TENDER DOCUMENT

TENDER NO.: DLI/C&E/WI-675/312

FOR

Tender for “Manufacturing and Supply of “different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width” for the project of “Augmentation of Fuel & Flux Crushing Facilities (Pkg-064)” for Bhilai Steel Plant, Bhilai at Chhattisgarh”

VOLUME – I

NOTICE INVITING TENDER

ENGINEERING PROJECTS (INDIA) LIMITED
(A GOVT. OF INDIA ENTERPRISE)
Core-3, Scope Complex, 7, Lodhi Road, New Delhi-110003
TEL NO. 011-24361666 FAX NO. 011-24363426
Email: core@engineeringprojects.com
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ENGINEERING PROJECTS (INDIA) LTD.  
(A Govt. of India Enterprise)  

NOTICE INVITING e-TENDER (NIT)  

Date: 24.08.2018  

Tender for “Manufacturing and Supply of “different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width” for the project of “Augmentation of Fuel & Flux Crushing Facilities (Pkg-064)” for Bhilai Steel Plant, Bhilai at Chhattisgarh”.

Engineering Projects (India) Ltd. invites the online item rate tender for the above work through e-tendering for Bhilai Steel Plant at Bhilai, Chhattisgarh from eligible firms/contractors for the following work.

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<th>S. No.</th>
<th>Description of work</th>
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<td>1.</td>
<td>Different types of Idler Sets, Frames &amp; Idlers for Conveyor 1200mm and 1400mm Belt Width</td>
<td>60 (Sixty) days from the date of manufacturing clearance to be given by EPI</td>
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The brief scope of work in this tender include (but not limited to) manufacturing, shop fabrication, assembly, testing & inspection at manufacturer’s works, painting, packing, dispatch, transportation, delivery to site of “Different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width” for “Augmentation of Fuel & Flux Crushing Facilities (Pkg-064) for Bhilai Steel Plant at Bhilai, Chhattisgarh”. The detailed scope of work is given in the tender document.

**Time schedule of tender activities:**

i) Date & Time of downloading of Tender Documents : Upto 13.09.2018 (till 04.00 PM)  

ii) Last Date & Time of Online Submission of Tenders : On or before 14.09.2018 upto 10:00 AM  

iii) Date & Time of Online Opening Envelope-1 (Techno-Commercial Bid) : 14.09.2018 at 10:30 AM

1.0 Offers from following preferred make of **Conveyor Idlers** as indicated by M/s Bhilai Steel Plant, SAIL-Bhilai are only acceptable.

Elecon; TRF; McNally Bharat; Kali; Hindustan Udyog Ltd.; Macmet; Golden Engineering Industries, Bhilai; V N Industries, Bhilai; Reena Mechanical Pvt. Ltd., Nagpur

(a) The following documents are required to be submitted alongwith offer

(i) Valid PAN (Permanent Account Number of Income Tax).

(ii) Should have valid GST Registration No. Copy of the GST Registration is to be enclosed.
All the above documents shall be submitted duly signed, stamped by the authorized signatory of bidder and attested by a class-1 gazetted officer/notary public.

2.0 Bidders have to submit confirmation letter whether they are registered under MSME Act or not and if yes, then relevant copies of the registration letter (Registered under single point registration scheme of NSIC, Govt. of India, Ministry of MSME, New Delhi vide Gazette Notification dated 26.03.2012 along with the form of Memorandum-2 with the concerned DIC) to be enclosed in Technical Bid Envelope-1 and a request letter for exemption from submission of Tender fee and EMD is also to be submitted.

3.0 Tender documents comprising of the following are available on the website of EPI: www.engineeringprojects.com, CPP Portal: www.eprocure.gov.in and as well as on TCIL portal: www.tcil-india-electronic tender.com

| i)  | Notice Inviting Tender (NIT) |
| ii) | Memorandum |
| iii) | Instructions To Tenderer (Suppliers) |
| iv) | Addendum to ITT (Suppliers) |
| v)  | General Purchase Conditions (GPC) |
| vi) | Additional Purchase Conditions (APC) |
| vii) | Proforma for Bank Guarantee towards EMD |
| viii) | Special Instructions to Bidders for e-Tendering |
| ix) | Price Bid Format |
| x)  | Tender Specifications & Drawings |

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4.0 In order to participate, the bidder should have Digital Signature Certificate (DSC) from one of the authorized Certifying Authorities.

5.0 Interested bidders have to necessarily register themselves on the portal www.tcil-india-electronic tender.com through M/s Telecommunications Consultants India Limited, New Delhi to participate in the bidding under this invitation for bids. It shall be the sole responsibility of the interested bidders to get themselves registered at the aforesaid portal for which they are required to contact M/s Telecommunications Consultants India Limited, New Delhi at following address to complete the registration formalities:

M/s Telecommunications Consultants India Limited,
6th Floor, TCIL Bhawan, Greater Kailash – 1,
New Delhi – 110 048
Contact No.: 011-26241790
98683 93717/75/92
Email-ID: ets_support@tcil-india.com

They may obtain further information regarding this tender from ED (C&E) at the address given at Clause No. 14.0 below from 10:00 hours to 17:00 hours on all working days till the last date of online submission of Bidding Documents.

For proper uploading of the bids on the portal namely www.tcil-india-electronic tender.com (hereinafter referred to as the ‘portal’), it shall be the sole responsibility of the bidders to apprise themselves adequately regarding all the relevant procedures and provisions as detailed at the portal as well as by contacting M/s Telecommunications Consultants India Limited, New Delhi directly, as and when required, for which contact details are mentioned above. The Employer in no case shall be
responsible for any issues related to timely or properly uploading/submission of the bid in accordance with the relevant provisions of Section: Instruction to Bidders of the Bidding Documents.

6.0 Bidders can download the bid document from the portal without paying document fees in advance, any time from 18:00 Hrs on 24.08.2018; however interested bidders have to pay tender fees for participating in the tendering and submitting the bid. For this purpose the interested bidders shall be required to pay ₹ 5,000.00 plus 18% GST amounting to ₹ 5,900.00 (Rupees Five Thousand Nine Hundred Only) as non-refundable document fees in the form of Demand Draft in favour of “Engineering Projects (India) Ltd.” payable at New Delhi. GSTIN of EPI for Delhi is 07AAACE0061C1ZF. The ETS Bidding fees to be paid to TCIL is separate. However, tenders submitted without or insufficient tender fees shall be rejected.

7.0 E-Bids must be submitted/uploaded along with scanned copies of relevant documents mentioned in Clause no. 1.0 to 2.0 under Single Stage Two Envelope Bidding Procedure on the TCIL portal on or before last date & time of online bid submission. Late bids will not be accepted. Under the above procedure, only first envelope (Technical Part) shall be opened in the presence of the bidders’ representatives who choose to attend in person at the address given below on scheduled date & time of bid opening or may be viewed by the bidders by logging in to the portal as per features available to them. Second envelope i.e. Price part shall be opened only of technically qualified bidders.

The bid must be accompanied by an Earnest Money Deposit (EMD) of ₹ 70,000.00 (Rupees Seventy Thousand Only). This can be either in the form of Crossed Demand Draft or Pay Order of any Nationalized Bank/Scheduled Bank for the full amount of EMD payable favouring “Engineering Projects (India) Ltd.”, payable at New Delhi or in the form of Bank guarantee of any Nationalized Bank/Scheduled Banks, in accordance with the prescribed Performa, favouring “Engineering Projects (India) Ltd.”. The EMD shall be valid for minimum period of 150 days (one hundred fifty) from the last day of submission of tender. Tenders submitted without EMD or inadequate amount of EMD shall be rejected. The bid shall be valid for 90 days from date of opening of Price Bid. EMD shall be forfeited in case the bidder withdraws his offer after submission of bid and also be forfeited in case the L1 bidder refuses to accept the LOI.

Tender fee, EMD (in original), Relevant Documents, NSIC/MSME certificate as per Clause No. 2 if bidder is claiming EMD/Tender fee exemption, Power-of-attorney, Affidavit as per Annexure-A and Pass Phrase (Both for technical and financial bid in separate envelope) to decrypt the bid must be submitted in physical form at the address given at Clause No. 14.0 below on or before Last date and time of online bid submission. If the above documents are not received in time then their offer shall not be considered and EPI shall not be responsible for any postal delay in respect of submission of hard copy part of the bids.

8.0 The Terms & Conditions contained in this NIT and tender documents shall be applicable.

9.0 EPI reserves the right to accept any tender or reject any or all tenders or split the work of tender or annul this tendering process without assigning any reason and liability whatsoever and to re-invite the tender at its sole discretion.

10.0 The corrigendum or addendum, extension, cancellation of this NIT, if any, shall be hosted on the EPI’s website/CPP portal as well as on TCIL portal www.tcil-india-electronic tender.com. The bidders are required to check these websites regularly for this purpose, to take into account before submission of tender. All
Corrigendum and addendum are to be submitted duly signed & stamped with tender documents as bid Annexure.

11.0 The price bid of those bidders whose bid has been technically accepted on the basis of documents submitted shall only be opened. However, it is made clear that the offer of the L-1 bidders shall be accepted subject to the confirmation of authenticity of the BG from the concerned bank.

