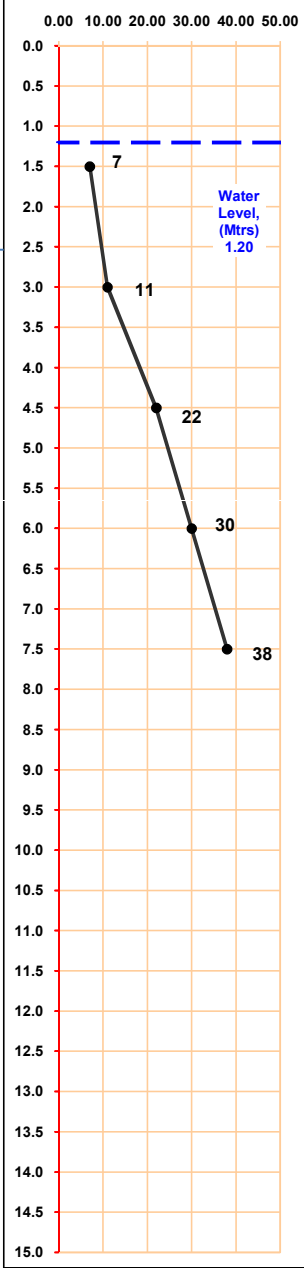
( Sr. Manager QC/QA)



## BORE - LOG DATA SHEET

Name of the Work:-	BORE HOLE NO	:-	LOC-18
SOIL TESTING FOR CONSTRUCTION OF 220 KV LILO LINE FROM EXISTING LOC NO- 30 OF TTPS-RENGALI DC LINE TO PROPOSED 220/33 KV GIS SUB-STATION AT M/S TALCHER FERTILIZER LTD.	Type of Boring	:-	ROTARY BORING
	DIA OF BORE HOLE	:-	150 MM
CLIENT:- PTC INDIA LIMITED	Date of Start	:-	30/07/2022
Name of Agency. :- KRISHNA POWER CONSTRUCTION PVT. LTD	Date of Completion	:-	30/07/2022
	Ground Water Table	:-	1.20 MTR

Visual Description of soil Starta	R.L. in Mtr.	Thickness of Starts & Soil Profile	Indian standrad Classificati on	Number of Blows			SPT Value "N"	Depth in mtrs.	SPT Value "N" Depth Plot	Type of Sample	Core Recovery (%)	R.Q.D (%)
				1st 15cm	2nd 15cm	3rd 15cm						
In Organic Clay with Low Comp.		0.00 2.50	CL	3	3	4	7			SPT Sample		
Clayey sand		2.50 7.50	SC	4	5	6	11			SPT Sample		
				7	10	12	22			SPT Sample		
				11	13	17	30			SPT Sample		
					14	16	22	38			SPT Sample	



<p>GW : Well Graded Gravels GP : Poor Graded Gravels SW : Well Graded Sand SP : Poor Graded Sand GM : Silty Gravels GC : Clayey Gravel SM : Silty Sand</p>	<p>SC : Clayey sand ML : In Organic Silty with Low Comp. CL: In Organic Clay with Low Comp. MI: In Organic Silt with Medium Comp. CI : In Organic Clay with Medium Comp. MH: In Organic Silty with High Comp. CH: In Organic Clay with High Comp.</p>	<p>OH : Organic Silty&amp;Clay with High Comp. RL : Reduce Level GW : Ground Water DS : Distrubed Sample UDS :Un Distrubed Sample SPT : Standard Penetration Test RQD : Rock Quality Designation</p>
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**LABORATORY TEST RESULT SHEET:  
BORE HOLE NO-LOC-18**

Sample Ref DEPTH IN MTR	Grain size analysis(% of mass retained)					Physical Peroperties					Index Properties Atterberg's limit			Shear Test Triaxial / Direct shear		DES In %	Group of Soil  as per IS: 1498-1970	
	Gravel- sand		Coarse sand	Medium sand	Fine sand	Silt&clay	Moisture	Bulk	Dry	Specific	Void	Liquid	Plastic	Plasticity	C in Kg/cm <sup>2</sup>			Ø in Degree
	10- 10mm	4.75mm	4.75-2.0mm 2mm	2mm-425mic 425mic	425-75mic 75mic	75-1mic 1mic	content in %	density gm/cc	density gm/cc	gravity SG	ratio e	limit in %	limit in %	index in %				
SPT AT 1.50 MT	0.000	0.000	2.850	15.890	20.200	61.060	17.52	1.805	---	2.67	---	36.00	19.00	17.00	---	---	25.00	CL
SPT AT 3.00 MT	0.000	0.000	5.250	25.300	24.520	44.930	14.7	1.870	---	2.66	---	32.00	18.00	14.00	---	---	15.00	SC
SPT AT 4.50 MT	0.000	0.000	8.000	24.000	23.500	44.500	14.76	1.902	---	2.66	---	32.00	18.00	14.00	---	---	15.00	SC
SPT AT 6.00 MT	0.000	0.000	9.800	27.000	20.300	42.900	14.82	---	---	2.66	---	30.00	17.00	13.00	---	---	10.00	SC
SPT AT 7.50 MT	0.000	0.000	11.420	28.300	18.200	42.080	14.92	---	---	2.66	---	30.00	17.00	13.00	---	---	10.00	SC



## CALCULATION OF SBC FROM FIELD SPT VALUE AT 1.50m ( LOC-18 )

Field SPT value at 1.50m depth	N =	7
Bulk density g =		1.805 g/cc
Depth Df =		1.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.121	Kg/cm <sup>2</sup>
$Bg = ( B \times g ) / 1000$	0.361	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	7
After Dilatency correction	N'' =	7
Angle of shearing resistance	f =	30 <sup>0</sup>
	f' =	21.0 <sup>0</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
30	18.4	22.4
21	7.252	6.488

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan (45 + f/2) = 1.26$$

$$d_q = d_g = 1.13 \quad i_c = i_q = i_g = 1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5BgNg' s_g d_g i_g W'$$

$$= 0.121 \times (7.252 - 1) \times 1.200 \times 1.130 \times 1.000 + 0.500 \times 0.361 \times 6.488 \times 0.800 \times 1.130 \times 1.000 \times 0.500$$

$$= 1.128 \quad + \quad 0.529 \quad = \quad 1.657 \quad \text{Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 1.657 \quad \text{Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 0.663 \quad \text{Kg/cm}^2$$

$$\text{NSBC} = 6.63 \quad \text{T/m}^2$$

$$\text{Safe Bearing capacity} = \text{SBC} = 7.84 \quad \text{T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 3.00m ( LOC-18 )

Field SPT value at 3.00m depth	N =	11
Bulk density g =		1.87 g/cc
Depth Df =		3 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$	0.261	Kg/cm <sup>2</sup>
$Bg = ( B \times g) / 1000$	0.374	Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	11
After Dilatency correction	N'' =	11
Angle of shearing resistance	f =	27 <sup>0</sup>
	f' =	19.0 <sup>0</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
27	13.756	15.488
19	5.908	4.842

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan (45 + f/2) = 1.49$$

$$d_q = d_g = 1.245 \quad i_c = i_q = i_g = 1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for square footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5BgNg' s_g d_g i_g W'$$

$$= 0.261 \times (5.908 - 1) \times 1.200 \times 1.245 \times 1.000 + 0.500 \times 0.374 \times 4.842 \times 0.800 \times 1.245 \times 1.000 \times 0.500$$

$$= 1.914 \quad + \quad 0.451 \quad = \quad 2.365 \quad \text{Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 2.365 \quad \text{Kg/cm}^2$$

$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 0.946 \quad \text{Kg/cm}^2$$

$$\text{NSBC} = 9.46 \quad \text{T/m}^2$$

$$\text{Safe Bearing capacity} \quad \text{SBC} = 12.07 \quad \text{T/m}^2$$

## CALCULATION OF SBC FROM FIELD SPT VALUE AT 4.50m ( LOC-18 )

Field SPT value at 4.50m depth	N =	22
Bulk density g =		1.902 g/cc
Depth Df =		4.5 m
Let us assume width of footing B =		2 m
Effective over-burden pressure		
$q = [Df \times (g-1)] / 1000$		0.406 Kg/cm <sup>2</sup>
$Bg = ( B \times g) / 1000$		0.380 Kg/cm <sup>2</sup>
Over-burden correction factor as per fig.1 of IS: 2131-1981 =		1.0
After over-burden correction	N' =	22
After Dilatency correction	N'' =	18.5
Angle of shearing resistance	f =	30 <sup>0</sup>
	f' =	21.0 <sup>0</sup>

Bearing capacity factors		
f & f'	Nq & Nq'	Ng & Ng'
30	18.4	22.4
21	7.252	6.488

$$S_c = 1.3$$

$$S_q = 1.2$$

$$S_g = 0.8$$

$$d_c = 1 + 0.2 \times (Df / B) \times \tan (45 + f/2) = 1.779$$

$$d_q = d_g = 1.39 \quad i_c = i_q = i_g = 1$$

$$w' = 0.5$$

### Strength Criteria

#### In case of Local shear failure for squire footing ( Clause-5.1.2)

$$q_d = q(Nq' - 1)S_q d_q i_q + 0.5 B g N_g' s_g d_g i_g W'$$

$$= 0.406 \times (7.252 - 1) \times 1.200 \times 1.390 \times 1.000 + 0.500 \times 0.380 \times 6.488 \times 0.800 \times 1.390 \times 1.000 \times 0.500$$

$$= 4.233 \quad + \quad 0.686 \quad = \quad 4.919 \quad \text{Kg/cm}^2$$

$$\text{Net Ultimate bearing capacity} = q_d = 4.919 \quad \text{Kg/cm}^2$$

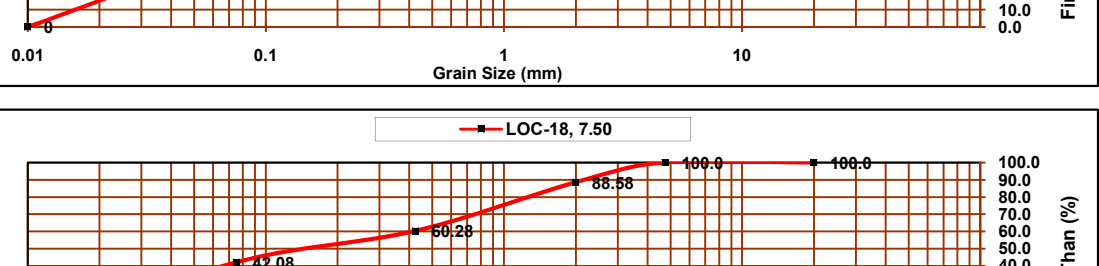
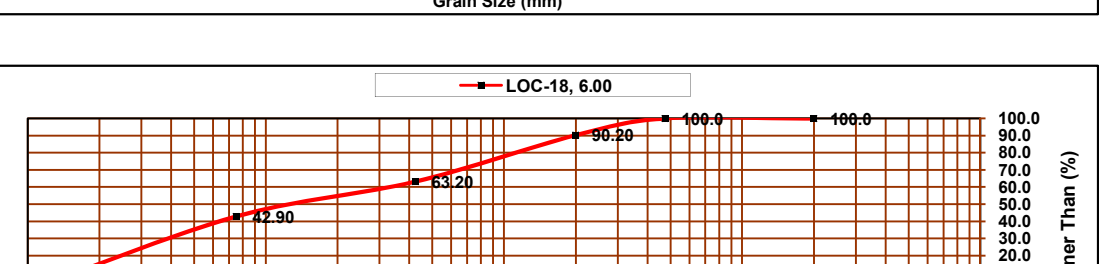
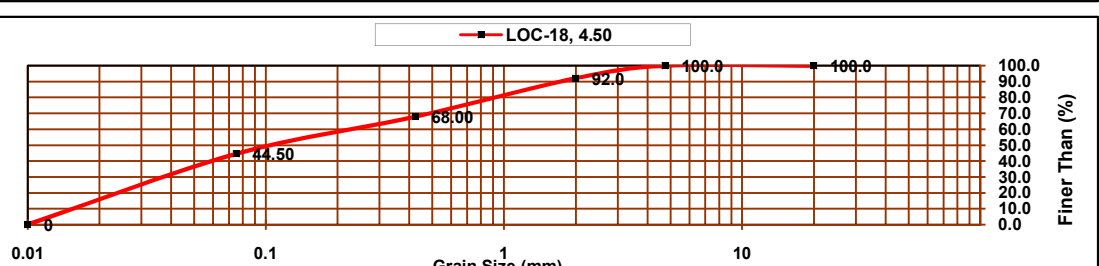
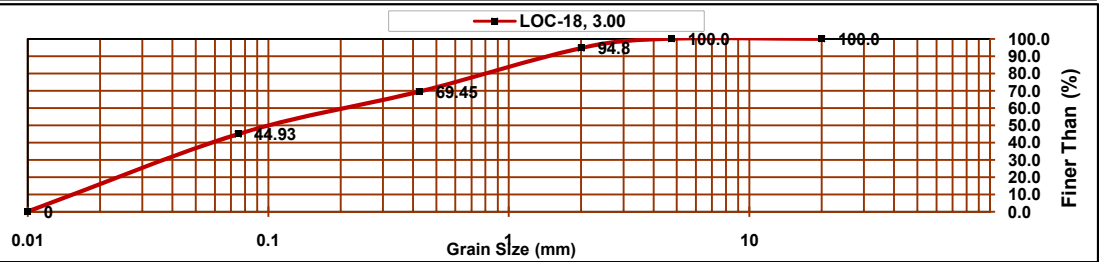
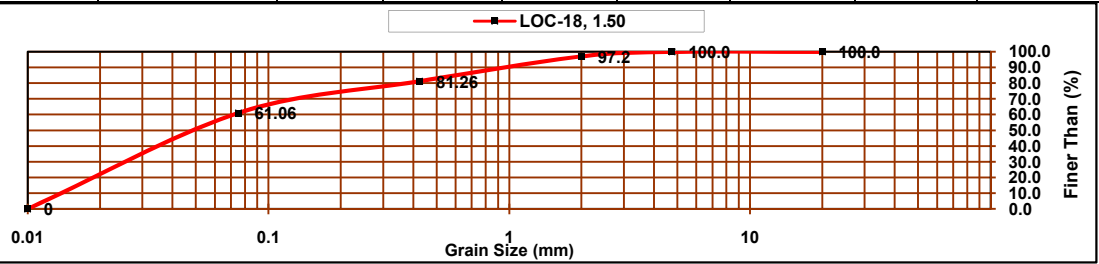
$$\text{Net Safe Bearing Capacity using a factor of safety of 2.5} = 1.968 \quad \text{Kg/cm}^2$$

$$\text{NSBC} = 19.68 \quad \text{T/m}^2$$

$$\text{Safe Bearing capacity} \quad \text{SBC} = 23.74 \quad \text{T/m}^2$$

**LABORATORY TEST RESULT OF GRAIN SIZE ANALYSIS OF LOC-18**

Sl.No.	Borehole Reference	Sample Depth in Mtr.	% of Passing through I. S. Sieve in mm					
			20.00	4.75	2.00	0.425	0.075	0.010
1	LOC-18,	1.50	100.0	100.0	97.2	81.26	61.06	0
2	LOC-18,	3.00	100.0	100.0	94.8	69.45	44.93	0
3	LOC-18,	4.50	100.0	100.0	92.0	68.00	44.50	0
4	LOC-18,	6.00	100.0	100.0	90.20	63.20	42.90	0
5	LOC-18,	7.50	100.0	100.0	88.58	60.28	42.08	0



### **BRIEF GEOLOGY & ANALYSIS OF BORING DATA**

<b>Borehole Reference</b>	<b>Depth in mtr</b>	<b>Visual Description Of Soil</b>	<b>Water Table</b>
LOC-18	0.00-2.50	In Organic Clay with Low Comp.	<b>1.20 mtr</b>
	2.50-7.50	Clayey sand	

### **DETERMINATION OF SAFE BEARING CAPACITY:**

safe bearing capacity (SBC) has been calculated as per I.S. 6403: 1985 .