12.0 Time is the essence of this NIT and timeline of supply will be strictly adhered to.

13.0 In case of tie-tender, where two firms are bidding lowest, EPI reserves the right to split the work among these bidders and/or EPI reserve the right to award the tender to any one of such bidder.

14.0 All correspondence with regard to the above shall be to the following address (By Post/In Person):

Executive Director (Consultancy & Engineering)  
ENGINEERING PROJECTS (INDIA) LTD.  
3rd Floor, Core-3, Scope Complex,  
7 Institutional Area, Lodhi Road,  
New Delhi – 110003

Tel No.: 011-24361666 Ext. 2328, 2339, 2331  
Fax No.: 011-24363426  
E-mail – core@engineeringprojects.com

15.0 EPI reserves the right to place the work order on the bidders from the following addresses:

ENGINEERING PROJECTS (INDIA) LTD.  
Core-3, Scope Complex,  
7, Lodhi Road,  
New Delhi – 110003

OR

ENGINEERING PROJECTS (INDIA) LTD.  
B-32, Phase II, Surya Vihar,  
Bhilai – 490020

For more information on EPI, visit our website at: www.epi.gov.in  
For more information on the e-tender, visit website of M/s Telecommunications Consultants India Limited, New Delhi at: www.tcil-india-electronictender.com
AFFIDAVIT

(To be submitted by bidder on non-judicial stamp paper of Rs. 100/- (Rupees Hundred only) duly attested by Notary Public)

(To be submitted in Envelope-1 i.e. Technical bid)

Affidavit of Mr. ........................................ S/o .......................................... R/o ........................................

I, the deponent above named do hereby solemnly affirm and declare as under:

1. That I am the Proprietor/Authorized signatory of M/s .......................................................... having its Head Office/Regd. Office at .......................................................... ........................................

2. That the information/documents/Experience certificates submitted by M/s .......................................................... along with the tender for ..........................................................(Name of work)........................... to EPl are genuine, true and nothing has been concealed.

3. I shall have no objection in case EPl verifies them from issuing authority(ies). I shall also have no objection in providing the original copy of the document(s), in case EPI demand so for verification.

4. I hereby confirm that in case, any document, information & / or certificate submitted by me found to be incorrect / false / fabricated, EPI at its discretion may disqualify / reject / terminate the bid/contract and also forfeit the EMD /All dues.

5. I shall have no objection in case EPI verifies any or all Bank Guarantee(s) under any of the clause(s) of Contract including those issued towards EMD and Performance Guarantee from the Zonal Branch/office issuing Bank and I/We shall have no right or claim on my submitted EMD before EPI receives said verification.

6. That the Bank Guarantee issued against the EMD issued by (name and address of the Bank) is genuine and if found at any stage to be. Incorrect / false / fabricated, EPI shall reject my bid, cancel pre-qualification and debar me from participating in any future tender for three years.

I .........................................................., the Proprietor / Authorised Signatory of M/s .......................................................... do hereby confirm that the contents of the above Affidavit are true to my knowledge and nothing has been concealed there from ....................... and that no part of it is false.

Verified at ......................... this ......................... day of .........................

DEPONENT

ATTESTED BY (NOTARY PUBLIC)
MEMORANDUM

Ref.: Tender for “Manufacturing and Supply of “different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width” of Project- “Augmentation of Fuel & Flux Crushing Facilities (Pkg-064)” for Bhilai Steel Plant, Bhilai at Chhattisgarh”

NIT No.: DLI/C&E/WI-675/312

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<th>DESCRIPTION</th>
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<td>i.</td>
<td>Name of work</td>
<td>Manufacturing and Supply of “different types of Idler Sets, Frames &amp; Idlers for Conveyor 1200mm and 1400mm Belt Width</td>
</tr>
<tr>
<td>ii.</td>
<td>Owner/Client / Employer</td>
<td>Bhilai Steel Plant (SAIL), Bhilai</td>
</tr>
<tr>
<td>iii.</td>
<td>Type of Tender</td>
<td>Item Rate</td>
</tr>
<tr>
<td>iv.</td>
<td>Earnest Money Deposit</td>
<td>₹ 70,000.00 (Rupees Seventy Thousand only)</td>
</tr>
<tr>
<td>v.</td>
<td>Estimated Cost</td>
<td>-</td>
</tr>
<tr>
<td>vi.</td>
<td>Time of completion of work</td>
<td>60 (Sixty) days from the date of manufacturing clearance to be given by EPI</td>
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<td>vii.</td>
<td>Mobilization Advance</td>
<td>Not applicable</td>
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<td>viii.</td>
<td>Interest Rate on Mobilization Advance</td>
<td>Not applicable</td>
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<tr>
<td>ix.</td>
<td>Number of Installments for recovery of Mobilization Advance</td>
<td>Not applicable</td>
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<tr>
<td>x.</td>
<td>Validity of Tender</td>
<td>90 (Ninety) days from the date of opening of Price Bid of the tender by EPI.</td>
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<td>xi.</td>
<td>Security Deposit cum Performance Guarantee</td>
<td>5% (Five Percent only) of contract value in the form of Bank Guarantee within 7 days from the date of issue of letter of Intent of acceptance of tender and validity of Bank Guarantee upto 90 (Ninety) days after expiry of defect liability period.</td>
</tr>
<tr>
<td>xii.</td>
<td>Time allowed for starting the work</td>
<td>The date of start of contract shall be reckoned from date of issue of letter of Intent (LOI).</td>
</tr>
<tr>
<td></td>
<td>Defect Liability Period</td>
<td>12 (Twelve) Months from the date of taking over of the equipment by Bhilai Steel Plant, SAIL.</td>
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<tr>
<td>xiv.</td>
<td>Arbitration</td>
<td>Arbitration shall be as per provision of Clause No. 28 of APC.</td>
</tr>
<tr>
<td>xv.</td>
<td>Jurisdiction</td>
<td>Courts at DELHI/NEW DELHI as per Clause No. 24 of GPC.</td>
</tr>
</tbody>
</table>

SIGNATURE OF BIDDER

NAME (CAPITAL LETTERS) : __________________________________________

OCCUPATION __________________________________________

ADDRESS __________________________________________

__________________________________________

SEAL OF BIDDER
INSTRUCTIONS TO TENDERERS (Suppliers)

1. Sealed tenders in the prescribed form are invited by Engineering Projects (India) Limited, New Delhi.

2. The tenderer is requested to sign each page of tender document and return the complete tender documents.

3. Tenders shall be submitted in sealed envelope marked with ‘Title’, ‘Number’ and ‘Last Date of receipt of Tender’ for the items as given in the ‘Covering Letter inviting Tender’ at the following address by Registered Post or through messenger with in the last date of receipt of tender given in the letter inviting Tender:

   The General Manager (Contracts)
   Engineering Projects (India) Limited,
   Core-3, Scope Complex,
   7, Institutional Area,
   Lodhi Road, New Delhi – 110003

4. The tenderer is required to submit their offer in 2 separate sealed and supercribed envelopes indicating the following:-

   **1st Envelope (Techno-Commercial Bid)**

   The tenderers are requested to furnish the documents as required in clause no. 25 in respect of the credentials of the tenderer in this envelope.

   In this envelope the tenderer should also keep the complete tender documents duly signed and stamped by them on each page as their acceptance, deviation sheet and unprecioed copy of price bid and super scribe the envelope with “Techno-Commercial Bid”.

   **2nd Envelope (Price Bid)**

   The form of Price Bid duly filled in with the item rates both in words and figures in the same form as issued to tenderers should be submitted in this envelope, with superscription “Price Bid” No terms and conditions or deviations if any or any other thing should be kept in this envelope.

   The sealed price bid of such tenderers who are found suitable on scrutiny of documents furnished by them i.e. pre-qualification and technically acceptable shall only be opened. The tenders of all such parties, who are not found suitable, shall not be considered and their earnest money deposit will be returned.

   The two envelopes should be enclosed again in a sealed cover super scribed as mentioned in Para. -3.

5. The bidders should quote in words as well as in figures the item rates quoted by them. In absence of which the bids may not be considered and are likely to be rejected. The amount of each item should be worked out and requisite totals given.
All corrections / cuttings should be signed by the tenderer. Each page of the tender should be signed by the tenderer. In the event of discrepancy between rate in figures and words, the rate quoted in words shall be treated as correct. In case there is discrepancy between rate and amount worked out the rate quoted shall be taken as correct and not the amount.

6. EPI takes no responsibility for tenders lost/delayed in postal transit and therefore, tenderers should lodge their tenders sufficiently in advance.

7. Tenders shall be accompanied by Earnest Money deposit for the amount indicated in the ‘Covering Letter inviting Tender’ in the form of crossed Demand Draft drawn in favour of “Engineering Projects (India) Ltd.” payable at Delhi or Bank Guarantee from a Nationalized Bank / Schedule Bank in the prescribed enclosed performa valid for 120 days from the due date of tender. Tender not accompanied with Earnest Money are liable to be rejected.

This must be submitted in 1st envelope super scirbed as “Techno – Commercial”. The tenderer must not keep Earnest Money with Price Bid in 2nd envelope.

8. The EPI’s format for Bank Guarantee towards ‘Earnest Money Deposit’ and "Security Deposit cum Performance Guarantee" is enclosed herewith.

9. EPI reserves the right to postpone the tender due date and issue required amendment, if any. There will be no public tender opening. However, selected tenderers may be called for discussions / clarifications after the tenders have been scrutinized.