<b>Bore Hole Ref.</b>	<b>Depth in Mtr.</b>	<b>Type of sample</b>	<b>NSBC in (T/m<sup>2</sup>)</b>	<b>SBC in (T/m<sup>2</sup>)</b>
LOC-18	1.50	SPT	6.63	7.84
	3.00	SPT	9.46	12.07
	4.50	SPT	19.68	23.74

### **CONCLUSION & RECOMMENDATION FOR FOUNDATION**

Based on all the engineering properties of soil from various field & laboratory testing report the Suitable foundation with respect to the type of structure is to be provided

For Gayatri Consultant



(Manager Q.C)

For Gayatri Consultant



( Sr. Manager QC/QA)

**PART-2**  
**TECHNICAL**  
**SPECIFICATION**  
**FOR**  
**OPGW CABLE**



## TECHNICAL SPECIFICATION

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**1. General Information and Scope:**

1.1 The transmission lines where OPGW shall be commissioned, are of 220kV voltage class. The bill of quantities for the same is specified in the BPS/ BOQ.

1.2 The quantities of hardware fittings such as tension assembly, suspension assembly, vibration damper, etc required for the stringing of the OPGW are not reflected in the BPS/BOQ. The contractor has to assess the quantities of such hardware fittings required for the OPGW stringing per kmas per the tower schedule and profile survey of the transmission line.

1.3 The bidder shall submit along with the Bid the sag-tension chart of the offered OPGW, based on the profile, for verification and approval by the employer.

**2. OPGW cabling and associated hardware & fittings:**

This section describes the functional & technical specifications of OPGW cabling and associated hardware & fittings.

**2.1 Fibre Optic Cabling:**

This section defines the requirements for G.652D Dual-window Single mode (DWSM) telecommunications grade fibre optic cable. Bidders shall furnish with their bids, detailed descriptions of the fibres & cable(s) proposed. All optical fibre cabling including fibre itself and all associated installation hardware shall have a minimum guaranteed design life span of 25 years. Documentary evidence in support of guaranteed life span of cable & fibre shall be submitted by the Contractor during detailed engineering.

**2.1.1 Required Optical Fibre Characteristics:**

This section describes the characteristics of optical fibre to be provided under this specification.

**2.1.1.1 Physical Characteristics:**

Dual-Window Single mode (DWSM), G.652D optical fibres shall be provided in the fibre optic cables. DWSM optical fibres shall meet the requirements defined in Table.

**2.1.1.2 Attenuation:**

The attenuation coefficient for wavelengths between 1525 nm and 1575 nm shall not exceed the attenuation coefficient at 1550 nm by more than 0.05 dB/km. The attenuation coefficient between 1285 nm and 1330 nm shall not exceed the attenuation coefficient at 1310 nm by more than 0.05 dB/km. The attenuation of the fibre shall be distributed uniformly throughout its length such that there are no point discontinuities in excess of 0.10 dB. The fibre attenuation

characteristics specified in table shall be “guaranteed” fibre attenuation of any & every fibre reel.

The overall optical fibre path attenuation shall not be more than calculated below:

- Maximum attenuation @ 1550nm: 0.21 dB/km x total km + 0.05 dB/splice x no. of splices + 0.5 dB/connector x no. of connectors
- Maximum attenuation @ 1310nm: 0.35dB/km x total km + 0.05 dB/splice x no. of splices + 0.5 dB/connector x no. of connectors

### DWSM Optical Fibre Characteristics

<b>Fibre Description:</b>	Dual-Window Single-Mode
<b>Mode Field Diameter:</b>	8.6 to 9.5 $\mu$ m ( $\pm$ 0.6 $\mu$ m )
<b>Cladding Diameter:</b>	125.0 $\mu$ m $\pm$ 1 $\mu$ m
<b>Mode field concentricity error</b>	$\leq$ 0.6 $\mu$ m
<b>Cladding non-circularity</b>	$\leq$ 1%
<b>Cable Cut-off Wavelength <math>\lambda_{cc}</math></b>	$\leq$ 1260 nm
<b>1550 nm loss performance</b>	As per G.652 D
<b>Proof Test Level</b>	$\geq$ 0.69 Gpa
<b>Attenuation Coefficient:</b>	@ 1310 nm $\leq$ 0.35 dB/km @ 1550 nm $\leq$ 0.21 dB/km
<b>Chromatic Dispersion;</b> <b>Maximum:Zero Dispersion</b> <b>Wavelength: Zero Dispersion</b> <b>Slope:</b>	18 ps/(nm x km) @ 1550 nm 3.5 ps/(nm x km) 1288- 1339nm5.3 ps/(nm x km) 1271-1360nm1300 to 1324nm 0.092 ps/(nm <sup>2</sup> xkm) maximum
<b>Polarization mode dispersioncoefficient</b>	$\leq$ 0.2 ps/km <sup>1/2</sup>
<b>Temperature Dependence:</b>	Induced attenuation $\leq$ 0.05 dB (-60°C - +85°C
<b>Bend Performance:</b>	@ 1310 nm (75 $\pm$ 2 mm dia Mandrel), 100 turns; Attenuation Rise $\leq$ 0.05 dB @ 1550 nm (30 $\pm$ 1 mm radius Mandrel), 100 turns; Attenuation Rise $\leq$ 0.05 dB @ 1550 nm (32 $\pm$ 0.5 mm dia Mandrel, 1 turn; Attenuation Rise $\leq$ 0.50 dB

## **2.1.2 Fibre Optic Cable Construction:**

Overhead Fibre Optic Cables shall be OPGW (Optical Ground Wire). The OPGW cable is proposed to be installed on the transmission lines of Orissa Power Transmission Corporation Ltd. (OPTCL). The design of cable shall account for the varying operating and environmental conditions that the cable shall experience while in service. The OPGW cable to be supplied shall be designed to meet the overall requirements of all the transmission lines. Normally the tower span of the lines shall not exceed 600 m, however, some of the spans may be up to around 1000 m or more. The exact details shall be collected by the Contractor during survey. To meet the overall requirement of all the transmission lines, the contractor may offer more than one design without any additional cost to OPTCL, in case span length of 600 m is found during survey. It may also be noted that some of the transmission lines route may be added during the engineering stage.

### **2.1.2.1 Transmission Line Details:**

The details required for cable design etc. shall be collected by the Contractor during survey.

### **2.1.2.2 Optical Fibre Cable Link Lengths:**

The estimated optical fibre link lengths are provided in Appendices as transmission line route length. However, the Contractor shall supply & install the optical fibre cable as required based on detailed site survey to be carried out by the Contractor during the project execution. The Contractor shall verify the transmission line route length during the survey and the Contract price shall be adjusted accordingly. For the purpose of payment, the optical fibre link lengths are defined as transmission line route lengths from Gantry at one terminating station to the Gantry in the other terminating station. The actual cable lengths to be delivered shall take into account various factors such as sag, service loops, splicing, working lengths & wastage etc. and no additional payment shall be payable in this regard. The unit rate for FO cable quoted in the Bid price Schedules shall take into account all such factors.

### **2.1.2.3 Optical Fibre Identification:**

Individual optical fibres within a fibre unit and fibre units shall be identifiable in accordance with EIA/TIA 598 or IEC 60304 or Bellcore GR-20 colour-coding scheme. Colouring utilized for colour coding optical fibres shall be integrated into the fibre coating and shall be homogenous. The colour shall not bleed from one fibre to another and shall not fade during fibre preparation for termination or splicing. Each cable shall have traceability of each fibre back to the original fibre manufacturer's fibre number and parameters of the fibre. If more than the specified number of fibres are included in any cable, the spare fibres shall be tested by the cable manufacturer and any defective fibres shall be suitably bundled, tagged and identified at the factory by the vendor.

#### 2.1.2.4 Buffer Tube:

Loose tube construction shall be implemented. The individually coated optical fibre(s) shall be surrounded by a buffer for protection from physical damage during fabrication, installation and operation of the cable. The fibre coating and buffer shall be strippable for splicing and termination. Each fibre unit shall be individually identifiable utilizing colour coding. Buffer tubes shall be filled with a water-blocking gel.

#### 2.1.2.5 Optical Fibre Strain & Sag-Tension chart

The fibre optic cable shall be designed and installed such that the optical fibres experience no strain under all loading conditions defined in IS 802. Zero fibre strain condition shall apply even after a 25 year cable creep.

For the purpose of this specification, the following definitions shall apply:

- Maximum Working Tension (MWT) is defined as the maximum cable tension at which there is *no fibre strain*.
- The no fibre strain condition is defined as fibre strain of less than or equal to 0.05%, as determined by direct measurements through IEC/ ETSI (FOTP) specified optical reflectometry techniques.
- The Cable strain margin is defined as the maximum cable strain at which there is no fibre strain.
- The cable Maximum Allowable Tension (MAT) is defined as the maximum tension experienced by the Cable under the worst case loading condition.
- The cable max strain is defined as the maximum strain experienced by the Cable under the worst case loading condition.
- The cable Every Day Tension (EDT) is defined as the maximum cable tension on any span under normal conditions.
- The Ultimate /Rated Tensile Strength (UTS/ RTS/ breaking strength) is defined as the maximum tensile load applied and held constant for one minute at which the specimen shall not break.
- While preparing the Sag-tension charts for the OPGW cable the following conditions shall be met:
  - The Max Allowable Tension (MAT) / max strain shall be less than or equal to the MWT/ Strain margin of the cable.
  - The sag shall not exceed the earth wire sag in all conditions.
  - The Max Allowable Tension shall also be less than or equal to 0.4 times the UTS.
  - The 25 year creep at 25% of UTS (creep test as per IEEE 1138) shall be such that the 25 year creep plus the cable strain at Max Allowable Tension (MAT) is less than or equal to the cable strain margin.
  - The everyday tension (EDT) shall not exceed 20% of the

### UTS for the OPGW cable.

The Sag-tension chart of OPGW cable indicating the maximum tension, cable strain and sag shall be calculated and submitted along with the bid under various conditions mentioned below:

- 53° C , no wind and no ice
- 32° C, no wind and no ice
- 0°C, no wind and no ice
- 32° C, full wind and no ice
- 32° C, 75% full wind and no ice
- 0° C, 2/3<sup>rd</sup> / 36% of full wind (IS 802:1977/1995)

The above cases shall be considered for the spans from 100 m to 600 m or higher span length in the range of 50 m spans. Max. Vertical sag, max. Tension and max sag at 0° C & no wind shall be considered for in line with the design parameter of transmission line. The typical details are indicated in the Appendices. The full wind load shall be considered as the design wind load for all the specified transmission lines as per relevant IS 802 version and the sag-tension chart shall be submitted considering the transmission lines. In case of any span higher than 600m, suitable OPGW cable meeting sag-tension requirement of transmission line shall also be provided by the Contractor. The Contractor shall submit the stringing chart for review of OPTCL.

#### **2.1.2.6 Cable Materials**

The materials used for optical fiber cable construction, shall meet the following requirements:

##### **2.1.2.6.1 Filling Materials**

The interstices of the fibre optic unit and cable shall be filled with a suitable compound to prohibit any moisture ingress or any water longitudinal migration within the fibre optic unit or along the fibre optic cable. The water tightness of the cable shall meet or exceed the test performance criteria as per IEC 60794-1-F-5. The filling compound used shall be a non-toxic homogenous waterproofing compound that is free of dirt and foreign matter, non hygroscopic, electrically nonconductive and non-nutritive to fungus. The compound shall also be fully compatible with all cable components it may come in contact with and shall inhibit the generation of hydrogen within the cable.

The waterproofing filling materials shall not affect fibre coating, colour coding, or encapsulate commonly used in splice enclosures, shall be dermatologically safe, non-staining and easily removable with a non-toxic cleaning solvent.



### 2.1.2.6.2 Metallic Members:

When the fibre optic cable design incorporates metallic elements in its construction, all metallic elements shall be electrically continuous.

### 2.1.2.6.3 Marking, Packaging and Shipping:

This section describes the requirements for marking, packaging and shipping the overhead fibre optic cable.

- Drum Markings: Each side of every reel of cable shall be permanently marked in white lettering with the vendors' address, the Purchaser's destination address, cable part number and specification as to the type of cable, length, number of fibres, a unique drum number including the name of the transmission line & segment no., factory inspection stamp and date.
- Cable Drums: All optical fibre cabling shall be supplied on strong drums provided with lagging of adequate strength, constructed to protect the cabling against all damage and displacement during transit, storage and subsequent handling during installation. Both ends of the cable shall be sealed as to prevent the escape of filling compounds and dust & moisture ingress during shipment and handling. Spare cable caps shall be provided with each drum as required.

The spare cable shall be supplied on sturdy, corrosion resistant, steel drums suitable for long periods of storage and re-transport & handling. There shall be no factory splices allowed within a continuous length of cable. Only one continuous cable length shall be provided on each drum. The lengths of cable to be supplied on each drum shall be determined by a "schedule" prepared by the Contractor.

### 2.1.2.7 OPGW cable installation requirements

Most of the OPGW fibre optic cables to be installed under this project shall be installed under live line conditions, i.e. With all the circuits of the transmission line charged to their rated voltage. However, some of OPGW cables may be installed in off-line conditions. The tentative bill of quantities for both live-line as well as off-line OPGW cable system installations have been specified in the appendices and the actual quantities for both types shall be finalized during project execution after detailed survey. The OPGW cable shall be installed at the top of the tower by replacing the existing ground wire. The Contractor shall carry out re-tensioning of the existing earth wire wherever required to maintain the adequate clearances for live line stringing of fibre optic cables. However, in exceptional cases installation of OPGW cable below conductor may also be considered on low voltage lines which shall be decided during detailed engineering.



### **2.1.2.8 Optical Ground Wire (OPGW):**

OPGW cable construction shall comply with IEEE-1138, 2009. The cable provided shall meet both the construction and performance requirements such that the ground wire function, the optical fibre integrity and optical transmission characteristics are suitable for the intended purpose. The cable shall consist of optical fibre units as defined in this specification. There shall be no factory splices within the cable structure of a continuous cable length. The composite fibre optic overhead ground wire shall be made up of multiple buffer tubes embedded in a water tight aluminium/aluminium alloy/stainless steel with aluminium coating protective central fibre optic unit surrounded by concentric-lay stranded metallic wires in single or multiple layers. Each buffer tube shall have maximum 12 no. of fibres. All fibres in single buffer tube or directly in central fibre optic unit is not acceptable. The dual purpose of the composite cable is to provide the electrical and physical characteristics of conventional overhead ground wire while providing the optical transmission properties of optical fibre

#### **2.1.2.8.1 Central Fibre Optic Unit:**

The central fibre optic unit shall be designed to house and protect multiple buffered optical fibre units from damage due to forces such as crushing, bending, twisting, tensile stress and moisture. The central fibre optic unit and the outer stranded metallic conductors shall serve together as an integral unit to protect the optical fibres from degradation due to vibration and galloping, wind and ice loadings, wide temperature variations, lightning and fault current, as well as environmental effects which may produce hydrogen. The OPGW design of dissimilar materials such as stainless steel tube with aluminium or aluminium –clad-steel wire strands are not allowed. Central fibre optic unit may be of aluminium or stainless steel tube with aluminium protective coating. In case of aluminium protective coating, the coating must completely cover the tubes leaving no exposed areas of tubing that can make electrical contact either directly or indirectly through moisture, contamination, protrusions, etc with the surrounding stranded wires. The tube may be fabricated as a seamless tube, seam welded, or a tube without a welded seam.

#### **2.1.2.8.2 Basic Construction:**

The cable construction shall conform to the applicable requirements of this specification, applicable clauses of IEC 61089 related to stranded conductors. OPGW Mechanical and Electrical Characteristics. In addition, the basic construction shall include bare concentric-lay-stranded metallic wires with the outer layer having left hand lay. The wires may be of multiple layers with a combination of various metallic wires within each layer. The direction of lay for each successive layer shall be reversed. The finished wires shall contain no joints or splices unless otherwise agreed to by the OPTCL and shall conform to all applicable clauses of IEC 61089 as they pertain to stranded conductors. The wires shall

be so stranded that when the complete OPGW is cut, the individual wires can be readily regrouped and then held in place by one hand.

### 2.1.2.8.3 Breaking Strength:

The rated breaking strength of the completed OPGW shall be taken as no more than 90 percent of the sum of the rated breaking strengths of the individual wires, calculated from their nominal diameter and the specified minimum tensile strength. The rated breaking strength shall not include the strength of the optical unit. The fibre optic unit shall not be considered a load bearing tension member when determining the total rated breaking strength of the composite conductor.

### 2.1.2.8.4 Electrical and Mechanical Requirements

OPGW Electrical and Mechanical Requirements for the minimum performance characteristics. Additionally, the OPGW mechanical & electrical characteristics shall be similar to that of the earthwire being replaced such that there is no or minimal consequential increase in stresses on towers. For the purposes of determining the appropriate Max Working Tension limit for the OPGW cable IS 802:1995 and IS 875: 1987 shall be applied. However the OPGW installation sag & tension charts shall be based on IS 802 version to which the line is originally designed. For the OPGW cable design selection and preparation of sag tension charts, the limits specified in this section shall also be satisfied. The Bidder shall submit sag-tension charts for the above cases with their bids.

#### OPGW Electrical and Mechanical Requirements

(1)	<b>Everyday Tension</b>	$\leq 20\%$ of UTS of OPGW
(2)	<b>D.C. Resistance at 20°C:</b>	$< 1.0$ ohm/Km
(3)	<b>Short Circuit Current</b>	$\geq 6.32$ kA for 1.0 second

#### **2.1.2.8.5 Operating conditions:**

Since OPGW shall be located at the top of the transmission line support structure, it will be subjected to Aeolian vibration, Galloping and Lightning strikes. It will also carry ground fault currents. Therefore, its electrical and mechanical properties shall be same or similar as those required of conventional ground conductors.

#### **2.1.2.8.6 Installation:**

OPGW installed under live line condition, i.e. with all circuits charged to the rated line voltage as specified in this section shall be generally in accordance with the IEEE Guide to the Installation of Overhead Transmission Line Conductors (IEEE STD. 524 with latest revisions), with additional instructions and precautions for live line working and fibre optic cable handling. Some of the cable may be installed in off-line condition also. The stringing procedure shall be submitted by the Contractor to OPTCL for approval prior to stringing. A tower structural analysis shall be carried out by the Contractor, based on the relevant data to be provided by OPTCL, to ensure that with the replacement of existing earth wire with the OPGW cable, the tower members remain within the statutory safety limits as per Indian Electricity rules and if required the Contractor shall carry out the tower strengthening as necessary. The OPGW cable sections shall normally be terminated & spliced only on tension towers. In exceptional circumstances, and on OPTCL specific approval, cable may be terminated on Suspension towers, but in this case tower strength shall be examined to ensure that tower loads are within safe limits and if required, necessary tower strengthening shall be carried out by the Contractor.

#### **2.1.2.8.7 Installation Hardware:**

The scope of supply of the optical cable includes the assessment, supply and installation of all required fittings and hardware such as Tension assembly, Suspension assembly, Vibration dampers, Reinforcing rods, Earthing clamps, Download clamps, splice enclosure etc. The Bidder shall provide documentation justifying the adequacy and suitability of the hardware supplied. The quantity of hardware & fittings to meet any eventuality during site installation min@ 1% shall also be provided as part of set/km for each transmission line without any additional cost to OPTCL. The Contractor shall determine the exact requirements of all accessories required to install and secure the OPGW. The OPGW hardware fittings and accessories shall follow the general requirements regarding design, materials, dimensions & tolerances, protection against corrosion and markings as specified in clause 4.0 of EN 61284: 1997 (IEC 61284). The shear strength of all bolts shall be at least 1.5 times the maximum installation torque. The OPGW hardware & accessories drawing & Data Requirement Sheets (DRS) document shall consist of three parts:

- A technical particulars sheet

- An assembly drawing i.e. level 1 drawing and
- Component level drawings i.e. level 2 & lower drawings. All component reference numbers, dimensions and tolerances, bolt tightening torques & shear strength and ratings such as UTS, slip strength etc shall be marked on the drawings.

The fittings and accessories described herein are indicative of installation hardware typically used for OPGW installations and shall not necessarily be limited to the following:

(a) Suspension Assemblies: Preformed armour grip suspension clamps and aluminium alloy armour rods/ reinforcing rods shall be used. The suspension clamps shall be designed to carry a vertical load of not less than 25 KN. The suspension clamps slippage shall occur between 12kN and 17kN as measured in accordance with type test procedures. The Contractor shall supply all the components of the suspension assembly including shackles, bolts, nuts, washers, split pins, etc. The total drop of the suspension assembly shall not exceed 150 mm (measured from the centre point of attachment to the centre point of the OPGW). The design of the assembly shall be such that the direction of run of the OPGW shall be the same as that of the conductor.

(b) Dead End Clamp Assemblies: All dead end clamp assemblies shall preferably be of performed armoured grip type and shall include all necessary hardware for attaching the assembly to the tower strain plates. Dead end clamps shall allow the OPGW to pass through continuously without cable cutting. The slip strength shall be rated not less than 95% of the rated tensile strength of the OPGW.

(c) Clamp Assembly Earthing Wire: Earthing wire consisting of a 1500 mm length of aluminium or aluminium alloy conductor equivalent in size to the OPGW shall be used to earth suspension and dead end clamp assemblies to the tower structure. The earthing wire shall be permanently fitted with lugs at each end. The lugs shall be attached to the clamp assembly at one end and the tower structure at the other.

(d) Structure Attachment Clamp Assemblies: Clamp assemblies used to attach the OPGW to the structures, shall have two parallel grooves for the OPGW, one on either side of the connecting bolt. The clamps shall be such that clamping characteristics do not alter adversely when only one OPGW is installed. The tower attachment plates shall locate the OPGW on the inside of the tower and shall be attached directly to the tower legs/cross-members without drilling or any other structural modifications.

(e) Vibration Dampers: Vibration dampers type 4R Stockbridge or equivalent, having four (4) different frequencies spread within the Aeolian frequency bandwidth corresponding to wind speed of 1m/s to 7 m/s, shall be used for suspension and tension points in each span. The Contractor shall determine the exact numbers and placement(s) of vibration dampers through a detailed vibration analysis as specified in technical specifications.

One damper minimum on each side per OPGW cable for suspension points and two dampers minimum on each side per OPGW cable for tension points shall be used for nominal design span of 400 meters. For all other ruling spans, the number of vibration damper shall be based on vibration analysis. The clamp of the vibration damper shall be made of high strength aluminum alloy of type LM-6. It shall be capable of supporting the damper and prevent damage or chaffing of the conductor during erection or continued operation. The clamp shall have smooth and permanent grip to keep the damper in position on the OPGW cable without damaging the strands or causing premature fatigue failure of the OPGW cable under the clamp. The clamp groove shall be in uniform contact with the OPGW cable over the entire clamping surface except for the rounded edges. The groove of the clamp body and clamp cap shall be smooth, free from projections, grit or other materials which could cause damage to the OPGW cable when the clamp is installed. Clamping bolts shall be provided with self locking nuts and designed to prevent corrosion of threads or loosening in service. The messenger cable shall be made of high strength galvanized steel/stain less steel. It shall be of preformed and post formed quality in order to prevent subsequent drop of weight and to maintain consistent flexural stiffness of the cable in service. The messenger cable other than stainless steel shall be hot dip galvanized in accordance with the recommendations of IS:4826 for heavily coated wires.

The damper mass shall be made of hot dip galvanized mild steel/cast iron or a permanent mould cast zinc alloy. All castings shall be free from defects such as cracks, shrinkage, inclusions and blow holes etc. The surface of the damper masses shall be smooth. The damper clamp shall be casted over the messenger cable and offer sufficient and permanent grip on it. The messenger cable shall not slip out of the grip at a load less than the mass pull-off value of the damper. The damper masses made of material other-than zinc alloy shall be fixed to the messenger cable in a suitable manner in order to avoid excessive stress concentration on the messenger cables which shall cause premature fatigue failure of the same. The messenger cable ends shall be suitably and effectively sealed to prevent corrosion. The damper mass made of zinc alloy shall be casted over the messenger cable and have sufficient and permanent grip on the messenger cable under all service conditions.

The contractor must indicate the clamp bolt tightening torque to ensure that the slip strength of the clamp is maintained between 2.5 kN and 5 kN. The clamp when installed on the OPGW cable shall not cause excessive stress concentration on the OPGW cable leading to

permanent deformation of the OPGW strands and premature fatigue failure in operation. The vibration analysis of the system, with and without damper and dynamic characteristics of the damper as detailed in Technical Specification, shall have to be submitted. The technical particulars for vibration analysis and damping design of the system are as follows:

Sl.No.	Description	Technical Particulars
1	Span Length in meters Ruling design span : Maximum span : Minimum Span :	400 meters 1100 meters 100 meters
2	Configuration :	As per Specifications
3	Tensile load in each :	As per sag tension calculations
4	Armour rods used :	Standard preformed armour rods/AGS
5	Maximum permissible dynamic strain :	+/- 150 micro strains

The damper placement chart for spans ranging from 100m to 1100m shall be submitted by the Bidder. Placement charts should be duly supported with relevant technical documents and sample calculations.

The damper placement charts shall include the following

- (1) Location of the dampers for various combinations of spans and line tensions clearly indicating the number of dampers to be installed per OPGW cable per span.
- (2) Placement distances clearly identifying the extremities between which the distances are to be measured.
- (3) Placement recommendation depending upon type of suspension clamps (viz free center type/Armour grip type etc.)
- (4) The influence of mid span compression joints, repair sleeves and armourrods (standard and AGS) in the placement of damper

### 2.1.3 Fibre Optic Splice Enclosures (Joint Box):

All splices shall be encased in Fibre Optic Splice Enclosures. Suitable splice enclosures shall be provided to encase the optical cable splices in protective, moisture and dust free environment. Splice enclosures shall comply to ingress protection class IP 66 or better. The splice enclosures shall be designed for the storage and



protection of required number of optical fibre splices and equipped with sufficient number of splice trays for splicing all fibres in the cable. No more than 12 fibres shall be terminated in a single splice tray. They shall be filled with suitable encapsulate that is easily removable should re-entry be required into the enclosures. Splice enclosures shall be suitable for outdoor use with each of the cable types provided under this contract. Splice enclosures shall be appropriate for mounting on transmission line towers above anti-climb guard levels at about 10 meters from top of the tower and shall accommodate pass-through splicing. The actual mounting height and location shall be finalized after Survey. Contractor shall be responsible for splicing of fibres and installation of splice enclosures.

#### **2.1.3.1 Optical Fibre Splices:**

Splicing of the optical fibre cabling shall be minimized through careful Contractor planning. There shall be no mid-span splices allowed. All required splices shall be planned to occur on tower structures. All optical fibre splicing shall comply with the following:

- (a) All fibre splices shall be accomplished through fusion splicing.
- (b) Each fibre splice shall be fitted with a splice protection sheath fitted over the final splice.
- (c) All splices and bare fibre shall be neatly installed in covered splice trays.
- (d) For each link, bi-directional attenuation of single mode fusion splices, shall not average more than 0.05 dB and no single splice loss shall exceed 0.1 dB when measured at 1550 nm.
- (e) For splicing, fibre optic cable service loops of adequate length shall be provided. So that all splices occurring at tower structures can be performed at ground level.

#### **2.1.4 Fibre Optic Approach Cables:**

For purposes of this specification, a fibre optic approach cable is defined as the Armoured underground fibre optic cable required to connect Overhead Fibre Optic Cable (OPGW) between the final in line splice enclosure on the gantry / tower forming the termination of the fibre cable on the power line and the Fibre Optic Distribution Panel (FODP) installed within the building. The estimated fibre optic approach cabling length requirements are indicated in the Annexure-V (A) & Annexure-V (B). However, the Contractor shall supply & install the optical fibre approach cable as required based on detailed site survey to be carried out by the Contractor during the project execution and the Contract price shall be adjusted accordingly.

#### 2.1.4.1 Basic Construction:

The cable shall be suitable for direct burial, laying in trenches & PVC/Hume ducts, laying under false flooring and on indoor or outdoor cable raceways.

#### 2.1.4.2 Jacket Construction & Material:

The Approach Cable shall be a UV resistant, rodent proof, armoured cable with metallic type of armouring. The outer cable jacket for approach cable shall consist of carbon black polyethylene resin to prevent damage from exposure to ultra-violet light, weathering and high levels of pollution. The jacket shall conform to ASTM D1248 for density.

#### 2.1.4.3 Optical, Electrical and Mechanical Requirements:

Approach cable shall contain fibres with identical optical/physical characteristics as those in the OPGW cables. The cable core shall comprise of tensile strength member(s), fibre support/bedding structure, core wrap/bedding, and an overall impervious jacket.

The fibre optic approach cable shall have a minimum outer jacket thickness of milli meters and shall meet the following requirements.

- Fire retardant and no acid gas evolution.
- Resistance to ultra-violet deterioration.
- Anti-moisture penetration.

1	Number of optical fibres in OFAC	24
2	Mode	DWSM (Dual Window Single Mode)
3	Optimised wavelength ( nm )	1550 / 1310
4	Mode field diameter (µm)	9.2 +/- 0.5
5	Outside (Clad ) diameter (µm) :	125 +/- 0.5
6	Attenuation	0.22 dB / Km Max. at 1550 nm 0.36 dB / Km Max at 1310 nm
7	Chromatic Dispersion At 1310 nm At 1550 nm	2.8 ps/ (nm.km) 18 ps/ (nm.km)
8	Polarisation Mode dispersion	≤ 0.1 ps Sqrt.Km



### **2.1.5 Installation of Approach Cable:**

The existing cable trenches/ cable raceways proposed to be used shall be identified in the survey report. The Contractor shall make its best effort to route the cable through the existing available cable trenches. Where suitable existing cable trenches are not available, suitable alternatives shall be provided after OPTCL approval. However, the approach cable shall be laid in the HDPE pipe in all condition. Suitable provisions shall be made by the Contractor to ensure adequate safety earthing and insulated protection for the approach cable. All required fittings, supports, accessories, ducts, inner ducts, conduits, risers and any item not specially mentioned but required for laying and installation of approach cables shall be supplied and installed by the Contractor.

### **2.1.6 Optical Fibre Termination and Splicing:**

Optical fibre terminations shall be installed in Fibre Optic Distribution Panels (FODP) designed to provide protection for fibre splicing of pre connectorized pigtailed and to accommodate connectorized termination and coupling of the fibre cables. The Contractor shall provide rack /wall mounted Fibre Optic Distribution Panels (FODPs) sized as indicated in the appendices and shall terminate the fibre optic cabling up to the FODPs. The location of FODP rack shall be fixed by the Contractor, with the Employer's approval.