10. Earnest Money shall be returned to the unsuccessful tenderer after decision has been taken on award of the contract.

11. Earnest Money of the successful tenderer shall be converted in to a part of the security deposit / returned on receipt of Security Deposit and unconditional acceptance of the order.

12. Tenders must be duly signed with date and sealed. An attested copy of power of attorney / affidavit / Board Resolution executed as under shall accompany the tender documents.

   a) In case of Sole Proprietorship, an affidavit of Sole Proprietorship and if the tender is signed by any other person Power of Attorney by the Sole Proprietor in favour of signatory.

   b) In case of Partnership, if document is not signed by all the partners, Power of Attorney in favour of the Partner / person signing the documents authorizing him to sign the documents. The person signing the documents should also have a specific authority to refer disputes with the partnership firm to arbitration.

   c) In case of Company, copy of the Board Resolution authorizing the signatory to sign on behalf of the Company.
13. The tenderer shall furnish the name(s) and designation of relative(s) if any, employed by EPI.

14. Tenders with following discrepancies are liable for rejections;
   
a) Tenders with over-written or erased rates or rates and amounts not written in both figures and words.

b) Tender that is incomplete, ambiguous, and not accompanied by the documents asked for.

c) Tender received after specified date / time whether due to postal or other delays.

d) Tender in respect of which canvassing in any form is resorted to by the tenderer.

e) If the tenderer deliberately gives wrong information in his tender or resorts to unfair methods in creating circumstances for the acceptance of his tender, EPI reserves the right to reject such tender at any stage.

15. No deviation shall be allowed from the terms and conditions stipulated in the tender documents and tender containing deviations are liable to be rejected. Deviations, if insisted upon must be specified in a separate ‘Deviation Sheet’ and kept in 1st envelope along with techno-commercial bid, otherwise, the tenderer shall be deemed to have accepted all conditions specified in these tender documents. Normally no deviation is accepted.

16. EPI reserves the right to split the order.

17. The tender shall remain open for acceptance for a period of 90 days from the due date for receiving the tender by EPI. If any tenderer withdraws his tender before the said period or makes any modifications in the terms and conditions of the tender which are not acceptable, Engineering Projects (India) Limited without prejudice to any other right or remedy shall be at liberty to forfeit the Earnest Money deposited.

18. These instructions to tenderers shall form part of the tender documents.

19. Successful tenderer must furnish Security Deposit as specified in tender documents within the time specified in the letter-communicating acceptance of his offer failing which the Earnest Money will be forfeited. The successful tenderer may also be required to enter into a contract agreement with EPI.

20. Submission of a tender by the tenderer implies that he has read the complete contract documents and has made himself aware of the scope, terms & condition and specifications etc. No claim within the purview of this clause shall be entertained at any stage.

21. EPI reserves the right to reject any or all tenders without assigning any reasons thereof and does not bind itself to accept the lowest tender.
22. In case the tender cannot be submitted for any reasons the complete set of Tender Documents in full shall be returned promptly but not later than 15 days from the due date to the address mentioned above for submitting the tender failing which the defaulting tenderer may not be considered for issue of future enquiries by EPI.

23. The order shall be governed by the Indian Laws for the time being in force.

24. Jurisdiction: All disputes shall be subject to Delhi Courts alone.

25. Tenderer shall submit the following documents in respect of their credentials along with their tender in the ‘first envelope’.

   a) List of orders of similar items executed during the last 5 years indicating name of the client, value, date of order and delivery.

   b) List of order under execution indicating name of the client, value, date of order and delivery.

   c) Audited balance sheet and profit and loss account for the last 3 years.

   d) Registration Certificate / Memorandum of Association / Partnership Deed.

   e) Copy of letters of registration with various authorities like CPWD, State PWD, MES and Public Sector Undertakings, etc.

   f) Sales Tax Clearance Certificate.

   Seal and signature of the Tenderer
ADDENDUM TO “INSTRUCTIONS TO TENDERER (SUPPLIERS)”

1.0 **CLAUSE NO. 1 of Instructions to Tenderers (Suppliers)** stands amended as below:

Tender shall be submitted through e-Bids only. Kindly refer “Special instructions to Bidders for e-Tendering” for downloading & uploading of tender documents as per NIT.

2.0 **CLAUSE NO. 2 of Instructions to Tenderers (Suppliers)** stands amended as below:

The tenderer is requested to sign & stamp each page of tender document and upload the complete tender documents as per NIT.

3.0 **CLAUSE NO. 3 of Instructions to Tenderers (Suppliers)** stands amended as below:

Tenders shall be submitted through e-Bids only. Kindly refer “Special instructions to Bidders for e-Tendering” for downloading & uploading of tender documents as per NIT.

4.0 **CLAUSE NO. 4 of Instructions to Tenderers (Suppliers)** stands amended as below:

The tenderer is required to submit their offer online in 2 separate envelopes indicating the following:-

**1st Envelope (Techno-Commercial Bid)**

The tenderers are requested to upload the documents as required in “Notice Inviting Tender” Clause No. 1.0 in respect of the credentials of the tenderer in this envelope.

In this envelope the tenderer should also enclose the complete tender documents duly signed and stamped by them on each page as their acceptance, and unpriced copy of price bid. Deviations if any, to be submitted in this envelope.

Bidders have to submit confirmation letter whether they are registered under MSME Act or not and if yes, then relevant copies of the registration letter (Registered under single point registration scheme of NSIC, Govt. of India, Ministry of MSME, New Delhi vide Gazette Notification dated 26.03.2012 along with the form of Memorandum-2 with the concerned DIC) to be enclosed in Technical Bid Envelope-1 and a request letter for claiming exemption from submission of Tender fee and EMD.

**2nd Envelope (Price Bid)**

The form of Price Bid duly filled in with the item rates both in words and figures in the same form as issued to tenderers should be enclosed in this envelope. No terms and conditions or deviations if any or any other thing should be kept in this envelope. In case of commercial deviations, the cost of withdrawal of commercial deviations if any, to be submitted in this envelope.
The price bid of such tenderers who are found suitable on scrutiny of documents furnished by them i.e. pre-qualification and technically acceptable shall only be opened. The tenders of all such parties, who are not found suitable shall not be considered and their earnest money deposit will be returned.

5.0 **CLAUSE NO. 7 of Instructions to Tenderers (Suppliers)** stands amended as below:

Earnest Money deposit for the amount indicated in the ‘Notice inviting Tender’ required to be submitted shall be in the form of crossed Demand Draft drawn in favour of “**Engineering Projects (India) Ltd.**” payable at New Delhi or Bank Guarantee from a Nationalized Bank / Schedule Bank in the prescribed enclosed performa valid for 150 days (One Hundred Fifty Days) from the due date of tender. Tender not accompanied with Earnest Money shall be rejected.

6.0 **CLAUSE NO. 11 of Instructions to Tenderers (Suppliers)** stands deleted.

7.0 **CLAUSE NO. 15 of Instructions to Tenderers (Suppliers)** stands deleted.

8.0 **CLAUSE NO. 17 of Instructions to Tenderers (Suppliers)** stands amended as below:

The tender shall remain open for acceptance for a period of 90 days from the date of opening of price bid of the tenderer by EPI. If any tenderer withdraws his tender before the said period or makes any modifications in the terms and conditions of the tender, Engineering Projects (India) Limited without prejudice to any other right or remedy shall be at liberty to forfeit the Earnest Money deposited.

9.0 **CLAUSE NO. 22 of Instructions to Tenderers (Suppliers)** stands deleted.

All other provisions of “Instructions to Tenderers (Suppliers)” shall remain unchanged.
1. DEFINITION

1.1 The Buyer means Engineering Projects (India) Limited, a Company incorporated in India and having its registered office and Corporate Office at Core 3, Scope Complex, Lodhi Road, New Delhi-110003.

1.2 Supplier' means the tenderer whose tender has been accepted and shall include his heirs, executors, administrators or successors and permitted agents as the case may be.

1.3 'Purchase Order' means the letter of memorandum, communicating to the supplier, the acceptance of his tender and include an advance acceptance of his tender.

1.4 'Consignee' means where the stores are required by the purchase order to be dispatched by rail, road, air or steamer, the person specified in the Purchase Order to whom they are to be delivered at the destination, where the stores are required by the Purchase Order to be delivered to a person as an interim consignee for the purpose of dispatch to another person, such other person and in any other case the person to whom the stores are required by the Purchase Order to be delivered in the manner specified therein.

1.5 ‘Inspectors’: Inspectors deputed by BUYER.

2. TERMS & EXPRESSIONS

Terms & expressions not herein defined shall have the same meanings as assigned to them in the Indian Sales of Goods Act, 1930, Indian Contract Act, 1872 and General Clause Act, 1897.

3. PRICES

Prices accepted by the BUYER shall be considered as firm and not subject to escalation due to any variations in the prices of materials, labour and/or any other reasons whosoever which may occur while the order is being carried out.

4. Payment Terms

Unless otherwise agreed upon between the parties, payment for delivery of the stores will be made on submission of bills in accordance with instruction given in the purchase order by a cheque or demand draft in accordance with the following procedure.