#### **2.1.6.1 Fibre Optic Distribution Panel:**

At each location requiring the termination of at least one fibre within a cable, all fibres within that cable shall be connectorized and terminated in Fibre Optic Distribution Panels in a manner consistent with the following:

- (a) All fibre optic terminations shall be housed using FODPs provisioned with splice organizers and splice trays. All fibres within a cable shall be fusion spliced to pre connectorized pigtailed and fitted to the "Back-side" of the provided fibre optic couplings.
- (b) FODPs shall be suitable for use with each of the cable types provided as part of this contract. FODPs shall accommodate pass-through splicing and fibre terminations.
- (c) FODPs for indoor use shall be supplied in suitable cabinets/racks with locking arrangement
- (d) All FODPs shall be of corrosion resistant, robust construction and shall allow both top or bottom entry for access to the splice trays. Ground lugs shall be provided on all FODPs and the Contractor shall ensure that all FODPs are properly grounded. The FODP shall meet or exceed ingress protection class IP55 specifications.

(e) Flexible protection shall be provided to the patch cord bunches going out from FODP to other equipment.

#### **2.1.6.2 Optical Fibre Connectors:**

Optical fibres shall be connectorised with FC-PC type connectors preferably. Alternatively connector with matching patch cord shall also be acceptable. Fibre optic couplings supplied with FODPs shall be appropriate for the fibre connectors to be supported. There shall be no adapters.

#### **2.1.7 Service Loops:**

For purposes of this specification, cable and fibre service loops are defined as slack (extra) cable and fibre provided for facilitating the installation, maintenance and repair of the optical fibre cable plant.

(a) Outdoor Cable Service Loops: In-line splice enclosures installed outdoors and mounted on the utility towers, shall be installed with sufficient fibre optic cable service loops such that the recommended minimum bend radius is maintained while allowing for installation or maintenance of the cable to be performed in a controlled environment at ground level.

(b) Indoor Cable Service Loops: FODPs shall provide at least three (3) metres of cable service loop. Service loops shall be neatly secured and stored, coiled such that the minimum recommended bend radius' are maintained.

(c) Fibre Units Service Loops: For all fibre optic cable splicing, the cable shall be stripped back a sufficient length such that the fan-out of fibre units shall provide for at least one (1) metre of fibre unit service loop between the stripped cable and the bare fibre fan-out.

(d) Pigtail Service Loops: Connectorised pigtails spliced to bare fibres shall provide at least 1 metre of service loop installed in the FODP fibre organizer and at least one (1) metre of service loop to the couplings neatly stored behind the FODP coupling panels.

(e) Fibre Service Loops: At least 0.5 metre of bare fibre service loop shall be provided on each side of all fibre splices. The bare fibre service loops shall be neatly and safely installed inside covered splice trays.

#### **2.1.8 Methodology for Installation and Termination:**

All optical fibre cable termination, installation, stringing and handling plans, guides and procedures, and engineering analysis (e.g. tension, sag, vibration etc.) shall be submitted to OPTCL for review and approval in the engineering/design phase of the project, prior to establishing the final cable lengths for manufacture. Installation procedures including details of personnel and time

required shall be documented in detail and submitted to OPTCL for approval. All installation practices shall be field proven and ISO accredited. All cable segments shall include service loops as specified in this specification. The maximum allowable stringing tension, maximum allowable torsional shear stress, crush strength and other physical parameters of the cable shall not be exceeded. The preventative measures to be taken shall be documented in detail and submitted to OPTCL in advance of installation. Optical fibre attenuation shall be measured after installation and before splicing. Any increase in attenuation or step discontinuity in attenuation shall not be acceptable and shall constitute a cable segment failure. In the event of cable damage or any fibre damage, the complete section (tension location to tension location) shall be replaced as mid-span joints are not acceptable. Any or all additional steel work or modifications required to attach the fibre cabling to the overhead transmission/ distribution line towers shall also be carried out by the Contractor. It shall be the Contractors responsibility to provide adequate communications among all crew members and support staff to ensure safe and successful installations

### **2.1.9 Cable Raceways**

To the extent possible, existing cable raceways shall be utilized. The Contractor is required to provide and install any additional indoor cable raceways which may be required for proper implementation of the fibre optic cabling system. This requirement shall be finalized during survey. The cable raceways shall conform to the following:

- (a) All cable raceways shall be sized to support full loading requirements plus at least a 200% safety loading factor.
- (b) Indoor cable raceways shall be fabricated from construction grade aluminum, galvanized iron or anodized sheet metal or any other suitable material approved by OPTCL. Suitable anti-corrosion measures shall be provided. Steel fabricated raceways shall be finished inside and out, treated to resist rust and to form a metal-to-paint bond.
- (c) Mechanical construction drawings of the cable raceways shall be submitted for OPTCL's information & review.

### **2.2 Inspection & Testing Requirement:**

All materials furnished and all work performed under this Contract shall be inspected and tested. Deliverables shall not be shipped until all required inspections and tests have been completed, and all deficiencies have been corrected to comply with this Specification and approved for shipment by the Employer. Except where otherwise specified, the Contractor shall provide all manpower and materials for tests, including testing facilities, logistics, power and instrumentation, and replacement of damaged parts. The costs shall be borne by the Contractor and shall be deemed to be included in the contract price. The entire cost of testing for factory, production tests and other test during manufacture specified herein shall be treated as

included in the quoted unit price of materials including the expenses of Inspector/Employer's representative as per clause-41 of ITB.. Acceptance or waiver of tests shall not relieve the Contractor from the responsibility to furnish material in accordance with the specifications. All tests shall be witnessed by the Employer and/or its authorized representative (hereinafter referred to as the Employer) unless the Employer authorizes testing to proceed without witness. The Employer representative shall sign the test form indicating approval of successful tests. Should any inspections or tests indicate that specific item does not meet Specification requirements, the appropriate items shall be replaced, upgraded, or added by the Contractor as necessary to correct the noted deficiencies at no cost to the Employer. After correction of a deficiency, all necessary retests shall be performed to verify the effectiveness of the corrective action. The Employer reserves the right to require the Contractor to perform, at the Employer's expense, any other reasonable test(s) at the Contractor's premises, on site, or elsewhere in addition to the specified Type, Acceptance, Routine, or Manufacturing tests to assure the Employer of specification compliance.

### **2.2.1 Testing Requirements:**

Following are the requirements of testing:

1. Type Testing
2. Factory Acceptance Testing
3. Site Acceptance Testing

#### **2.2.1.1 Type Testing:**

"Type Tests" shall be defined as those tests which are to be carried out to prove the design, process of manufacture and general conformity of the materials to this Specification. Type Testing shall comply with the following:

- (a) All cable & equipment being supplied shall conform to type tests as per technical specification.
- (b) The test reports submitted shall be valid as per applicable CEA Guidelines. In case the test reports are older for OPGW cable, the Contractor shall repeat these tests at no extra cost to the Employer.
- (c) The Contractor shall submit, within 30 days of Contract Award, copies of test reports for all of the Type Tests that are specified in the specifications and that have previously (before Contract award) been performed. These reports may be accepted by the Employer only if they apply to materials and equipment that are essentially identical to those due to be delivered under the Contract and only if test procedures and parameter values are identical to those specified in this specifications carried out at accredited labs and witnessed by third party / customer's representatives. In the event of any discrepancy in the test reports or any type tests not carried out, same shall be carried out by Contractor without any additional cost

implication to the Employer.

In case the Type Test is required to be carried out, then following shall be applicable:-

(d) Type Tests shall be certified or performed by reputed laboratories using material and equipment data sheets and test procedures that have been approved by the Employer. The test procedures shall be formatted as defined in the technical specifications and shall include a complete list of the applicable reference standards and submitted for Employer approval at least four (4) weeks before commencement of test(s). The Contractor shall provide the Employer at least 30 days written notice of the planned commencement of each type test.

(e) The Contractor shall provide a detailed schedule for performing all specified type tests. These tests shall be performed in the presence of a representative of the Employer.

(f) The Contractor shall ensure that all type tests can be completed within the time schedule offered in his Technical Proposal.

(g) In case of failure during any type test, the Supplier is either required to manufacture a fresh sample lot and repeat all type tests successfully or repeat that particular type test(s) at least three times successfully on the samples selected from the already manufactured lot at his own expenses. In case a fresh lot is manufactured for testing then the lot already manufactured shall be rejected.

#### **2.2.1.1.1 Type Test Samples**

The Contractor shall supply equipment/material for sample selection only after the Quality Assurance Plan has been approved by the Employer. The sample material shall be manufactured strictly in accordance with the approved Quality Assurance Plan. The Contractor shall submit for Employer approval, the type test sample selection procedure. The selection process for conducting the type tests shall ensure that samples are selected at random. For optical fibres/ Fibre Optic cables, at least three reels/ drums of each type of fibre/cable proposed shall be offered for selection. For FO cable installation hardware & fittings at least ten (10) samples shall be offered for selection. For Splice enclosures at least three samples shall be offered for selection.

#### **2.2.1.1.2 List of Type Tests**

The type testing shall be conducted on the following items

- (a) Optical fibres
- (b) OPGW Cable
- (c) OPGW Cable fittings
- (d) Vibration Damper
- (e) Splice Enclosure (Joint Box)
- (f) Approach Cable

**(a) Type Tests for Optical Fibres**

The type tests listed below in table shall be conducted on DWSM fibres to be supplied as part of overhead cables. The tests specific to the cable type are listed in subsequent sections.

**Type Tests for Optical Fibres**

S.No.	Test Name	Acceptance Criteria	Test Procedure
1	Attenuation	As per Section-01 of TS	IEC 60793-1-40 or EIA/TIA 455-78A
2	Attenuation Variation	As per Section-01 of TS	IEC 60793-1-40
3	Attenuation at Water Peak	As per Section-01 of TS	IEC 60793-1-40 or EIA/TIA 455-78A
4	Temp. Cycling (Temp dependence of Attenuation)	As per Section-01 of TS	IEC 60793-1-52 or EIA/TIA 455-3A, 2 cycles
5	Attenuation with Bending (Bend Performance)	As per Section-01 of TS	IEC 60793-1-47 or EIA/TIA 455-62A
6	Mode Field dia.	As per Section-01 of TS	IEC 60793-1-45 or EIA/TIA 455-164A/167A/174
7	Chromatic Dispersion	As per Section-01 of TS	IEC 60793-1-42 or EIA/TIA 455-168A/169A/175A
8	Cladding Diameter	As per Section-01 of TS	IEC 60793-1-20 or EIA/TIA 455-176
9	Point Discontinuities of attenuation	As per Section-01 of TS	IEC 60793-1-40 or EIA/TIA 455-59
10	Core – Clad concentricity error	As per Section-01 of TS	IEC 60793-1-20 or EIA/TIA 455-176
11	Fibre Tensile Proof Testing	As per Section-01 of TS	IEC 60793-1-30 or EIA/TIA 455-31B

**(b) Type Tests for OPGW Cables**



The type tests to be conducted on the OPGW cable are listed in Table Type Tests for OPGW Cables. Unless specified otherwise in the technical specifications or the referenced standards, the optical attenuation of the specimen, measured during or after the test as applicable, shall not increase by more than 0.05 dB/Km.

### Type tests for OPGW Cable

S.No	Test Name	Test Description	Test Procedure
1	Water Ingress Test	IEEE 1138-2009 (IEC 60794-1-2 Method F5 or EIA/ TIA 455-82B)	Test Duration : 24 hours
2	Seepage of filing compound	IEEE 1138-2009 (EIA/ TIA 455-81B)	Preconditioning period: 72 hours Test duration: 24 Hours
3	Short Circuit Test	IEEE 1138-2009	Fibre Attenuation shall be continuously monitored and recorded through digital data logging system or equivalent means. A suitable temperature sensor such as thermocouple shall be used to monitor and record the temperature inside the OPGW tube in addition to monitoring & recording the temperature between the strands and between optical tube and the strand as required by IEEE 1138. Test shall be conducted with the tension clamps proposed to be supplied. The cable and the clamps shall be visually inspected for mechanical and damage photographed after the test.
		Or IEC60794-410/ IEC 60794-1-2(2003) Method H1	Initial temperature during the test shall be greater than or equal to ambient field temperature
4	Aeolian Vibration Test	IEEE 1138-2009 or IEC60794-4-10/ IEC 60794-1-5, Method E19	Fibre attenuation shall be continuously monitored and recorded through digital data logging system or equivalent means. The vibration frequency and amplitude shall be monitored and recorded continuously. All fibres of the test cable sample shall be spliced together in serial for attenuation monitoring. Test shall be conducted with the tension/ suspension clamps proposed to be supplied. The

			cable and the clamps shall be visually inspected for mechanical and damage photographed after the test.
5	Galloping test	IEEE 1138-2009	Test shall be conducted with the tension/ Suspension clamps proposed to be supplied. The cable and clamps shall be visually inspected for mechanically and damage photographed after the test. All fibres of the test cable sample shall be spliced together in serial for attenuation monitoring
6	Cable bend Test	IEC 60794-1-2	The short- term and long- term bend tests shall be conducted in accordance with procedure 2 in IEC 60794-1-2 E11 to determine the minimum acceptance radius of bending without any increase in attenuation or any other damage to the fibre optic cable core such as brid caging, deformation, kinking and crimping.
7	Sheave Test	IEEE 1138-2009 Or IEC 60794-1-2(2003) Method E1B	Fibre Attenuation shall be continuously monitored and recorded through digital data logging system or equivalent means. The Sheave dia. Shall be based on the pulling angle and the minimum pulley dia employed during installation. All fibres of the test cable sample shall be spliced together in serial for attenuation monitoring.
8	Crush Test	IEEE 1138-2009 (IEC 60794-1-2, Method E3/ EIA/ TIA 455-41B)	The Crush test shall be carried out on a sample of approximately one (1) metre long in accordance with IEC 60794-1-2 E3. A Load equal to 1.3times the weight of a 400-metre length of fibre optic cable shall be applied for a period of 10 minutes. A permanent or temporarily increase in optical attenuation value greater than 0.1 dB change in sample shall constitute failure. The load shall be further increased in small increment until the measured attenuation of the optical wave gude fibres increase and the failure load recorded along with results
9	Impact test	IEEE 1138-2009 (IEC 60794-1-2, Method E4/ EIA/ TIA 455-25B)	The impact test shall be carried out in accordance with IEC 60794-1-2 E4. Five separate impacts of 0.1- 0.3 kgm shall be applied. The radius of intermediate piece shall be the reel drum radius $\pm$ 10%. A permanent or temporary increase in attenuation optical value greater than 0.1 dB/km change in sample shall constitute failure.



10	Creep Test	IEEE 1138-2009	As per aluminium association method, the best-fit straight line shall be fitted to the recorded creep data and shall be extrapolated to 25 years shall be calculated. The time when the creep shall achieve the strain margin limits shall also be calculated.
11	Fibre strain Test	IEEE 1138-1994	IEEE 1138-1994
12	StrainMargin Test	IEEE 1138-2009	IEEE 1138-2009
13	Stress strain Test	IEEE 1138-2009	IEEE 1138-2009
14	Cable Cut-off wavelength Test	IEEE 1138-1994	IEEE 1138-1994
15	Temperature Cycling Test	IEEE 1138-2009	IEEE 1138-2009 Or IEC 60794-1-2, Method F1
16	Corrosion (Salt Spray) Test	EIA/TIA 455-16A	
17	Tensile Performance Test	IEC 60794-1-2- EI/EIA/TIA 455-33B	The test shall be conducted on a sample of length sufficient in accordance with IEC 60794-1-2 EI. The attenuation variation shall not exceed 0.05dB/Km upto 90% of RTS of fibre optic cable. The load shall be increased at a steady rate up to rated tensile strength and held for one minute. The fibre optic cable sample shall not fail during the period. The applied load shall then be increased until the falling load is reached and the value recorded.
18	Lightning Test	IEC 60794-4-10/ IEC 60794-1-2 (2003)	The OPGW cable construction shall be tested in accordance with IEC 60794-1-2, Method H2 for Class1.
19	DC Resistance Test (IEC 60228)	On a fibre optic cable sample of minimum I metre length, two contact clamps shall be fixed with a predetermined bolt torque. The resistance shall be measured by a Kelvin double bridge by placing the clamps initially zero metre and subsequently one metre apart. The tests shall be repeated at least five times and the value recorded after correcting at 20°C.	