4.1 90% of the price of the equipment/material shall be paid on proof of dispatch to the consignee through bank or delivery to an interim consignee, if any, and on production of Inspection Note issued by the Inspector, Maker’s Test Certificate, the
number- and date of the Railway receipt, postal receipt, bill of lading or consignment note under which the goods charged for in the bill are dispatched by rail, post, sea or air respectively and the number and date of the letter with which such railway receipt, post receipt, bill of lading shall also be attached to the bill and in the case of stores dispatched by post, the postal receipt shall be attached in original to the bill. The bank charges shall be borne by the supplier.

4.2 Balance 10% of price of equipment/material shall be released within 30 days after expiry of the warranty period as per Clause No. 17.

5. **Insurance to be arranged by BUYER.**

6. **Inspection, Checking, Testing**

The stores covered by the Purchase Order shall be subject to preliminary inspection and testing at any time prior to shipment and/or dispatch and final inspection within a reasonable time after arrival at the place of delivery. The Inspector shall have the right to carry out the inspection and testing which include raw materials at manufacturer's work and at the time of actual dispatch before and after completion of packing.

The supplier shall inform the BUYER at least 21 days in advance of the exact place, date and time of rendering the stores for required inspection, provide free access to Inspectors during normal working hours at supplier's or his/its sub-supplier's works and places at their disposal, internal test reports, material/component test certificates, approved drawings and all useful means of performing, checking, marking, testing, inspection and final stamping at his own expenses. Stores offered without internal testing shall be treated as a lapse on the part of supplier.

If, after receiving inspection call from the supplier/manufacturer the inspector on reaching the works finds that the equipment/materials offered for inspection is not fully ready or fails to meet vital requirements, it will be deemed to be a fake inspection call. Issue of a fake inspection call shall be treated as a serious lapse on the part of the supplier.

In the event of rejection of stores due to defective workmanship/material/design or fake inspection call, the stores would be offered for re-inspection at the earliest. The BUYER shall have the right to deduct the cost of re-inspection from the supplier's invoices.

Even if inspections and tests are fully carried out, supplier shall not be absolved to any degree from their responsibilities to ensure that stores supplied, comply strictly with requirements, of the purchase order at the time of delivery, inspection on arrival at site, after its erection or start-up and guarantee period.

In any case, the stores must be strictly in accordance with the Purchase order failing which the BUYER shall have the right to reject goods and hold the supplier liable for non-performance of contract.

7. **Maker's Test Certificate:**

Maker's Test Certificate shall be supplied by the supplier at the time of inspection. Failure to comply may cause delay in the issue of certificate of inspection and consequent delay in delivery and payment.
8. **Packing, Marking and Painting:**

A. The stores shall be dispatched by the supplier adequately packed in appropriate packing which should be suitable for sea and inland carriage and ensure complete safety of goods from any kind of damage in transport both on sea and land and all equipment should be properly lubricated.

B. Each package shall contain packing list in English. Each packing shall bear the following marking in English, in indelible paint:

(i) Address of the Ultimate Consignee  
(ii) Address of the Interim Consignee, if any  
(iii) Name of Railway Station for ultimate and interim consignee,  
(iv) Supplier's name  
(v) Name of Equipment  
(vi) Railway Station from where dispatched  
(vii) Purchase Order  
(viii) No. & Date  
(ix) Package Number  
(x) Gross Weight in Kg  
(xi) Net Weight in Kg  
(xii) Outer Dimension in cm  
(xiii) TOP 'Do NOT TURN OVER' 'HANDLE WITH CARE' etc.

The package shall indicate the centre of gravity with a red vertical line, wherever required, together with marking for slings.

The package which cannot be so marked shall have metal tags with the above marking on them.

As far as possible, size of packing shall remain within the permissible limit allowed by the Indian Railways. If this is not possible, timely information will be given and necessary over dimension sanction obtained.

9. **Security Deposit:**

The successful tenderer shall be required to furnish security deposit equal to 5% of the value of the contract within 7 days from the date of issue of letter of intent (LOI). The security deposit is to be deposited in the form of unconditional irrevocable bank guarantee from a Nationalized Bank (if from any other bank the bank guarantee should be duly countersigned by State Bank/Reserve Bank). The bank guarantee should remain valid till 90 (Ninety) days after expiry of defect liability period.

10. **Dispatch Instructions:**

Dispatches of stores will be arranged by Public Tariff rates. In case of FOR Station of Dispatch stores shall be booked at full wagon rates whenever available and by the most economical route or by most economical tariff available. Failure to do so will render the supplier liable for any avoidable expenditure caused to the BUYER.
11. **Assembly, after sales service and training:**

If required by the BUYER the supplier shall be fully responsible for the assembly of the equipment at destination site and completeness of the machinery from the angle of its end use.

The supplier shall provide necessary "After Sales Service" and also impart training to the Consignee's staff in the operation and maintenance of the equipment free of cost to the satisfaction of the consignee. Furthermore, all tools and plants particularly heavy cranes, which are generally used as well as semi- skilled and unskilled labour for the assembly of such machinery will be provided by the BUYER free of cost to the supplier with consumable stores, like fuel, oil, lubricants, battery acids, cotton waste, grease etc., free of cost for the purpose of starting the machines, testing and putting them into good working order.

12. **Respect of Delivery Date:**

The time and delivery date as agreed to between the BUYER and Supplier shall be the essence of the contract. No variation shall be permitted, except with prior authorization in writing from the Buyer. Goods should be delivered securely packed and in good order and conditions at the place and within the time specified for their delivery.

13. **Penalty for late deliveries:**

The time and date of delivery of stores, materials, equipment as agreed to shall be deemed to be the essence of the contract. In case of delay in execution of the order beyond the date of delivery as agreed to for any reason, the BUYER shall recover from the supplier as penalty a sum equivalent to 0.5% of the value of the entire contract for every week of delay or part thereof limited to an aggregate of 5%.

14. **Risk Purchase on Default**

In case of default on the part of the supplier to supply all the stores or part thereof covered by the contract upto the standard/specifications within the contractual delivery period stipulated in the contract, the BUYER shall have the right to purchase such stores or other of similar description at the risk and cost of the supplier.

However, supplier shall be liable to pay penalty under clause 13 above for resultant delay.

15. **Delay due to force majeure**

If any time during the continuance of the contract the performance in whole or part by either party on any obligation under the contract shall be prevented or delayed by reason of any war, hostility, explosions, epidemics, quarantine restrictions, or other acts of God, then provided, notice of the happening of any such event is given by either party to the other within twenty one days from the date of occurrence thereof, neither party shall be reason of such event be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance and delay in performance and deliveries under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist and the decision of the Chairman and Managing Director, EPI, New Delhi as to whether the deliveries so resumed shall be final and binding on both the parties. In
case Force Majeure Condition persists for a period exceeding sixty (60) days, either party may at its option terminate the contract.

BUYER shall be at liberty to take over from the supplier at a price to be fixed by the Chairman and Managing Director, EPI, New Delhi which shall be the final, all unused, undamaged and acceptable material, bought out components and stores in course of manufacture in the possession of the supplier at the time of such termination or portion thereof as the BUYER may deem fit.

16. Rejection, Removal of Rejected Goods and Replacement

In case the testing and inspection at any stage by inspectors reveal that the equipment, material and workmanship do not comply with the specifications and requirements, the same shall be removed by the Supplier at his/its own expenses and risk within the time allowed by the BUYER. The BUYER shall be at liberty to dispose of such rejected goods in such manner as he may think appropriate, in the event the supplier fails to remove the rejected goods within the period as aforesaid. All expenses incurred by the BUYER for such disposal shall be to the account of the supplier. The freight paid by the BUYER, if any, on the inward journey of the rejected material shall be reimbursed by the supplier to the BUYER before the rejected materials are removed by the Supplier. The supplier will have to proceed with the replacement of that equipment or part of equipment without claiming any extra payment if so required by the BUYER. The time taken for replacement in such event will not be added to the contractual delivery period.

17. Warranty

The supplier shall warrant that every material/plant, machinery and equipment to be supplied be new and free from all defects and faults in design, material, workmanship and manufacture and shall be of the highest quality.

The items should be consistent with the established, recognized or stipulated standards for material of the type usually used for the purpose and in full conformity with the specifications and drawings or samples, if any. Equipment offered must be capable, during operation, of withstanding extreme dusty, wet, humid and sultry conditions. The warranty shall continue not withstanding inspection, payment, acceptance of tendered equipment and shall expire except in respect of complaints notified to supplier prior to such date within 12 months from the date of commissioning or 18 months from the date of dispatch whichever is earlier.

18. Performance Guarantee

The supplier shall guarantee that any/all material used in execution of the Purchase Order shall be in strict compliance with characteristics requirements and specifications agreed upon and that same shall be free from any defects.

The supplier shall guarantee that all material and equipment shall be repaired or replaced as the case may be at his own expense in case the same have been found to be defective in respect of material, workmanship or smooth and rated operation within a period of 12 months after the same has been put in service or 18 months from the date of dispatch of last consignment, whichever is earlier. The guarantee period for the replacement parts shall be 12 months starting from the date on which the replacement parts are commissioned. Acceptance by the BUYER or his inspectors
of any equipment and materials or their replacement will not relieve the supplier of his/its responsibility concerning the above guarantee.