**(c) Type Test on OPGW Cable Fittings**

The type tests to be conducted on the OPGW Cable fittings and

accessories are listed below:

**(i) Mechanical Strength Test for Suspension/Tension Assembly**  
Applicable Standards: IEC 61284, 1997.

**Suspension Assembly**

The armour rods /reinforcement rods are assembled on to the approved OPGW using the Installation Instructions to check that the assembly is correctly fitted and is the same that will be carried out during installations.

**Part 1:**

The suspension assembly shall be increased at a constant rate up to a load equal to 50% of the specified minimum Failure Load increased and held for one minute for the test rig to stabilize. The load shall then be increased at a steady rate to 67% of the minimum Failure Load and held for five minutes. The angle between the cable, the Suspension Assembly and the horizontal shall not exceed  $16^{\circ}$ . This load shall then be removed in a controlled manner and the Protection Splice disassembled. Examination of all the components shall be made and any evidence of visual deformation shall be documented.

**Part 2:**

The Suspension clamp shall then be placed in the testing machine. The tensile load shall gradually be increased up to 50% of the specified Minimum Failure Load of the Suspension Assembly and held for one minute for the Test Rig to stabilize and the load shall be further increased at a steady rate until the specified minimum Failure Load is reached and held for one minute. No fracture should occur during this period. The applied load shall then be increased until the failing load is reached and the value shall be documented.

**Tension Assembly**

The Tension Assembly is correctly fitted and is the same that will be carried out during installations.

**Part 1:**

The tension assembly (excluding tension clamp) shall be increased at a constant rate up to a load equal to 50% of the specified minimum Failure Load increased at a constant rate and held for one minute for the test rig to stabilize. The load shall then be increased at a steady rate to 67% of the minimum Failure Load and held for five minutes. This load shall then remove in a controlled manner and the Tension Assembly disassembled. Examination of the Tension Dead-End and associated components shall be made and any evidence of visual deformation shall be documented.

**Part 2:**

The Tension Dead-End and associated components shall then be reassembled and bolts tightened as before. The tensile load shall gradually be increased up shall gradually be increased up to 50% of the specified Minimum Failure Load of the Tension Assembly and held for one minute for the Test Rig to stabilize and the load shall be further increased at a steady rate until the specified minimum Failure Load is reached and held for one minute. No fracture should occur during this period. The applied load shall then be increased until the failing load is reached and the value shall be documented.

Acceptance Criteria for Tension/Suspension Assembly:

- No evidence of binding of the Nuts or Deformation of components at end of Part 1 of Test.
- No evidence of Fracture at the end of one minute at the minimum failure load during Part 2 of the Test.

Any result outside these parameters shall constitute a failure.

**(ii) Clamp Slip Strength Test for Suspension Assembly**

The suspension assembly shall be vertically suspended by means of a flexible attachment. A suitable length fibre optical cable shall be fixed in the clamps. Once the Suspension Clamp has been assembled, the test rig is tensioned to 1 kN and the position scale on the recorder 'zeroed'. The test rig is then tensioned to 2.5 kN and the relative positions of the Reinforcing Rods, Armour Rods and Suspension Clamp shall be marked by a suitable means to confirm any slippage after the test has been completed. The relative positions of the helical Armour Rods and associated Reinforcing Rods at each end shall be marked and also 2 mm relative position between clamp body and Armour Rods shall be marked on one side. The load shall be increased to 12 kN at a loading rate of 3 kN/min and held for one minute. At the end of this one minute period, the relative displacement between clamp body and the armour rods shall be observed. If the slippage is 2 mm or above, the test shall be terminated. Otherwise, at the end of one minute the position of the clamp body and 2 mm. relative positions between clamp body and armour rods shall be marked on the other side. After the one minute pause, the load shall be further increased at a loading rate of 3 kN/min, and recording of load and displacement shall continue until either the relative Position displacement between clamp body and armour rods reaches more than 2 mm or the load reaches the maximum slip load of 17 kN. On reaching either of the above values the test is terminated. Visual examination of all paint marks shall be recorded, and a measurement of any displacement recorded in the Table of Results.

**Acceptance Criteria:**

The Suspension Clamp has passed the Slip Test if the following

conditions are met:

- No slippage shall occur at or below the specified minimum slip load.
- Definition of no slippage in accordance with IEC 61284, 1997:- Any relative movement less than 2 mm is accepted. The possible couplings or elongations produced by the cable as a result of the test itself are not regarded as slippage.
- Slippage shall occur between the specified maximum and minimum slip load of 12 - 17 kN.
- There shall be no slippage of the Reinforcing Rods over the cable, and no slippage of the Armour Rods over the Reinforcing Rods.
- The relative movement (i.e. more than 2 mm between Armour Rods & Clamp body) between minimum 12 kN and maximum slip 17 kN, shall be considered as slip.
- The Armour Rods shall not be displaced from their original lay or damaged
- Definition of no damage in accordance with convention expressed in IEC 61284: 1997 no damage, other than surface flattening of the strands shall occur.

Any result outside these parameters is a failure.

**(iii) Slip Strength Test of Tension Clamp:**

Tension clamps shall be fitted on an 8 m length of fibre optic cable on both ends. The assembly shall be mounted on a tensile testing machine and anchored in a manner similar to the arrangement to be used in service. A tensile load shall gradually be applied up to 20 % of the RTS of OPGW. Displacement transducers shall be installed to measure the relative movement between the OPGW relative to the Reinforcing Rods and Tension Dead -End relative to Reinforcing Rods. In addition, suitable marking shall be made on the OPGW and Dead-End to confirm grip. The load shall be gradually increased at a constant rate up to 50 % of the UTS and the position scale of the recorder is zeroed. The load shall then gradually increased up to 95 % of the UTS and maintained for one minute. After one minute pause, the load shall be slowly released to zero and the marking examined and measured for any relative movement.

### **Acceptance Criteria:**

- No movement shall occur between the OPGW and the Reinforcing Rods, or between the Reinforcing Rods and the Dead-End assembly.
- No failure or damage or disturbance to the lay of the Tension Dead-End, Reinforcing Rods or OPGW.
- Definition of no movement as defined in IEC 61284: Any relative movement less than 2 mm is accepted. The possible couplings or elongations produced by the conductor as a result of the test itself are not regarded as slippage.

Any result outside these parameters shall constitute a failure.

#### **(iv) Grounding Clamp and Structure Mounting Clamp Fit Test**

For structure mounting clamp, one series of tests shall be conducted with two fibre optic cables installed, one series of tests with one fibre optic cable installed in one groove, and one series of tests with one fibre optic cable in the other groove. Each clamp shall be installed including clamping compound as required on the fibre optic cable. The nut shall be tightened on to the bolt by using torque wrench with a torque of 5.5 kgm or supplier's recommended torque and the tightened clamp shall be held for 10 minutes. After the test remove the fibre optic cable and examine all its components for distortion, crushing or breaking. Also the fibre optic cable shall be checked to ensure free movement within the core using dial calipers to measure the diameter of the core tube. The material shall be defined as failed if any visible distortion, crushing, cracking or breaking of the core tube is observed or the fibre optic cable within the core tube is not free to move, or when the diameter of the core tube as measured at any location in the clamped area is more than 0.5 mm larger or smaller of the core diameter as measured outside the clamped area.

#### **(v) Structure Mounting Clamp Strength Test**

The clamp and mounting assembly shall be assembled on a vertical 200 mm x 200 mm angle and a short length of fibre optic cable installed. A vertical load of 200 kg shall be applied at the end of the mounting clamp and held for 5 minutes. Subsequently, the load shall be increased to 400 kg and held for 30 seconds. Any visible distortion, slipping or breaking of any component of the mounting clamp or assembly shall constitute failure.

#### **(d) Type Test on Vibration Damper**

The testing standard of vibration damper for OPGW shall be as per applicable international standard i.e. IEC 61897.

**(a) Dynamic Characteristic Test**

The damper shall be mounted with its clamp tightened with torque recommended by the manufacturer on shaker table capable of simulating sinusoidal vibrations for Critical Aeolian Vibration frequency band ranging from  $0.18/d$  to  $1.4/d$  – where  $d$  is the OPGW cable diameter in meters. The damper assembly shall be vibrated vertically with a  $\pm 1$  mm amplitude from 5 to 15 Hz frequency and beyond 15 Hz at 0.5 mm to determine following characteristics with the help of suitable recording instruments.

- (i) Force Vs frequency
- (ii) Phase angle Vs frequency
- (iii) Power dissipation Vs frequency

The Force Vs frequency curve shall not show steep peaks at resonance frequencies and deep troughs between the resonance frequencies. The resonance frequencies shall be suitably spread within the Aeolian vibration frequency-band between the lower and upper dangerous frequency limits determined by the vibration analysis of fibre optic cable without dampers.

Acceptance criteria for vibration damper:

- (iv) The above dynamic characteristics test on five damper shall be conducted.
- (v) The mean reactance and phase angle Vs frequency curves shall be drawn with the criteria of best fit method.
- (vi) The above mean reactance response curve should lie within following limits: V.D. for OPGW -  $0.060 f$  to  $0.357 f$  kgf/mm\*  
Where  $f$  is frequency in Hz.
- (vii) The above mean phase angle response curve shall be between  $25^{\circ}$  to  $130^{\circ}$  within the frequency range of interest.
- (viii) If the above curve lies within the envelope, the damper design shall be considered to have successfully met the requirement.
- (ix) Visual resonance frequencies of each mass of damper is to be recorded and to be compared with the guaranteed values.

**(b) Vibration Analysis**

The vibration analysis of the fibre optic cable shall be done with and without damper installed on the span. The vibration analysis shall be done on a digital computer using energy balance approach. The following parameters shall be taken into account for the purpose of analysis.

- (i) The analysis shall be done for single fibre optic cable without armour rods. The tension shall be taken as 25% of RTS of fibre optic cable for a span ranging from 100 m to 1100 m.
- (ii) The self damping factor and flexural stiffness (EI) for fibre optic cable shall be calculated on the basis of experimental results. The details to experimental analysis with these data shall be furnished.
- (iii) The power dissipation curve obtained from Damper Characteristics Test shall be used for analysis with damper.
- (iv) Examine the Aeolian Vibration level of the fibre optic cable with and without vibration damper installed at the recommended location or wind velocity ranging from 0 to 30 Km per hour, predicting amplitude, frequency and vibration energy input.
- (v) From vibration analysis of fibre optic cable without damper, antinode vibration amplitude and dynamic strain levels at clamped span extremities as well as antinodes shall be examined and thus lower and upper dangerous frequency limits between which the Aeolian vibration levels exceed the specified limits shall be determined.
- (vi) From vibration analysis of fibre optic cable with damper(s) installed at the recommended location, the dynamic strain level at the clamped span extremities, damper attachment point and the antinodes on the fibre optic cable shall be determined. In addition to above damper clamp vibration amplitude and antinodes vibration amplitudes shall also be examined.

The dynamic strain levels at damper attachment point, clamped span extremities and antinodes shall not exceed the specified limits. The damper clamp vibration amplitude shall not be more than that of the specified fatigue limits.



**(c) Fatigue Tests:**

**(i) Test Set Up**

The fatigue tests shall be conducted on a laboratory set up with a minimum effective span length of 30m. The fibre optic cable shall be tensioned at 25% of RTS of fibre optic cable and shall not be equipped with protective armour rods at any point.

Constant tension shall be maintained within the span by means of lever arm arrangement. After the fibre optic cable has been tensioned, clamps shall be installed to support the fibre optic cable at both ends and thus influence of connecting hardware fittings are eliminated from the free span. The clamps shall not be used for holding the tension on the fibre optic cable. There shall be no loose parts, such as suspension clamps, U bolts, on the test span supported between clamps mentioned above. The span shall be equipped with vibration inducing equipment suitable for producing steady standing vibration. The inducing equipment shall have facilities for step less speed control as well as step less amplitude arrangement. Equipment shall be available for measuring the frequency, cumulative number of cycles and amplitude of vibration at any point along the span.

**(ii) Fatigue Test**

The vibration damper shall be installed on the test span with the manufacturer's specified tightening torque. It shall be ensured that the damper shall be kept minimum three loops away from the shaker to eliminate stray signals influencing damper movement. The damper shall then be vibrated at the highest resonant frequency of each damper mass. For dampers involving torsional resonant frequencies, tests shall be done at torsional modes also in addition to the highest resonant frequencies at vertical modes. The resonance frequency shall be identified as the frequency at which each damper mass vibrates with the maximum amplitude on itself. The amplitude of vibration of the damper clamp shall be maintained not less than  $\pm 25/f$  mm where  $f$  is the frequency in Hz. The test shall be conducted for minimum ten million cycles at each resonant frequency mentioned above. During the test, if resonance shift is observed, the test frequency shall be tuned to the new resonant frequency. The clamp slip test as mentioned herein shall be repeated after fatigue tests without retorquing or adjusting the damper clamp, and the clamp shall withstand a minimum load equal to 80% of the slip strength for a minimum duration of one minute. After the above tests, the damper shall be removed from fibre optic cable and subjected to dynamic characteristics test. There shall not be any major deterioration in the characteristics of the damper. The damper then shall be cut open and



inspected. There shall not be any broken, loose, or damaged part. There shall not be significant deterioration or wear of the damper. The fibre optic cable under clamp shall also be free from any damage.

For purposes of acceptance, the following criteria shall be applied:

- (1) There shall not be any resonant frequency shift before and after the test by more than  $\pm 20\%$
- (2) The power dissipation of the damper before and after test at the individual resonant frequencies do not differ by more than  $\pm 20\%$

Beside above tests, the type tests listed below in the table shall also be conducted on Vibration Damper

S. No.	Test Name	Test Procedure
1	Visual examination & Dimensional and material verification	IEC 61897 Clause 7.1 & 7.2
2	Clamp Sliptest	IEC 61897 Clause 7.5
3	Clamp bolt tightening test	IEC 61897 Clause 7.7
4	Attachments of cable weights to messenger	IEC 61897 Clause 7.8
5	Attachment of cable clamps to messenger	IEC 61897 Clause 7.8
6	Damper effectiveness evaluation	IEC 61897 Clause 7.11.3.2

**(e) Type Tests for Splice Enclosures (Joint Box)**

Following Type tests shall be demonstrated on the Splice Enclosure(s) (Splice Enclosure/Box). For certain tests, lengths of the fibre optic cable shall be installed in the splice box, and the fibres must be spliced and looped in order to simulate conditions of use. The attenuation of the fibres shall be measured, during certain tests, by relevant Fibre Optic Test Procedures (EIA/TIA 455 or IEC 60794-1 procedures).

**(i) Temperature Cycling Test**

FO cable is installed in the splice enclosure and optical fibres spliced and looped. The box must be subjected to 5 cycles of temperature variations of  $-40^{\circ}$  to  $+65^{\circ}$  with a dwell time of at least 2 hours on each extreme.