19. **Indemnity**

The supplier shall at all times indemnify the BUYER against all claims which may be made in respect of stores for infringement of any right protected by patent, registration of design or trade mark. Provided always that in the event of any claim in respect of alleged breach of patent, registered designs or trade mark being made against the BUYER, the BUYER shall notify the supplier of the same and the supplier shall at his own expense either settle any such dispute or conduct any litigation that may arise there from.

The supplier shall not be liable for payment of any royalty, license fee or other expenses in respect of or for making of patents or designs with respect to which he is, according to the terms of the contract, to be treated as an agent of the Government for the purpose of making use of the patent or trade mark of fulfillment of the contract.

20. **Spare Parts**

The supplier shall furnish itemized and priced list of spare parts required for two years normal operation of the equipment alongwith the quotation.

21. **Drawings**

The supplier shall furnish the general arrangements and dimensional drawings in three sets within four weeks from date of placement of order.

22. **Literature of Equipment**

Following literature and documents for the equipment shall be supplied in five copies each free of cost alongwith the equipment,(a) Operator's instructions (b) Service Manual (c) Illustrated and detailed parts catalogues (d) Specifications (e) A list of service tools required for routine servicing of the equipment.

23. **Arbitration**

Except where otherwise provided for in the contract all questions and disputes relating to the meaning of the specifications, designs, drawings and instructions herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other questions, claim, right matter or thing whatsoever if any, arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or any contradictions or otherwise concerning the purchase order or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the Chairman and Managing Director/General Manager (accepting authority) of Engineering Projects (India) Ltd. and if the Chairman and Managing Director/General Manager is unable or unwilling to act to the sole arbitration some other person shall be appointed by the Chairman and Managing Director/General Manager willing to act as such arbitrator. There will be no objection if the arbitrator so appointed is an employee of Engineering Projects (India) Ltd., and that he had to deal with matters to which the contract relates and that in the course of his duties as such he had expressed views on all or any of the matters in disputes or difference.
The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason, such Chairman and Managing Director/General Manager as aforesaid at the time of such transfer, vacation of office or inability to act, shall appoint another person to act as an arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor. It is also a term of this contract that no person other than a person appointed by such Chairman and Managing Director/General Manager as aforesaid should act as arbitrator and if for any reason that is not possible, the matter is not to be referred to arbitration at all.

Cases where the amount of award in claim is Rs. 50,000/- (Rupees Fifty Thousand Only) and above, the arbitrator shall give reasons for the award.

Subject as aforesaid the provisions of the arbitration act 1940 or any statutory modification or re-enactment thereof and the rules made thereunder and for time being in force shall apply to the arbitration proceedings under this clause.

It is a term of the contract that the party invoking arbitration shall specify the disputes or dispute to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.

The arbitrator may from time to time with consent of the parties enlarge the time, for making and publishing the award.

The work under the contract shall, if reasonably possible continue during the arbitration proceedings.

The arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties fixing the date of the first hearing.

The arbitrator shall give a separate award in respect of each disputes or difference referred to him.

The avenue of arbitration shall be such place as maybe fixed by the Arbitrator in his sole discretion.

The award of the arbitrator shall be final, conclusive and binding on all parties to the contract.

24. **Court Jurisdiction**

Disputes of any nature that may arise in connection with the execution of the contract shall be subjected to the jurisdiction of courts situated in Delhi/New Delhi only.
Check List for Evaluation & Selection of Suppliers / Vendors

1. Name
2. Address
3. Contact Person
4. Proprietor
5. a) Phone Nos.
b) Fax Nos.
6. Items / Products
7. Manufacturer
   Distributor
   Dealer
   Stockist
8. Facilities Available In House Through External Agency
   a) Testing Facilities
      i) For Incoming materials
      ii) For In process
      iii) For Final Product
   b) Can Issue Test Certificate Yes No
   c) Details of Manufacturing Facilities
   d) Products being manufactured
      (Product Catalogues)
9. Annual Turn Over
10. Whether ISO 9000 certified or not
11. Whether IS certified or not
12. Reference list of important customers during last five years
13. Ability to give after sales service
14. Sample sent or not

To Incharge MMD  
EPI  

Signature of Vendor / Supplier  
Name  
Designation  
Date
For use in EPI

Data has been collected over phone verbally.  

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Approved  

Reviewed  

Signature  

Signature
1.0 The following Additional Purchase Conditions shall be read in conjunction with General Purchase Conditions. If there are any provisions in these Additional Purchase Conditions, which are at variance with the provisions of General Purchase Conditions, the provisions in these Additional Purchase Conditions shall take precedence.

2.0 INTRODUCTION

As part of expansion project of the owner/client viz Bhilai Steel Plant (BSP), SAIL, was conceived in the Second Five Year Plan with a steel production capacity of 1.0 MTPA. BSP has expanded its production capacity in two phases. First phase expansion to 2.5 MTPA of steel was completed in 1967 and second phase expansion to 4.0 MTPA of steel was completed in 1988. The corporate plan of BSP envisages expansion of its production capacity to 7.0 MTPA of Crude Steel by 2011-12.

The capacity of the present system of receiving, storing and transporting coal for Coke oven will increase in view of the increase in crude steel production to 7.0 MTPA. To meet the additional requirement of coke for new proposed blast furnace no. 8, one new coke oven battery no. 11 has been envisaged. The system of feeding coal to new coal tower and coke sorting plant for the new battery has been envisaged in this specification.

Presently, Blast furnace returns are being transported through C-line belt conveyors to the Junction house 127 of Sinter Plant III (SP-III). These belt conveyors are crossing the proposed Coke Dry & Cooling Plant (CDCP, which shall be executed through other package). Therefore, Dismantling and re-routing of these belt conveyors are envisaged in this package. This package shall also cover the transportation & integration of Proposed BF#8 return fines with re-routed C-line conveyor up-to the existing JH-127 of SP-III.

Further, in order to cater to increased requirement of fuel and flux for the new sinter machine of SP-III, following three facilities have been envisaged under this package:

1. Up gradation/addition of coke crushing and screening facilities.
2. Up gradation/addition of Coke Grinding facilities
3. Up gradation of Flux crushing & screening facilities.

The project, once implemented, shall ensure a smooth operation in transportation of the coking coal to new battery no. 11 and coke & sinter to new blast furnace no. 8, which in turns caters to enhancement of raw material required for the 7.0 MTPY of Crude steel stage.

3.0 SCOPE OF WORK INCLUDED IN THE CONTRACT

The brief scope of work included in this tender shall include (but not limited to) manufacture, shop fabrication, assembly, testing & inspection at manufacturer's works, packing, dispatch, transportation, delivery at site, performance guarantee testing, final painting and handing over to Bhilai Steel Plant, SAIL, Bhilai/EPI of “different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width” for the project of “Augmentation of Fuel & Flux Crushing Facilities (Package 064) of Bhilai Steel Plant (SAIL), Bhilai, Chhattisgarh.”
4.0 QUALIFICATION OF TENDERERS

To be eligible for this tender the bidders should fulfill the requirements for eligibility as mentioned in the Notice Inviting Tender (NIT). The Bidders are required to fulfill all the eligibility criteria as stipulated in NIT and elsewhere in the Tender documents. The price bid of bidders who fulfill the eligibility criteria as per evaluation of EPI shall only be opened. The decision of EPI in this regard shall be final & binding on the bidders.

5.0 DISQUALIFICATION

In addition to clause no. 14 of Instructions To Tenderers (Suppliers), the bidders may note that they are liable to be disqualified and may not be considered for the opening of Price Bid if;

a) Representation in the forms, statements and attachments submitted in the pre-qualification document are proved to be incorrect, false and misleading.

b) They have record of poor performance during the past 10 years such as abandoning the work, rescinding of contract for which the reasons are attributable to the non-performance of the bidder, inordinate delay in completion, consistent history of litigation/arbitration awarded against the bidder or any of its constituents or financial failures due to bankruptcy etc. in their ongoing/past projects.

c) They have submitted incompletely filled in formats without attaching certified supporting documents and credentials to establish their eligibility to participate in the Tender.

d) If the bidders attempt to influence any member of the Tender Scrutiny committee.

e) Non-submission of valid NSIC certificate/relevant copies of registration letter (in the form of Memorandum-2 with the concerned DIC) under MSME Act for claiming exemption from payment of Tender fee.

f) Non-submission of valid NSIC certificate/ relevant copies of registration letter (in the form of Memorandum-2 with the concerned DIC) under MSME Act for claiming exemption from EMD submission.

EPI reserves its right to take appropriate action including disqualification of tenderer(s) as may be deemed fit and proper by EPI at any time without giving any notice to the bidder in this regard. The decision of EPI in the matter of disqualification shall be final and binding on the Bidders.

6.0 EPI reserves the right to independently verify the performance of the bidder from the Existing owners/users/owners’ Consultants. In case any installation of the bidder is found to be performing unsatisfactorily, EPI reserves the right to reject the tender and price bid of such bidder shall not be opened, even if the bidder is meeting the technical and other qualifying criteria.

In such circumstances the bidder shall have no claim on EPI of whatsoever nature.

7.0 PAYMENT TERMS

7.1 The Clause No. 4 of GPC shall be replaced as under:
The bidder shall reimburse the EPI all costs, charges, damages or expenses which the EPI may have paid or incurred on behalf of the bidder, if and to the extent to which the bidder is liable under this Contract to pay within thirty (30) days upon written request of the Engineer Incharge of EPI, failing which such costs, charges, damages or expenses shall be deducted by the EPI from any money due or becoming due by the EPI to the bidder under this Contract or any other Contract failing which such amounts shall be considered as debt from the Successful bidder to the EPI and shall be recoverable accordingly.