Fibre loop attenuation shall be measured in accordance with EIA 455-20/ IEC 60794-1-C10. The variation in attenuation shall be less than  $\pm 0.05\text{dB}$ . The final humidity level, inside the box, shall not exceed the initial level, at the closing of the box.

**(ii) Humid Heat test**

The sealed splice enclosure, with fibres spliced and looped inside, must be subjected to a temperature of  $+55^{\circ}\text{C} \pm 2^{\circ}\text{C}$  with a relative humidity rate of between 90% and 95% for 5 days. The attenuation variation of the fibres during the duration of the test shall be less than  $\pm 0.05\text{dB}$ , and the internal humidity rate measured, less than 2%.

**(iii) Rain Withstand Test / Water Immersion test**

The splice enclosure with optical fibres cable installed and fibres spliced fixed, shall be subjected to 24 hours of simulated rain in accordance with IEC 60060 testing requirements. No water seepage or moisture shall be detected in the splice enclosure. The attenuation variation of the fibres after the test shall be less than  $\pm 0.05\text{dB}$ .

**(iv) Vibration Test**

The splice enclosure, with fibres united inside, shall be subjected to vibrations on two axes with a frequency scanning of 5 to 50 Hz. The amplitude of the vibrations shall be constant at 0.450mm, peak to peak, for 2 hours, for each of the vibrations' axes. The variation in attenuation, of the fibres, shall be less than  $\pm 0.05\text{dB}$ . The splice enclosure shall be examined for any defects or deformation. There shall be no loosening or visible damage of the FO cable at the entry point.

**(v) Bending and Torsion test**

The splice enclosure, with fibres spliced inside, shall be firmly held in place and be subjected to the following sequence of mechanical stresses on the cable:

- a) 3 torsion cycles of  $\pm 180^{\circ}$  shall be exercised on the cable. Each cycle shall be less than one minute.
- b) 3 flexure cycles of the cable, of  $\pm 180^{\circ}$  with one cycle less than one minute.

The variation in the attenuation, of the fibres, shall be less than  $\pm 0.05\text{dB}$ . The cables connection ring shall remain securely fixed to the box with the connection maintained firmly. No defects/fissures shall be noted on the joint ring or on the splice enclosure

**(vi) Tensile test**

The splice enclosure with cable fixed to the boxes shall be subjected to a minimum tension of 448 N for a period of two minutes. No fissure shall be noted in the connections or on the box.

**(vii) Drop Test**

With 2 lengths of 11 metres of cable fixed to the box, it shall be dropped five times from a height of 10 metres. There shall be no fissure, at all, of the box, and the connections shall remain tight. The test surface shall be carried out in accordance with IEC 60068-2-32.

**(f) Type Tests for Fibre Optic Approach Cable**

The type tests to be conducted on the Fibre Optic Approach cable are listed in Table: Type Tests for Fibre Optic Approach Cable. Unless specified otherwise in the technical specifications or the referenced standards, the optical attenuation of the specimen, measured during or after the test as applicable, shall not increase by more than 0.05 dB/Km.

**Type Tests Fibre Optic Approach Cable**

S.No.	Test Name	Test Procedure
1	Water Ingress Test	(IEC 60794-1-F5 / EIA 455-82B) Test duration : 24 hours
2	Seepage of filling compound	(EIA 455-81A) Preconditioning : 72 hours, Test duration: 24 hours.
3	Crush Test	(IEC 60794-1-E3/ EIA 455-41)
4	Impact Test	(IEC-60794-1-E4/ EIA 455-25A)
5	Stress strain Test	(EIA 455-33A)
6	Cable Cut-off Wavelength Test	(EIA 455-170)
7	Temperature Cycling Test	(IEC60794-1-F1/EIA-455-3A) – 2 cycles

**a) Impact Test**

The Impact test shall be carried out in accordance with IEC: 60794-1-E4. Five separate impacts of 2.0 kg shall be applied at different locations. The radius of the intermediate piece shall be the reel drum radius  $\pm$  10%. A permanent or temporary increase in optical attenuation value greater than 0.05 dB/km shall constitute failure.

### **2.2.1.2 Factory Acceptance Tests**

Factory acceptance tests shall be conducted on randomly selected final assemblies of all equipment to be supplied. Factory acceptance testing shall be carried out on OPGW Cable and associated hardware & fittings, Approach Cable, Joint Box, FODP etc. and all other items for which price has been identified separately in the Bid Price Schedules.

Material shall not be shipped to the Employer until required factory tests are completed satisfactorily, all variances are resolved, full test documentation has been delivered to the Employer, and the Employer has issued Material Inspection & Clearance Certificate (MICC). Successful completion of the factory tests and the Employer approval to ship, shall in no way constitute final acceptance of the system or any portion thereof. These tests shall be carried out in the presence of the Employer's authorized representatives unless waiver for witnessing by Employer's representatives is intimated to the contractor.

Factory acceptance tests shall not proceed without the prior delivery to and approval of all test documentation by the Employer.

The factory acceptance tests for the supplied items shall be proposed by the Contractor in accordance with technical specifications and Contractor's (including Sub-Contractor's / supplier's) standard FAT testing program. In general the FAT for other items shall include at least: Physical verification, demonstration of technical characteristics, various operational modes, functional interfaces etc.

For Test equipment FAT shall include supply of proper calibration certificates, demonstration of satisfactory performance, evidence of correct equipment configuration and manufacturer's final inspection certificate/ report.

#### **2.2.1.2.1 Sampling for FAT**

From each batch of equipment presented by the Contractor for Factory acceptance testing, the Employer shall select random sample(s) to be tested for acceptance. Unless otherwise agreed, all required FAT tests in the approved FAT procedures, shall be performed on all samples. The Sampling rate for the Factory acceptance tests shall be minimum 10% of the batch size (minimum 1) for all items. The physical verification shall be carried out on 100% of the offered quantities as per the approved FAT procedure. In case any of the selected samples fail, the failed sample is rejected and additional 20% samples shall be selected randomly and tested. In case any sample from the additional 20% also fails the entire batch may be rejected.

For the OPGW cable hardware fittings & accessories, the minimum sampling rate, and batch acceptance criteria shall be as defined in IS 2486.

The Sampling rate for the Factory acceptance tests shall be 10% of the

batch size (minimum 2) for FO cable drums, FODPs, Joint box and other similar items.

Since FAT testing provides a measure of assurance that the Quality Control objectives are being met during all phases of production, the Employer reserves the right to require the Contractor to investigate and report on the cause of FAT failures and to suspend further testing/ approvals until such a report is made and remedial actions taken, as applicable.

#### **2.2.1.2.2 Production Testing**

Production testing shall mean those tests which are to be carried out during the process of production by the Contractor to ensure the desired quality of end product to be supplied by him. The production tests to be carried out at each stage of production shall be based on the Contractor's standard quality assurance procedures. The production tests to be carried out shall be listed in the Manufacturing Quality Plan (MQP), along with information such as sampling frequency, applicable standards, acceptance criteria etc.

The production tests would normally not be witnessed by the Employer. However, the Employer reserves the right to do so or inspect the production testing records in accordance with Inspection rights specified for this contract.

#### **2.2.1.2.3 Factory Acceptance Tests on Optical Fibre to be supplied with OPGW**

The factory acceptance tests listed in table below are applicable for the Optical fibres to be supplied. The listed tests follow testing requirements set forth in IEEE standard 1138/IEC 60794. The referenced sections specify the detailed test description. The acceptance norm shall be as specified in the above mentioned IEEE standards unless specified otherwise in the technical specifications.

### Factory Acceptance Tests for Optical Fibres: Optical Tests

S. No.	Test Name	Acceptance Criteria	Test procedure
1	Attenuation Coefficient	T S, Table DWSW Optical Fibre Characteristics	EIA/TIA 455- 78A
2	Point Discontinuities of attenuation	TS, Section 2.1.1.2	EIA/TIA 455-59
3	Attenuation at Water Peak	TS ,Table Type test for Optical Fibers	EIA/TIA 455- 78A
4	Chromatic Dispersion		EIA/TIA 455- 168A/169A/175A
5	Core – Clad Concentricity Error		EIA/TIA 455-/176
6	Cladding diameter		EIA/TIA 455-176
7	Fibre Tensile Proof Testing		EIA/TIA 455-31B

The test report for the above tests for the fibers carried out by the Fiber Manufacturer and used in the OPGW cables shall be shown to the inspector during OPGW cable FAT and shall be submitted along with the OPGW cable FAT report.

#### 2.2.1.2.4 Factory Acceptance Test on OPGW Cable

The factory acceptance tests for OPGW cable specified below in Table follow the requirements set forth in IEEE standard 1138 / IEC 60794. The FAT shall be carried out on 10% of offered drums in each lot as specified in technical specifications and the optical tests shall be carried out in all fibres of the selected sample drums. The Rated Tensile Strength test shall be carried out on one sample in each lot.

#### Factory Acceptance Tests on OPGW Applicable standard: IEEE 1138 / IEC 60794

S. No.	Factory Acceptance Test on Manufactured OPGW
1	Attenuation Co-efficient at 1310 nm and 1550 nm
2	Point discontinuities of attenuation
3	Visual Material verification and dimensional checks as per approved DRS/Drawings
4	Rated Tensile Strength
5	Lay Length Measurements

### 2.2.1.2.5 Factory Acceptance Test on OPGW Fittings

The factory acceptance tests for OPGW Fittings as specified below in Table. The sampling plan shall be as per relevant standard:

#### Factory Acceptance Tests on OPGW Fittings:

S. No.	Factory Acceptance Test
<b>Suspension Assembly</b>	
1	UTS/Mechanical Strength of the assembly
2	Clamp Slip Test
3	Visual Material verification and dimensional checks as per approved DRS/Drawings
4	Mechanical strength of each component
5	Galvanizing test
<b>Tension Assembly</b>	
6	Clamp Slip Strength test
7	Visual Material verification and dimensional checks as per approved DRS/Drawings
8	Mechanical strength of each component
	Galvanizing Test
<b>Vibration Damper</b>	
10	Galvanizing test on damper, masses and messenger wires
11	Damper response (resonant frequencies)
12	Clamp Slip test
13	Strength of messenger wires
14	Attachments of weights to messenger cable
15	Attachments of clamps to messenger cable
16	Clamp bolt tightening test
17	Clamp bolt torque test
18	Dynamic characteristic test
19	Visual Material verification and dimensional checks as per approved DRS/ Drawings
20	Clamp fit test
21	Clamp Strength test
22	Visual Material verification and dimensional checks as per approved DRS/ Drawings

### 2.2.1.2.6 Factory Acceptance Test on Approach Cable

The factory acceptance tests for Approach Cable specified below in Table:

#### Factory Acceptance Tests On Approach Cable

S. No.	Factory Acceptance Test
1	Attenuation Co-efficient at 1310 nm and 1550 nm
2	Point discontinuities of attenuation
3	Visual Material verification and dimensional checks as per approved DRS/Drawings

### 2.2.1.2.7 Factory Acceptance Test on Splice Enclosure (Joint Box) /FODP

The factory acceptance tests for Splice Enclosures/FODP as specified below in Table:

#### Factory Acceptance Tests on Splice Enclosures (Joint Box) / FODP

S.No	Factory Acceptance Test
1	Visual check of Quantities and Specific Component Number for each component of Splice Enclosure/ FODP and dimensional checks against the approved drawings.

### 2.2.1.2.8 Factory Acceptance Test on Test Equipment & other items

As per technical specification and approved DRS/Documents.

### 2.2.1.3 Site Acceptance Tests

The Contractor shall be responsible for the submission of all material & test equipment supplied in this contract for site tests and inspection as required by the Employer. All equipment shall be tested on site under the conditions in which it will normally operate.

The tests shall be exhaustive and shall demonstrate that the overall performance of the contract works satisfies every requirement specified. At a minimum Site Acceptance Testing requirement for FO cable etc. is outlined in following section. This testing shall be supplemented by the Contractor's standard installation testing program, which shall be in accordance with his quality plan(s) for FO installation.

During the course of installation, the Employer shall have full access for inspection and verification of the progress of the work and for checking workmanship and accuracy, as may be required. On completion of the work prior to commissioning, all equipment shall be tested to the satisfaction of the Employer to demonstrate



that it is entirely suitable for commercial operation.

### 2.2.1.3.1 Minimum Site Acceptance Testing Requirement for FO Cabling

Prior to installation, every spooled fibre optic cable segment shall be tested for compliance with the Pre-shipment data previously received from the manufacturer. This requirement will preclude the installation of out of specification cable segments that may have been damaged during shipment.

#### a) Phases of Site Acceptance Testing

SAT shall be carried out link by link from FODP to FODP. SAT may be performed in parts in case of long links. The tests, checks, adjustments etc conducted by the Contractor prior to offering the equipment for SAT shall be called Pre-SAT activities. The Pre-SAT activities shall be described in the installation manuals and Field Quality Plan documents. Sag and tension of OPGW shall generally be as per approved sag-tension chart and during installation, sag and tension of OPGW shall be documented. Upon completion of a continuous cable path, all fibres within the cable path shall be demonstrated for acceptance of the cablepath. Fibre Optic cable site testing minimum requirements are provided in Table through below:

#### Fibre Optic Cable Pre-Installation Testing

Item:	Description:
1.	Physical Inspection of the cable assembly for damage
2.	Optical fibre continuity and fibre attenuation with OTDR at 1550 nm
3.	Fibre Optic Cable length measurement using OTDR

#### Fibre Optic Cable Splicing Testing

Item:	Description
1.	Per splice bi-directional average attenuation with OTDR
2.	Physical inspection of splice box/enclosure for proper fibre / cable routing techniques
3.	Physical inspection of sealing techniques, weather proofing, etc.

### Fibre Optic Cable Commissioning Testing

Item:	Description
1.	End to End (FODP to FODP) bi-directional average attenuation of each fibre at 1310 nm and 1550 nm by OTDR.
2.	End to End (FODP to FODP) bi-directional average attenuation of each fibre at 1310 nm and 1550 nm by Power meter.
3.	Bi-directional average splice loss by OTDR of each splice as well as for all Splices in the link (including at FODP also).
4.	Proper termination and labeling of fibres & fibre optic cables at FODP as per Approved labeling plan.

## GUARANTEED TECHNICAL PARTICULARS OF OPGW CABLE & HARDWARE ACCESSORIES

Sl.No	Description.	Technical Particulars
1.	Make & Model	
2.	No. of Fibres in OPGW	24
3.	Mode	DW-SM
4.	Buffer type	Loose
5.	Buffer tube diameter	2.2mm
6.	Buffer tube material	PBT
7.	No. of buffer tubes	4
8.	No. of fibres per tube	6
9.	Identification/numbering of individual tubes	Red, green blue and natural.
10.	No.of empty tubes (if any)	1
11.	Filling material	Moisture proof & Hydrogen Adherent jelly.
12.	Strength members	1
13.	Binding yarn/tape	Tapes
14.	(i)10% Aluminium clad steel wire(ii)20.3% IACS	(i) 2.25mm (Dia) & 12 Nos. (ii) 2.6 mm (Dia) & 11 Nos. (iii) Other design meeting to the electrical & mechanical parameters as per detail technical specification.
15.	Aluminium alloy wires (Diameter & Number)	2.25mm & 3 Nos.
16.	Aluminium tube diameter	Design dimensional parameters of OPGW should meet the SAG-Tension criteria as enclosed at <b>Appendix-A</b>
17.	Approximate outside diameter	
18.	Cable diameter	
19.	Cable cross section area	
20.	Min. Breaking load/ Ultimate Tensile Strength	82.10kN
21.	Fibre Strain margin	0.6%
22.	Weight Kgs/Km	488 kgs/km
23.	Crush strength	1000kg with a 10cm <sup>2</sup> piste
24.	Modulus of Elasticity	135.8kN/mm <sup>2</sup>
25.	Minimum bending radius	300mm
26.	Maximum bending radius	Short term 300mm Long term 400mm
27.	Maximum permissible tensile stress	-
28.	Permissible CTS Tensile stress	0.669kN/- mm <sup>2</sup>
29.	Coefficient of inner expansion	15.3 X 10 <sup>-6</sup> per °C

30	Coefficient expansion Cladding Core	$6.3 \times 10^{-6}$ per °C
31	Nominal operating temperature range	-10 °C to 70 °C
32	SC current transient peak temperature	41 KA
33	Maximum allowable temperature for lightning strike	200
34	Available length of cable per drum: Min Max	2500 mtrs 3500 mtrs or as per site requirement.
35	Splice loss (Min. & Max.Allowable)	0.05 dB. 0.01 dB
36	Operating Temperature range-	-10 °C to 70°C
37	Expected Cable Life	25 years.
38.	Fibre production method	-
39.	Core diameter.	9.2 +/-0.5 $\mu$ m
40	Core non circularity	-
41.	Cladding diameter	125+/-0.5 $\mu$ m
42	Core Clad Concentricity Error	< 1 $\mu$ m
43	Cladding non circularity	< 2%
44	Protective coating type & material Primary Secondary.	Acrylat ePBT
45	Protective coating Diameter	-
46	Coating concentricity	>70%
47	Colour Coding scheme compliant with EIA 395/IEC3047	
48	Attenuation Coefficient @ 1310nm -@1559nm-	.36 dB/km .22 dB/km
50	Mode field non Circularity	< 2%
51	Romatic Dispersion 1310 nm 1550 nm	2.8 ps/ (n.km) 18 ps/(nm.km)

## **Annexure I**

### **OPTCL Approved Make List**

**Provisionally Approved Vendor list of OPTCL for supplying materials to the contractors, awarded with total turnkey / partial turnkey projects of OPTCL Valid up to 30.04.2026**

**Breaker**

<b>Breaker ( up to 400 KV Spring-Spring,SF-6)</b>	1	M/s Hitachi Energy India Ltd., Gujarat
	2	M/s CG Power and Industrial Solutions Ltd, Nasik
	3	M/s. Siemens Limited, Kolkata
	4	M/s GE T&D India Ltd.

**PCVCB**

<b>33 KV Spring-Vacuum, 1600A, 25 kA</b>	1	M/s CG Power and Industrial Solutions Ltd, Nasik
	2	M/s. Stelmec Limited, Mumbai

**CT**

<b>CT of 0.2S Accuracy class up to 400 KV</b>	1	M/s CG Power and Industrial Solutions Ltd, Nasik ( Only Polymer Type)
	2	M/s Hitachi Energy India Ltd., Gujarat ( Only Polymer type)
	3	M/s GE T&D India Ltd.
<b>CT of 0.2S Accuracy class up to 220 KV</b>	1	M/s.Heptacare Power Industries Pvt. Ltd., Meerut (Polymer/ Porcelain type)
	2	M/s Mehru Electrical & Mechanical Engineers (P) Ltd, Bhiwadi (Polymer/ Porcelain type)
<b>CT of 0.2S Accuracy class up to 132 KV</b>	1	M/s Pragati Electricals Pvt Ltd, Navi Mumbai (Polymer/ Porcelain type)
	2	M/s CG Power and Industrial Solutions Ltd, Nasik (Polymer/ Porcelain type)
	3	M/s Hitachi Energy India Ltd., Gujarat (Polymer/ Porcelain type)
	4	M/s Kapco Electric Pvt. Ltd, Noida (Polymer/ Porcelain type)
	5	M/s. Siemens Limited, Kolkata (Polymer/ Porcelain type)

**PT (IVT)**

<b>PT/ IVT of 0.2S Accuracy class (Porcelain/ Polymer) up to 400 KV</b>	1	M/s CG Power and Industrial Solutions Ltd, Nasik
	2	M/s. Siemens Limited, Kolkata
<b>PT/ IVT of 0.2S Accuracy class (Porcelain/ Polymer) up to 220 KV</b>	3	M/s.Heptacare Power Industries Pvt. ltd, Meerut
	4	M/s SCT Ltd., Ghaziabad, UP
	5	M/s Mehru Electrical & Mechanical Engineers (P) Ltd, Rajasthan
<b>PT/ IVT of 0.2S Accuracy class (Porcelain/ Polymer) up to 132 KV</b>	6	M/s Pragati Electricals Pvt Ltd, Navi Mumbai
	7	M/s Kapco Electric Pvt. Ltd, Noida

**Surge Arrestor/ LA**

<b>Surge Arrestor (Polymer Type) up to 400 KV</b>	1	M/s CG Power and Industrial Solutions Ltd, Nasik
	2	M/s Oblum Electrical Industries Hyderabad
<b>Surge Arrestor (Polymer type) up to 220 KV</b>	1	M/s Elecktrolites (Power) Pvt. Ltd, Jaipur

**CVT**

	1	M/s Hitachi Energy India Ltd., Gujarat
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CVT of 0.2 accuracy class up to 400 KV (Porcelain /Polymer type)	2	M/s CG Power and Industrial Solutions Ltd, Nasik
	3	M/s. Siemens Limited, Kolkata
	4	M/s GE T&D India Ltd.
CVT of 0.2 accuracy class up to 132 KV	1	M/s Mehru Electrical & Mechanical Engineers (P) Ltd, Rajasthan
<b>Hardware fitting</b>		
Hardware fitting up to 400KV	1	M/s Supreme & Company Pvt. Ltd., Kolkata
	2	M/s Electromech & Transtech Pvt. Ltd., Kolkata
	3	M/s Krsna Transmission Hardware Mfg. Pvt. Ltd, Vadodara
	4	M/s IAC Electricals Pvt. Ltd, Kolkata
	5	M/s Legion Energy, Bangaluru
Hardware fitting up to 220KV	1	M/s. Jainco Transmission Limited,
	2	M/s Aumni Transmission Industry Pvt. Ltd, Vadodara,
<b>Clamp &amp; Connectors</b>		
Clamp and Connector up to 400 KV	1	M/s Legion Energy, Bangaluru
	2	M/s Exalt Engineering Industries, Mumbai
	3	M/s Supreme & Company Pvt. Ltd., Kolkata
	4	M/s IAC Electricals Pvt. Ltd, Kolkata
	5	M/s Electromech & Transtech Pvt. Ltd., Kolkata
Clamp and Connector up to 220 KV	1	M/s Krsna Transmission Hardware Mfg. Pvt. Ltd, Vadodara
	2	M/s. Jainco Transmission Limited, Kolkata
	3	M/s Aumni Transmission Industry Pvt. Ltd, Vadodara,
<b>Spacers</b>		
Spacers upto 400kV		M/s IAC Electricals Pvt. Ltd, Kolkata
Spacers upto 220kV		M/s. Jainco Transmission Limited, Kolkata
<b>Conductor</b>		
Conductor (ACSR –Moose, Zebra, Panther, Bersimisi & AAAC-Moose, Zebra & Panther)	1	M/s Lumino Industries Ltd, Kolkata
	2	M/s Mahavir Transmission Limited, Noida
	3	M/s Gupta Power Infrastructure Limited, Bhubaneswar
	4	M/s Galaxy Transmissions Pvt. Limited, Sangli
Conductor (ACSR - Moose, Zebra, Panther & AAAC-Moose, Zebra, Panther)	1	M/s Dynamic Cables Private Ltd, Jaipur
	2	M/s Cabcon India Limited, Kolkata
	3	M/s Anvil Cables Pvt. Ltd., Kolkatta
ACSR (Moose, Zebra and Panther)	1	M/s Nirmal Wires Pvt. Ltd, Kolkata
Conductor (ACSR –Moose & Zebra)	1	M/s Transrail Lighting Limited, Silvasa
<b>GI Earthwire</b>		
GI Earthwire (7/3.15 mm & 7/3.66 mm)	1	M/s Nirmal Wires Pvt. Ltd, Kolkata
	2	M/s Cabcon India Limited, Kolkata
<b>OPGW Cable with Hardware Accessories</b>		

<b>OPGW Cable Hardware fittings , splice Enclosure (Joint Box) 24F/48F/96F, FODP, 48F/96F</b>	1	M/s Krsna Transmission Hardware Mfg. Pvt. Ltd, Vadodara
	2	M/s IAC Electricals Pvt. Ltd., Howrah
	3	M/s Legion Energy Products Pvt. Ltd., Bengaluru
<b>OPGW Hardware Accessories</b>	1	M/s Aumni Transmission Industry Pvt. Ltd, Vadodra,
<b>INSULATORS</b>		
<b>Porcelain Long rod Insulators &amp; Solid core Post Insulators</b>	1	M/s Modern Insulators Limited, Rajasthan
<b>Composite Polymer Insulator &amp; Composite Polymer Bus Post Insulator up to 400 KV</b>	2	M/s Deccan Enterprises Ltd, Hyderabad
<b>Porcelain Disc Insulator (160KN, 120KN, 90KN), Antifog &amp; Normal TYPE</b>	1	M/s Imperial Ceramics Pvt. Ltd., Bikaner
	2	M/s Bikaner Ceramics Private Limited, Bikaner
	3	M/s Allied Ceramics Pvt. Ltd, Kolkata
	4	M/s Grasim Industries Limited, , West Bengal
<b>Porcelain Disc Insulator / Porcelain Bus Post Insulator</b>	1	M/s Insulators& Electricals Company, New Delhi
<b>Composite polymer Insulator (up to 400 KV-160 KN)”</b>	1	M/s Shree Radhe Industries, Vadodara
<b>Composite Polymer Insulator (up to 220KV-120KN)”</b>	1	M/s Yamuna Power & Infrastructure Limited, Jagadhri, Haryana
<b>Solid Core post Insulator</b>	1	M/s CJI Porcelain Pvt. Ltd., UP
<b>33kV 6KN Solid Core PI, 145kV 6 KN for Bus PI &amp; 145kV 8 KN Insulator, 245kV 8 KN Solid Core PI, 420kV 8 KN Solid Core PI</b>	1	M/s Saravana Global Energy Ltd., Tamilnadu
<b>ISOLATORS</b>		
<b>ISOLATOR up to 400KV</b>	1	M/s.Switchgears & Structurals (India) Pvt. Ltd, Hyderabad
<b>ISOLATOR up to 220KV</b>	1	M/s.Switchgears Manufacturing Company Pvt Ltd, Hyderabad
	2	M/s JDE SwitchgearPvt. Ltd., Howrah
	3	M/s Elektrolites (Power) Pvt. Ltd., Jaipur
<b>Battery Charger</b>		
<b>220 V Battery Charger for VRLA &amp; Plante Type</b>	1	M/s Voltech Manufacturing Company Ltd, Chennai
<b>EHV Grade XLPE Cable (both Al &amp; Cu)</b>		
	1	M/s Universal Cables Ltd., Kolkata



<b>EHV Grade XLPE Cable (both Al &amp; Cu) up to 220KV</b>	<b>2</b>	M/s KEC International Limited, Kolkatta
<b>EHV Grade XLPE Cable (both Al &amp; Cu) up to 132KV</b>	<b>1</b>	M/s Finolex J-Power Systems Pvt. Ltd, Pune
<b>EHV Grade XLPE Cable (Both Al &amp; Cu) up to 33 KV</b>	<b>1</b>	M/s Dynamic Cables Private Ltd, Jaipur
	<b>2</b>	M/s Havells India Ltd, Bhubaneswar
	<b>3</b>	M/s Gemcab Industries ltd, New delhi
<b>Cable End termination Kit for 220kV/132kV/33kV</b>		
<b>Cable end termination Kit up to 33 KV</b>	<b>1</b>	M/s Yamuna Cable Accessories Pvt. Limited, Haryana
<b>Station Transformer</b>		
<b>Station Transformer (33/0.433 KV) up to 500 KVA</b>	<b>1</b>	M/s Orissa Transformers Pvt. Ltd., Bhubaneswar
<b>Station Transformer (33/0.433 KV) up to 1000 KVA</b>	<b>1</b>	M/s Voltech Manufacturing Company Ltd, Kanchipuram
<b>CONTROL, PROTECTION &amp; SAS SYSTEM</b>		
<b>Control, Protection &amp; SAS System Upto 400kV</b>	<b>1</b>	M/s Hitachi Energy India Ltd., Bengaluru
	<b>2</b>	M/s. Siemens Limited, Kolkata
<b>Conventional Control &amp; Relay Panel, Event Logger, Disturbance Recorder (up to 220 KV)</b>	<b>1</b>	M/s Voltech Manufacturing Company Ltd., Bengaluru
<b>Conventional Control &amp; Relay Panel, Event Logger, Disturbance Recorder (up to 33 KV)</b>	<b>1</b>	M/s. Stelmec Limited, Mumbai
	<b>2</b>	M/s CG Power and Industrial Solutions Ltd, Nasik
<b>Conventional Control &amp; Relay Panel up to 220kV</b>	<b>1</b>	M/s Schneider Electric Infrastructure Ltd, Bhubaneswar
<b>NUMERICAL RELAYS, IEC-61850 &amp; AUXILIARY RELAYS</b>		
<b>NUMERICAL RELAYS, IEC-61850 &amp; AUXILIARY RELAYS up to 33 KV</b>	<b>1</b>	M/s CG Power and Industrial Solutions Ltd, Nasik
<b>GIS Equipment for Indoor sub station</b>		
<b>GIS Equipment for Indoor GIS Sub Station up to 400 KV</b>	<b>1</b>	M/s. Siemens Limited, Kolkata
<b>GIS Equipment for Indoor GIS (400kV, 220kV &amp; 132kV)</b>	<b>2</b>	M/s. Hitachi Energy India Ltd., Bengaluru