Any Indian Income Tax which EPI may be required to deduct by law or statute, shall be deducted at the source and the same shall be paid to Income Tax Authorities on account of the bidder. EPI shall provide the bidder a certificate for deduction of TDS. The bidder shall indicate their Permanent Account Number with the relevant Income Tax Authority to EPI. Bidders shall maintain books of account and shall get the account audited as per Section 44DA of Income Tax Act.

If the bidder is exempted from the deduction/recovery of Income Tax, no such recovery shall be made by EPI provided Bidder shall furnish valid exemption Certificate issued by Income Tax Department to this effect.

Following breakup of payment shall be followed:

i) 90% of the total order value will be released after receipt of material at site.

ii) 10% of the total order value will be released after 6 months from the date of receipt of last consignment at site.

7.2 Taxes & Duties:

i) Price quoted by the bidder shall be inclusive of all the taxes & duties including GST as per the price schedule of NIT document. All the columns of taxes & duties shall be duly filled without blank space. The Invoice shall be raised on EPI as per GST Complaint Invoices. Failure to provide Tax Invoices in desired format or non-payment of taxes or non-filling of GST returns/mismatch of Invoices would lead to non-availability of Input Tax Credit to BSP/EPI. Thereby is to be borne by bidder and EPI shall deduct such amount along with Interest/penalty/late fees, etc., if any paid by EPI on account of disallowance of ITC, from the next payment/dues due to supplier. Bidder while quoting the rates in the tender must also consider the ITC credit applicable for the works, if any.

ii) In case any tax/duty is not applicable, the bidder has to either write NIL or NA.

iii) Transit Insurance will be in EPIL scope however all documents related to transit insurance will be provided by the bidder.

iv) Bidder must have registration under GST.

v) Taxes & duties/GST besides all direct and indirect cost of works, infrastructures are included in the party’s quoted rates.

8.0 While raising invoice for such goods, the invoice should contain the following:

a) Tax payer Identification Number under GST Act.
9.0 **VARIATION IN TAXES, DUTIES, LEVIES AND IMPOSITION OF NEW TAXES ETC.**

In case of any reduction in rate of GST or other taxes in future or the project getting exemption status prior to the late date of bid submission or afterwards, the subcontractor shall pass on the benefit to EPIL immediately, failing which EPIL shall have the right to recover the differential amount from the amounts due to the sub-contractor. Further, in case of any increase in rate of GST or other taxes in future or the project losing exemption status prior to last date of bid submission or afterwards, the said increase of taxes shall be paid/reimbursed to the subcontractor, subject to the condition that the client reimburses the said increased taxes to EPIL.

10.0 For Dispatch of materials to Site, the vendor shall mark consignee as “Bhilai Steel Plant, SAIL A/c EPIL, Bhilai” and follow dispatch instruction to be given by EPI.

11.0 **COMPLETION PERIOD**

Completion Period of the total work as mentioned in the NIT & tender documents shall be 60 days from the date of manufacturing clearance to be given by EPI.

12.0 The bidder shall comply with legal orders & directions of law of local bodies. The bidder shall give to the Municipality, Police, Local Bodies and concerned Governmental authorities all necessary notices relating to work that may be required under the law and obtain all requisite licenses/permissions. Nothing extra shall be paid by EPI on this account.

13.0 **GUARANTEE**

The Contractor shall be responsible for the rectification of defects in the works for a period of twelve months from the date of taking over of the works by the client (BSP). Any defects discovered and brought to the notice of the Contractor forthwith shall be attended to and rectified by them at their own cost and expense. In case the Contractor fails to carry out these rectifications, the same may without prejudice to any other right or remedy available, be got rectified by EPI at the cost and expense of the Contractor.

14.0 **PERMITS AND INSPECTIONS**

The bidder shall obtain all necessary permits from local bodies, provincial or central authorities and shall make arrangement for inspection and tests etc. as required at their own cost.

15.0 **LICENCES**

The bidder shall arrange for obtaining the license for the operation and approval of drawings for the equipments etc. as required from the local Government/authorities at their own cost & nothing extra shall be payable.

16.0 The work shall be carried out in accordance with the drawings approved by the EPI/BSP/MECON. Before the commencement of any item of work, the bidder shall correlate all the relevant drawings/documents/specification issued for the work and satisfy themself that the information available there from is complete and unambiguous. The discrepancy, if any, shall be brought to the notice of Engineer-In-Charge of EPI before the execution of work. The bidder alone shall be responsible for any loss or damage occurring by the commencement of work on
the basis of any erroneous and/or incomplete information. Nothing extra shall be paid on this account.

17.0 The bidder shall give performance tests of the entire installation(s) as per specifications and drawings before the work is finally accepted and nothing extra whatsoever shall be payable to the bidder for these performance tests.

18.0 **BOQ**

i) Bill of Quantities shall be read in conjunction with NIT, Instructions to Tenderers (Suppliers), General Purchase Conditions (GPC), Additional Purchase conditions (APC), Technical Specifications, Drawing, Schedules, and Annexure & Addendum etc. to tender Document.

ii) Quantity variation shall be considered as (+/-) 25% of total quantity.

iii) The unit rate for any variation (+/-) shall remain unchanged & the same shall be applicable as quoted in the Price Schedule (Supply).

19.0 After completion of installation, testing and commissioning of all the equipment as per tender specifications, the bidder shall, however, provide proper training to the Owner's employees/representatives for maintenance and operation of the equipment without any additional cost.

20.0 The bidder has to arrange for inspection of equipment and shall submit internal inspection certificate/document and nothing extra shall be paid.

21.0 Care shall be taken in handling of material to avoid damage. Any damages made to the equipment during transit shall be made good by the bidder at their own cost.

22.0 **TEST CERTIFICATE**

All manufacturer's certificates of test showing that the materials have been tested in accordance with the requirements of the relevant standard specification and the copy of the test certificate as well as standard shall be supplied free of cost to EPI for onward submission to BSP/MECON.

23.0 **INITIAL INSPECTION AT MANUFACTURER’S WORK:**

The bidder shall provide such facilities at their own cost as will be necessary for inspection of the material before dispatch at their or their associate’s works and also for witnessing such tests as per technical specifications, as are done at the works if so required by BSP/MECON/EPI. The bidder shall give minimum two weeks’ notice regarding the dates proposed for inspections. The Tenderer shall submit list of test on components of equipments, which shall be carried out at manufacturer’s premises.

24.0 **INSPECTION DURING INSTALLATION AND FINAL INSPECTION:**

The bidder shall arrange for checking and testing at their own cost the installation as per technical specifications. All instruments and materials required for testing shall be the responsibility of the successful bidder. The final inspection of the installation and testing of equipment may be carried out by EPI/MECON/BSP. The taking over of equipment after trial run shall be subject to removal of defects by the successful bidder at their own cost, if any, pointed out during the inspection.
25.0 It will be the sole responsibility of bidder to obtain all statutory approvals and completion clearance from all the relevant statutory bodies and for all other services as included in the scope of contract etc. from the concerned department as required within the stipulated time frame. Liaison work on behalf of EPI with the local bodies will also have to be done by the bidder. Nothing extra shall be payable to bidder on this account. No claim whatsoever in this regard shall be entertained.

26.0 LIQUIDATED DAMAGES DUE TO DELAY IN “COMPLETION OF THE FACILITIES”:

The Clause No.13 of GPC shall be amended & replaced as under:

If the Successful bidder fails to attain completion of the work within the time of completion or any extension thereof, due to reasons not attributable to the EPI, the EPI shall recover the amount of Liquidated Damages, but not by way of penalty, by making deductions from the Successful bidder’s RA bills or by encashment of their Bank Guarantees at the rate of 0.5% of the Contract Price plus escalation, if any, excluding taxes & duties per complete week of delay or part thereof subject to a maximum of 5% of the contract price plus escalation, if any, excluding taxes & duties.

However, the payment of liquidated damages shall not in any way relieve the successful bidder from any of its obligations to complete the facilities or from any other obligations and liabilities of the successful bidder under the contract.

27.0 CENVAT/ITC ON GST

27.1 The Bidder will ensure dispatches of their own manufactured as well as all bought out plant, equipment & materials directly to work site of the BSP/EPI by issue of Tax Invoice so that the BSP/EPI will get the ITC (Input Tax Credit) of GST paid on all such supplies including imported plant & equipment.

27.2 The Bidder shall issue E-way bill under GST as per the rules prescribed under GST Law and requirements if any under GST rules shall also be complied with by BSP/EPI.

28.0 CONCILIATION AND ARBITRATION

Before resorting to arbitration as per the clause given below, the parties if they so agree may explore the possibility of conciliation as per the provisions of Part III of the Arbitration and Conciliation Act, 1996 as amended by Arbitration and Conciliation (Amendment) Act, 2015. When such conciliation has failed, the parties shall adopt the following procedure for arbitration:

28.1 Except where otherwise provided for in the contract, any disputes and differences relating to the meaning of the Specifications, Design, Drawing and Instructions herein before mentioned and as to the quality of workmanship or materials used in the work or as to any other questions, claim, right, matter or things whatsoever in any way arising out of or relating to the Contract, Designs, Drawings, Specifications, Estimates, Instructions, or these conditions or otherwise concerning the works of the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the Sole Arbitrator appointed by the Chairman & Managing Director (CMD) of Engineering Projects (India) Limited (EPI) or any other person discharging the functions of CMD of EPI. The person
approached for appointment as Arbitrator shall disclose in writing circumstances, in terms of Sub-Section (1) of Section (12) of the Arbitration and Conciliation Act, 1996 as amended by Arbitration and Conciliation (Amendment) Act, 2015 as follows:

(i) such as the existence either direct or indirect, of any past or present relationship with or interest in any of the parties or in relation to the subject-matter in dispute, whether financial, business, professional or other kind, which is likely to give rise to justifiable doubts as to his independence or impartiality; and

(ii) which are likely to affect his ability to devote sufficient time to the arbitration and in particular his ability to complete the entire arbitration within a period of twelve months.

The Arbitrator shall be appointed within 30 days of the receipt of letter of invocation of arbitration duly satisfying the requirements of this clause.

28.2 If the arbitrator so appointed resigns or is unable or unwilling to act due to any reason whatsoever, or dies, the Chairman & Managing Director aforesaid or in his absence the person discharging the duties of the CMD of EPI may appoint a new arbitrator in accordance with these terms and conditions of the contract, to act in his place and the new arbitrator so appointed may proceed from the stage at which it was left by his predecessor.

28.3 It is a term of the contract that the party invoking the arbitration shall specify the dispute/ differences or questions to be referred to the Arbitrator under this clause together with the amounts claimed in respect of each dispute.

28.4 The Arbitrator may proceed with the arbitration ex-parte, if either party, in spite of a notice from the arbitrator, fails to take part in the proceedings.

28.5 The work under the contract shall continue as directed by the Engineer-In-Charge of EPI, during the arbitration proceedings.

28.6 Unless otherwise agreed, the venue of arbitration proceedings shall be at the venue given in the ‘Memorandum’ to the ‘Form of Tender’.

28.7 The award of the Arbitrator shall be final, conclusive and binding on both the parties.

28.8 Subject to the aforesaid, the provisions of the Arbitration and Conciliation Act, 1996 as amended by Arbitration and Conciliation (Amendment) Act, 2015 or any statutory modifications or re-enactment thereof and the Rules made thereunder and for the time being in force shall apply to the arbitration proceedings and Arbitrator shall publish his Award accordingly.

Note: Not withstanding anything contained herein above, this clause shall not be applicable where the dispute is between EPI and another Public Sector Enterprise or Govt. Department for which a separate Arbitration Clause is provided vide Clause No. A given below:

A. ARBITRATION BETWEEN PUBLIC SECTOR ENTERPRISES INTERSE/ GOVERNMENT DEPARTMENTS

1. In the event of any dispute of difference relating to the interpretation and application of the provisions of the contracts, such dispute or differences shall be
referred by either party for Arbitration to the sole Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India incharge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 and The Arbitration and Conciliation Act, 2015 shall not be applicable to arbitration under this clause. The award of the Arbitrator shall be binding upon the 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 the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Government of India. Upon such reference the dispute shall be decided by the Law-Secretary or the Special Secretary/Additional Secretary, when so authorized by the Law-Secretary, whose decision shall bind the Parties finally and conclusively. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator”.

2. Subject to any amendment that may be carried out by the Government of India from time to time the procedure to be followed in arbitration shall be as is contained in F. No. 4(1)/2013-DPE(PMA)/FTS-1835 Dated: 11/04/2017 of Department of Public Enterprises, Ministry of Heavy Industries & Public Enterprises or any modification issued in this regard.
PROFORMA FOR BANK GUARANTEE IN LIEU OF EARNEST MONEY DEPOSIT

In consideration of Chairman & Managing Director, Engineering Projects (India) Limited, (A Govt. of India Enterprise), Core-3, Scope Complex, Lodhi Road, New Delhi Pin-110003. (hereinafter called the EPI) having agreed to accept bank Guarantee of Rs................... in lieu of EARNEST MONEY DEPOSIT from............................................................. (hereinafter called the Supplier/Contractor/Sub-Contractor, which expression shall include its heirs, successors and assignees) in respect of the Tender for............................................................................................................................................................................

We, ........................................ bank having its registered/head office at............................................ (hereinafter referred to as the Bank) do hereby agree and undertake to pay to EPI without demur or protest an amount not exceeding Rs....................... on demand by EPI.

We the above said Bank further agree and undertake to pay the said amount of Rs....................... without any demur on demand within 48 hours. Any demand made on the Bank by EPI shall be conclusive as regards the amount due and payable by the Bank under this guarantee.

We the above said Bank further agree that the guarantee herein contained shall be in full force and in effect until .......................................................... date ............................................Unless a demand or claim under this guarantee is made on us in writing on or before............................ date ................................., we shall be discharged from all liabilities under this guarantee thereafter.

We, the above said Bank, further agree that EPI shall have full liberty, without our consent and without affecting in any manner our obligation to verify, modify or delete any of the conditions.

We, the above said Bank, lastly undertake not to revoke this guarantee during its currency except with the prior consent of EPI in writing.

Dated..........................this day of................. 201...

For and on behalf of the Bank

NOTE: on a Non-Judicial stamp paper of Rs. 100/- (Rupees One hundred only)
Special Instructions to Bidders for e-Tendering

General

The Special Instructions (for e-Tendering) supplement ‘Instruction to Bidders’, as given in these Tender Documents. Submission of Online Bids is mandatory for this Tender.

E-Tendering is a new methodology for conducting Public Procurement in a transparent and secured manner. Now, the Government of India has made e-tendering mandatory. Suppliers/Vendors will be the biggest beneficiaries of this new system of procurement. For conducting electronic tendering, Engineering Projects (India) Ltd. has decided to use the portal www.tcil-india-electronic tender.com through TCIL, a Government of India Undertaking. This portal is based on the world’s most ‘secure’ and ‘user friendly’ software from Electronic Tender®. A portal built using Electronic Tender’s software is also referred to as Electronic Tender System® (ETS).

Benefits to Suppliers are outlined on the Home-page of the portal.

Instructions

Tender Bidding Methodology:

Sealed Bid System

- Single Stage Two Envelope

Broad Outline of Activities from Bidder’s Perspective:

1. Procure a Digital Signing Certificate (DSC)
2. Register on Electronic Tendering System® (ETS)
3. Create Marketing Authorities (MAs), Users and assign roles on ETS. It is mandatory to create at least one MA.
4. View Notice Inviting Tender (NIT) on ETS
5. For this tender -- Assign Tender Search Code (TSC) to an MA
6. Download Official Copy of Tender Documents from ETS. Note: Official copy of Tender Documents is distinct from downloading ‘Free Copy of Tender Documents’. To participate in a tender, it is mandatory to procure official copy of Tender Documents for that tender.
7. Clarification to Tender Documents on ETS
   - Query to Engineering Projects (India) Ltd. (Optional)
8. View response to queries posted by Engineering Projects (India) Ltd.
9. Bid-Submission on ETS
10. Attend Public Online Tender Opening Event (TOE) on ETS
    - Opening of relevant Bid-Part (PQ Application)
11. Post-TOE Clarification on ETS (Optional)
    - Respond to Engineering Projects (India) Ltd. Post-TOE queries
12. Attend Public Online Tender Opening Event (TOE) on ETS
    - Opening of relevant part (Financial-Part)
    (Only for PQ Responsive Bidders)
For participating in this tender online, the following instructions are to be read carefully. These instructions are supplemented with more detailed guidelines on the relevant screens of the ETS.

**Digital Certificates**

For integrity of data and authenticity/ non-repudiation of electronic records, and to be compliant with IT Act 2000, it is necessary for each user to have a Digital Certificate (DC). also referred to as Digital Signature Certificate (DSC), of Class 2 or above, issued by a Certifying Authority (CA) licensed by Controller of Certifying Authorities (CCA) [refer http://www.cca.gov.in].

**Registration**

To use the Electronic Tender® portal www.tcil-india-electronictender.com, vendors need to register on the portal. Registration of each organization is to be done by one of its senior persons who will be the main person coordinating for the e-tendering activities. In ETS terminology, this person will be referred to as the Super User (SU) of that organization. For further details, please visit the website/portal, and click on the ‘Supplier Organization’ link under ‘Registration’ (on the Home Page), and follow further instructions as given on the site. Pay Annual Registration Fee as applicable.

**Any Instructions for Online/ Offline Payment of Registration Fee??**

After successful submission of Registration details and Annual Registration Fee, please contact TCIL/ ETS Helpdesk (as given below), to get your registration accepted/activated

**Important Note:** To minimize teething problems during the use of ETS (including the Registration process), it is recommended that the user should peruse the instructions given under ‘ETS User-Guidance Center’ located on ETS Home Page, including instructions for timely registration on ETS. The instructions relating to ‘Essential Computer Security Settings for Use of ETS’ and ‘Important Functionality Checks’ should be especially taken into cognizance.