<b>GIS Equipment for Indoor GIS (33kV)</b>	<b>3</b>	M/s CG Power and Industrial Solutions Ltd, Nasik
<b>ACDB /DCDB / BMK / CONSOLE BOX</b>		
<b>ACDB /DCDB / BMK / CONSOLE BOX</b>	<b>1</b>	M/s United Engineers Pvt Ltd, Bhubaneswar
	<b>2</b>	M/s. Bose Engineering (India) Pvt. Ltd, Kolkata
	<b>3</b>	M/s S R Automation Pvt. Ltd, Kolkata
	<b>4</b>	M/s AIM Engineering Industries, Kolkata
	<b>5</b>	M/s Control Devices, Kolkata-
	<b>6</b>	M/s. S.K .Engineers India Pvt. Limited, Bhubaneswar
	<b>7</b>	M/s Technocrat Enterprises, Cuttack
	<b>8</b>	M/s Nitya Electrocontrols Pvt Ltd, Noida
<b>LT XLPE Cable of 1100 V</b>		
<b>LT XLPE Cable of 1100 V</b>	<b>1</b>	M/s Vishal Cables Pvt. Ltd, Mumbai-
	<b>2</b>	M/s Zenium Cables Ltd, Mumbai-
	<b>3</b>	M/s Havells India Ltd, Bhubaneswar
	<b>4</b>	M/s Prime Cable Industries Pvt Ltd, Delhi
	<b>5</b>	M/s Alpha Communication Ltd, Delhi
	<b>6</b>	M/s Gupta Power Infrastructure Limited, Bhubaneswar
	<b>7</b>	M/s. Gloster Cables Ltd, Secunderabad
	<b>8</b>	M/s Universal cables Ltd, Kolkata
	<b>9</b>	M/s Cabcon India Limited, Kolkata
	<b>10</b>	M/s Dynamic Cables Private Ltd, Jaipur,
<b>PVC INSULATED POWER &amp; CONTROL CABLES ( with Type-C Insulation )</b>		
<b>PVC INSULATED POWER &amp; CONTROL CABLES ( with Type-C Insulation)</b>	<b>1</b>	M/s Dynamic Cables Private Ltd, Jaipur,
	<b>2</b>	M/s Prime Cable Industries Delhi
	<b>3</b>	M/s Universal cables Ltd, Kolkata
	<b>4</b>	M/s Zenium Cables Ltd, Mumbai
	<b>5</b>	M/s Vishal Cables Pvt. Ltd, Mumbai
	<b>6</b>	M/s Cabcon India Limited, Kolkata
	<b>7</b>	M/s. Gloster Cables Ltd, Secunderabad
	<b>8</b>	M/s Alpha Communication Ltd, Delhi
	<b>9</b>	M/s Gupta Power Infrastructure Limited, Bhubaneswar
	<b>10</b>	M/s Gemcab Industries ltd, New delhi
<b>Digital Tele-protection Coupler</b>		
<b>Digital Tele-protection Coupler</b>	<b>1</b>	M/s M/s Hitachi Energy India Ltd, Bengaluru
	<b>2</b>	M/s. Siemens Limited, Kolkata
<b>Fibre Optic Terminal Equipment/GPRS (SDH Equipment)(STM-4/STM-16/STM-64) &amp; GPRS Modem</b>	<b>1</b>	M/s Commtel Networks Pvt Ltd , Navi Mumbai
<b>RTU</b>		
<b>RTU Conforming to IEC Protocols in Use in OPTCL system</b>	<b>1</b>	M/s Hitachi Energy India ltd., Bengaluru
	<b>2</b>	M/s. Siemens Limited, Kolkata

## **Annexure II**

### **Project Bill of Quantities**

**220kV Transmission Line Works – Supply, Erection & Civil**

Sl. No.	Item Description	Quantity	Units
1	2	3	4
<b>1.00</b>	<b>SCHEDULE 2A-SUPPLY (FOR TRANSMISSION LINE)</b>		
1.1	<b>SUPPLY of Following type tested Lattice type Galvanized steel tangent / Angle tower with stubs and cleats , different type of G.I HT Nuts &amp; Bolts, washer, spring washer for the towers ,hanger and all accessories, tower super structure complete including step bolts. Supply of black bituminous paint for three coats up to a height of 500mm above the cooping(legs &amp; bracing members). All Supply should confirm to the Technical Specification.</b>		
1.11	<b>OA TYPE (SUSPENSION) TOWERS (NOMINAL UNIT WEIGHT 4.35 MT)</b>		
1.111	+3 EXTENSION (NOMINAL UNIT WEIGHT 0.725MT)		
1.112	+6 EXTENSION (NOMINAL UNIT WEIGHT 1.448 MT)		
1.12	<b>OB TYPE (30 deg ANGLE ) TOWERS (NOMINAL UNIT WEIGHT 6.575 MT)</b>		
1.121	+6 EXTENSION (NOMINAL UNIT WEIGHT 2.132 MT)		
1.13	<b>OC TYPE (60 deg ANGLE ) TOWERS (NOMINAL UNIT WEIGHT 9.8398MT)</b>		
1.131	+3 EXTENSION (NOMINAL UNIT WEIGHT 1.474MT)		
1.132	+6 EXTENSION (NOMINAL UNIT WEIGHT 2.597 MT)		
1.133	+15 EXTENSION (NOMINAL UNIT WEIGHT 8.555 MT)		
1.14	<b>TEMPLATES</b>		
1.141	OA (NOMINAL UNIT WEIGHT 0.579 MT)		
1.142	OB (NOMINAL UNIT WEIGHT 0.815 MT)		
1.143	OC (NOMINAL UNIT WEIGHT 0.984 MT)		
1.15	WEIGHT OF THE STRUCTURES & Templates including Tower Stub	188.05	MT
1.16	Weight of different type G.I Nuts and Bolts	9.40	MT
<b>1.2</b>	<b>Supply of the following tower accessories as per technical specification and as directed by the engineer in charge.</b>		
1.21	EARTHING DEVICE	18	Nos.
1.22	DANGER BOARD	18	Nos.
1.23	NUMBER PLATE	18	Nos.
1.24	PHASE PLATE	108	Nos.
1.25	BIRD GUARD	36	Nos.
1.26	ANTICLIMBING DEVICE	18	Nos.
1.27	CIRCUIT PLATE	36	Nos.
1.28	COUNTERPOISE EARTHING	6	Nos.
<b>1.3</b>	<b>Supply of following POWER CONDUCTORS in the proposed 220kV lines including provision for sag and wastage as per the technical specification and as per the instruction of the engineer in charge.</b>		
1.31	ACSR Zebra (54/7/3.18mm)	27.3	Kms
<b>1.4</b>	<b>POWER CONDUCTOR ACCESSORIES For ACSR ZEBRA</b>		
1.41	VIBRATION DAMPER	216	Nos.
1.42	MID SPAN JOINT	5	Nos.
1.43	Repair Sleeve	5	Nos.
<b>1.5</b>	<b>Supply of the following Anti Fog Type DISC insulators as per the technical specification and as per the instruction of the Engineer in charge.</b>		
1.51	220kV LONG ROD 160KN PORCILAIN INSULATOR (2 NOS IN 1 SET)	288	SET
1.52	220 KV LONG ROD 90KN PORCILAIN INSULATOR	48	SET
<b>1.6</b>	<b>Supply of the following hard ware fittings suitable for following conductors as per the technical specification.</b>		
1.61	<b>For ACSR ZEBRA</b>		
1.611	Single suspension Hard Wares fittings suitable for 90 KN Long ROD Insulator	24	Set
1.612	Double suspension Hard Wares fittings suitable for 90 KN Long ROD Insulator	12	Set
1.613	Single tension Hard Wares fittings, suitable for 160 KN Long ROD Insulator	24	Set
1.614	Double tension Hard Wares fittings, suitable for 160 KN Long ROD Insulator	132	Set
1.615	"D" Shackle	144	Nos.
1.616	Hanger	36	Nos.
1.617	U'-Bolt.	36	Nos
<b>1.7</b>	<b>OPGW fibre Optic Cable &amp; Hardwares</b>		
1.71	24 Fibre(DWSM) OPGW fibre Optic Cable	4.5	Km
1.72	OPGW hardware set like suspension Asembly,Tensin Assembly(Dead end assembly, Pass through assembly) ,Vibration Damper,Down Lead Clamp Assembliesfor 24 Fibre(DWSM) OPGW,Joint Box	1	Lot
<b>2.00</b>	<b>SCHEDULE-2C-ERECTION &amp; CIVILWORKS (FOR TRANSMISSION LINE)</b>		
<b>2.10</b>	<b>ELECTRICAL WORKS</b>		
<b>2.11</b>	<b>ERECTION,TESTING &amp; COMMISSIONING of Following tested Lattice type Galvanized steel tangent / Angle tower without stubs and cleats including different type of G.I HT Nuts &amp; Bolts, washer, spring washer for the above type towers ,hanger and all accessories, tower super structure complete with tightening, punching of bolts including step bolts. All other left out portion of the bolts above bottom cross arm shall be riveted by using suitable hammer. Painting of black bituminous paints three coats shall be provided up to a height of 500mm above the cooping legs &amp; bracing members. All Erection should confirm to the Technical Specification laid there in the Tender Specification.</b>		

2.111	OA TYPE (SUSPENSION) TOWERS (NOMINAL UNIT WEIGHT 4.35 MT)		
2.112	+3 EXTENSION (NOMINAL UNIT WEIGHT 0.725MT)		
2.113	+6 EXTENSION (NOMINAL UNIT WEIGHT 1.448 MT)		
2.114	OB TYPE (30 deg ANGLE ) TOWERS (NOMINAL UNIT WEIGHT 6.575 MT)		
2.115	+6 EXTENSION (NOMINAL UNIT WEIGHT 2.132 MT)		
2.116	OC TYPE (60 deg ANGLE ) TOWERS (NOMINAL UNIT WEIGHT 9.8398MT)		
2.117	+3 EXTENSION (NOMINAL UNIT WEIGHT 1.474MT)		
2.118	+6 EXTENSION (NOMINAL UNIT WEIGHT 2.597 MT)		
2.119	+15 EXTENSION (NOMINAL UNIT WEIGHT 8.555 MT)		
<b>2.12</b>	<b>WEIGHT OF THE STRUCTURES (including Tower stubs, Templates &amp; Foundation Nut and Bolts)</b>	188.05	MT
<b>2.13</b>	<b>Weight of different type G.I Nuts and Bolts</b>	9.40	MT
<b>2.14</b>	<b>Fixing of of Templates &amp; setting of stubs</b>		
2.141	OA Type	4.96	MT
2.142	OB Type	3.75	MT
2.143	OC Type	15.87	MT
<b>2.15</b>	<b>Erection of following tower accessories as per technical specification and as directed by the engineer-in-charge</b>		
2.151	EARTHING DEVICE	18	Nos.
2.152	DANGER BOARD	18	Nos.
2.153	NUMBER PLATE	18	Nos.
2.154	PHASE PLATE	108	Nos.
2.155	BIRD GUARD	36	Nos.
2.156	ANTICLIMBING DEVICE	18	Nos.
2.157	CIRCUIT PLATE	36	Nos.
<b>2.16</b>	Hoisting and fixing of insulators with required accessories, paying out of conductor ,jointing, stringing, sagging & Jumpering etc. of power conductor with G.I. Earth wire in the proposed lines and without earth wire with all required accessories including scaffolding for 33 KV,11 KV, LT , P&T lines, roads and using own required T&P and compression jointing machines etc. with 1.5% provision for Sag & Wastage and as per the direction of Engineer in charge.		
<b>2.161</b>	<b>STRINGING OF DOUBLE CIRCUIT CONDUCTOR (ACSR ZEBRA, SIX POWER CONDUCTOR )</b>	4.482	RKM
<b>2.17</b>	<b>ERECTION OF POWER CONDUCTOR ACESSORIES</b>		
<b>2.17</b>	<b>For ACSR ZEBRA</b>		
2.171	VIBRATION DAMPER	216	Nos.
2.172	MID SPAN JOINT	5	Nos.
2.173	Repair Sleeve	5	Nos.
<b>2.18</b>	<b>Erection of the following Anti Fog Type DISC insulators as per the technical specification and as per the instruction of the Engineer in charge.</b>		
2.181	220 KV LONG ROD 160 KN SILICON COMPOSITE INSULATOR	288	Nos
2.182	90 KV LONG ROD 160 KN SILICON COMPOSITE INSULATOR	48	Nos
<b>2.19</b>	<b>Erection of the following hard ware fittings suitable for following conductors as per the technical specification.</b>		
<b>2.19</b>	<b>For ACSR ZEBRA</b>		
2.191	Single suspension Hard wares fittings.(AGS type) suitable for 120 KN insulator.	24	Set
2.192	Double suspension Hard wares fittings.(AGS type) suitable for 120 KN insulator.	12	Set
2.193	Single tension Hard wares fittings, suitable for 160 KN insulator.	24	Set
2.194	Double tension Hard wares fittings, suitable for 160 KN insulator.	132	Set
2.195	"D" Shackle	144	Nos.
2.196	Hanger	36	Nos.
2.197	U'-Bolt.	36	Nos
2.198	Erection of OPGW cables & hardware sets	4.5	Kms.
<b>2.2</b>	<b>CIVIL WORKS</b>		
<b>2.21</b>	<b>SURVEY OF LINE &amp; PREPARATION LAND SCHEDULE: Supply of required T&amp;P's, Technical personnel's, labours for conducting</b>		
2.211	Check survey including supply of all labour, T&P as per instruction of Engineer in Charge and as per the approved profile.	4.482	Kms.
2.212	Soil Testing in complete shape along with submission of report etc. up to the depth of 15 Mtrs.	18	Loc.
<b>2.22</b>	<b>EXCAVATION WORKS FOR OPEN CAST/SHALLOW TYPE FOUNDATIONS</b>		
2.221	Excavation for all type of soil and rocks and back filling (back filling shall be done in layers of 500mm sprinkling of water and compaction thereafter and disposed of excess quantity of excavated soil at suitable place after back filling), & if required for filling the foundation, borrowed earth/morrum/sand shall be brought for filling and compaction, including supply of sand, all T&P, labour as required.	3220	CUM
<b>2.23</b>	<b>FOUNDATION MATERIALS: Supply of all materials like cement, steel, all coarse aggregates, fine aggregates and making foundations of the required above mentioned type towers as per the direction laid down in the technical specification and the direction of the site- in charge</b>		
2.231	Design, Engineering, Providing and laying of plain cement concrete (PCC 1:3:6) of grade M10 with approved quality coarse aggregates (Nominal size 12mm to 20mm) , fine aggregates, cement in tower foundation as blind layer inclusive of labour charges for concrete mixing & curing. This includes supply of all labourers, T&P and dewatering wherever required as per Technical specification and instruction of Engineer In charge.	50	CUM

2.232	Design, Engineering and laying of reinforced cement concrete (RCC M25 Design Mix) for open cast foundation with supply of approved quality coarse aggregates(Nominal size 12mm to 20mm), fine aggregates, cement and steel of different size(as per design) with cutting, bending, binding of M.S.Rod (FE-500) including supply of binding wire in tower foundation and inclusive of labour charges for concrete mixing, supply and fixing of form boxes, curing, shoring, shuttering, testing of sample cement concrete cubes as per IS. The height of the coping shall be 350mm above the finished concrete level. The surrounding area shall be clear from materials. Damage of land if any by the contractor shall be repaired before measurement. This includes supply of all labourers, T&P and dewatering wherever required as per Technical specification and instruction of Engineer In charge.	520	CUM
2.233	Cutting bending hooking ,fixing and binding in position of MS bars for reinforcement of foundation concrete of towers including supply of wire for binding (With supply of steel rod(TATA/RINL/SAIL Make).	33	MT
<b>2.24</b>	<b>Supply of borrowed earth/morrum for back filling for foundation/revertment works</b>		
2.241	Beyond 30 mtr lead	200	CUM
<b>2.25</b>	<b>SHORING &amp; SHUTTERING-Required in wet/submerged or special locations of open cast/shallow type foundations with supply of all materials,T&amp;P and Labour.</b>	500	SQ.MTR.
<b>2.26</b>	<b>WELDING OF TOWER MEMBERS</b>		
2.261	Supply of all materials for continuous welding of bolts & nuts (around the bolts) up to top of tower without cross arm, including welding rods, welding generator machine (diesel engine operator.), application of required zinc rich paints around the welding portion after welding (two coats),fuel,lubricants,T&P and labours and other arrangements etc.	32028	Nos
<b>2.27</b>	<b>REVTMENT: (including Benching) Supply of all materials like cement, Late-rite stone (stone masonry) all type aggregates, labours, &amp; T&amp;P for construction of revetment walls as per requirement to protect the towers, where felt unsafe and as per approved drawing and the direction of Engineer in charge.</b>		
2.28	Excavation in all type of soil including rock & back filling including supply of sand with back filling.	890.4	CUM
2.29	Lean Concrete in the ratio 1:3:6 (Grade M-10) including supply of sand chips etc.	116.138	CUM
2.30	PCC in the ratio 1:2:4 (Grade M-15) as above.	15.784	CUM
2.31	RR Massonary work in the ratio 1:5.	979.182	CUM
<b>2.28</b>	<b>Liaisoning Charges</b>	4.84	Km.