Please note that even after acceptance of your registration by the Service Provider, to respond to a tender you will also require time to complete activities related to your organization, such as creation of users, assigning roles to them, etc.

| TCIL/ ETS Helpdesk | Customer Support: **011-26241790 (multiple lines)**  
| Emergency Mobile Numbers: +91-9868393775, 9868393717, 9868393792 |
| - Telephone/ Mobile |  
| - E-mail ID | ets_support@tcil-india.com  
[Please mark CC: support@electronictender.com] |

| Contact |  
| Engineering Projects (India) Ltd.  
Contact Person | **Executive Director (Consultancy & Engineering)**  
Engineering Projects (India) Ltd.  
Core 3, Scope Complex, Lodhi Road,  
New Delhi – 110003 |
Some Bidding related Information for this Tender (Sealed Bid)

The entire bid-submission would be online on ETS (unless specified for Offline Submissions). Broad outline of submissions are as follows:

- Submission of Bid-Parts/Envelopes
  - Technical-Part
  - Financial-Part

Offline Submissions:

The bidder is requested to submit the following documents offline to the under mentioned address before the start of Public Online Tender Opening Event in a Sealed Envelope.

1. Original copy of the Tender Fee of ₹ 5,900.00 (Rupees Five Thousand Nine Hundred only) in form of DD.
2. Original copy of the EMD of ₹ 70,000.00 (Rupees Seventy Thousand Only) in the form of a Bank Guarantee/DD.
3. Original copy of power-of-attorney to sign the tender documents.
4. Documentary evidence with regard to registration with NSIC/MSME as mentioned in Clause No. 2 of NIT for tender fees & EMD waiver.
5. Pass-phrase (Both for technical and financial bid in separate envelope) to decrypt the Bid.
6. Affidavit as per Annexure-A of NIT.

Contact Persons Name:
Executive Director (Consultancy & Engineering)
Address: Engineering Projects (India) Ltd.
Core 3, Scope Complex, 7 Lodhi Road,
New Delhi – 110003

The envelope shall bear (the project name), the tender number and the words 'DO NOT OPEN BEFORE' (due date & time).

Note: The Bidder should also upload the scanned copies of all the above mentioned original documents as Bid-Annexures during Online Bid-Submission in addition to PQ documents listed in NIT Clause no. 1.

Note: Bidders are required to pay applicable ETS bidding fees online at the time of bid submission.

Special Note on Security and Transparency of Bids

Security related functionality has been rigorously implemented in ETS in a multi-dimensional manner. Starting with 'Acceptance of Registration by the Service Provider', provision for security has been made at various stages in Electronic Tender's software. Specifically for Bid Submission, some security related aspects are outlined below:
As part of the Electronic Encrypter™ functionality, the contents of both the ‘Electronic Forms’ and the ‘Main-Bid’ are securely encrypted using a Pass-Phrase created by the Bidder himself. Unlike a ‘password’, a Pass-Phrase can be a multi-word sentence with spaces between words (e.g. I love this World). A Pass-Phrase is easier to remember, and more difficult to break. It is recommended that a separate Pass-Phrase be created for each Bid-Part. This method of bid-encryption does not have the security and data-integrity related vulnerabilities which are inherent in e-tendering systems which use Public-Key of the specified officer of a Buyer organization for bid-encryption. Bid-encryption in ETS is such that the Bids cannot be decrypted before the Public Online Tender Opening Event (TOE), even if there is connivance between the concerned tender-opening officers of the Buyer organization and the personnel of e-tendering service provider.

CAUTION: All bidders must fill Electronic Forms™ for each bid-part sincerely and carefully, and avoid any discrepancy between information given in the Electronic Forms™ and the corresponding Main-Bid. For transparency, the information submitted by a bidder in the Electronic Forms™ is made available to other bidders during the Online Public TOE. If it is found during the Online Public TOE that a bidder has not filled in the complete information in the Electronic Forms™, the TOE officer may make available for downloading the corresponding Main-Bid of that bidder at the risk of the bidder. If variation is noted between the information contained in the Electronic Forms™ and the ‘Main-Bid’, the contents of the Electronic Forms™ shall prevail. Alternatively, the Buyer organization reserves the right to consider the higher of the two pieces of information (e.g. the higher price) for the purpose of short-listing, and the lower of the two pieces of information (e.g. the lower price) for the purpose of payment in case that bidder is an awardee in that tender.

Typically, ‘Pass-Phrase’ of the Bid-Part to be opened during a particular Public Online Tender Opening Event (TOE) is furnished online by each bidder during the TOE itself, when demanded by the concerned Tender Opening Officer.

Additionally, the bidder shall make sure that the Pass-Phrase to decrypt the relevant Bid-Part is submitted to Engineering Projects (India) Ltd. in a sealed envelope before the start date and time of the Tender Opening Event (TOE).

There is an additional protection with SSL Encryption during transit from the client-end computer of a Supplier organization to the e-tendering server/ portal.

**Public Online Tender Opening Event (TOE)**

ETS offers a unique facility for ‘Public Online Tender Opening Event (TOE)’. Tender Opening Officers, as well as, authorized representatives of bidders can simultaneously attend the Public Online Tender Opening Event (TOE) from the comfort of their offices. Alternatively, one/ two duly authorized representative(s) of bidders (i.e. Supplier organization) are requested to carry a Laptop with Wireless Internet Connectivity, if they wish to come to Engineering Projects (India) Ltd. office for the Public Online TOE.

Every legal requirement for a transparent and secure ‘Public Online Tender Opening Event (TOE)’, including digital counter-signing of each opened bid by the authorized TOE-officer(s) in the simultaneous online presence of the participating bidders’ representatives, has been implemented on ETS.
As soon as a Bid is decrypted with the corresponding ‘Pass-Phrase’ as submitted offline by the bidder himself (during the TOE itself), salient points of the Bids (as identified by the Buyer organization) are simultaneously made available for downloading by all participating bidders. The tedium of taking notes during a manual ‘Tender Opening Event’ is therefore replaced with this superior and convenient form of ‘Public Online Tender Opening Event (TOE)’.

ETS has a unique facility of ‘Online Comparison Chart’ which is dynamically updated as each online bid is opened. The format of the chart is based on inputs provided by the Buyer for each Bid-Part of a tender. The information in the Comparison Chart is based on the data submitted by the Bidders. A detailed Technical and/ or Financial Comparison Chart enhances Transparency. Detailed instructions are given on relevant screens.

ETS has a unique facility of a detailed report titled ‘Minutes of Online Tender Opening Event (TOE)’ covering all important activities of ‘Online Tender Opening Event (TOE)’. This is available to all participating bidders for ‘Viewing/Downloading’.

There are many more facilities and features on ETS. For a particular tender, the screens viewed by a Supplier will depend upon the options selected by the concerned Buyer.

**SEVEN CRITICAL DO’S AND DON’TS FOR BIDDERS**

Specifically for Supplier organizations, the following ‘SEVEN KEY INSTRUCTIONS for BIDDERS’ must be assiduously adhered to:

1. Obtain individual Digital Signing Certificate (DSC or DC) well in advance of your first tender submission deadline on ETS

2. Register your organization on ETS well in advance of the important deadlines for your first tender on ETS viz ‘Date and Time of Closure of Procurement of Tender Documents’ and ‘Last Date and Time of Receipt of Bids’. Please note that even after acceptance of your registration by the Service Provider, to respond to a tender you will also require time to complete activities related to your organization, such as creation of --Marketing Authority (MA) [ie a department within the Supplier/ Bidder Organization responsible for responding to tenders], users for one or more such MAs, assigning roles to them, etc. It is mandatory to create at least one MA. This unique feature of creating an MA enhances security and accountability within the Supplier/ Bidder Organization.

3. Get your organization's concerned executives trained on ETS well in advance of your first tender submission deadline on ETS

4. For responding to any particular tender, the tender (ie its Tender Search Code or TSC) has to be assigned to an MA. Further, an ‘Official Copy of Tender Documents’ should be procured/ downloaded before the expiry of Date and Time of Closure of Procurement of Tender Documents. **Note:** Official copy of Tender Documents is distinct from downloading ‘Free Copy of Tender Documents’. Official copy of Tender Documents is the equivalent of procuring physical copy of Tender Documents with official receipt in the paper-based manual tendering system.

5. Submit your bids well in advance of tender submission deadline on ETS (There could be last minute problems due to internet timeout, breakdown, et al)
6. It is the responsibility of each bidder to remember and securely store the Pass-Phrase for each Bid-Part submitted by that bidder. In the event of a bidder forgetting the Pass-Phrase before the expiry of deadline for Bid-Submission, facility is provided to the bidder to 'Annul Previous Submission' from the Bid-Submission Overview page and start afresh with new Pass-Phrase(s).

7. ETS will make your bid available for opening during the Online Public Tender Opening Event (TOE) 'ONLY IF' your 'Status pertaining Overall Bid-Submission' is 'Complete'. For your record, you can generate and save a copy of 'Final Submission Receipt'. This receipt can be generated from 'Bid-Submission Overview Page' only if the 'Status pertaining overall Bid-Submission' is 'Complete'.

NOTE: 
*While the first three instructions mentioned above are especially relevant to first-time users of ETS, the fourth, fifth, sixth and seventh instructions are relevant at all times.*
TENDER DOCUMENT

TENDER NO.: DLI/C&E/WI-675/312

FOR

Tender for “Manufacturing and Supply of “different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width” for the project of “Augmentation of Fuel & Flux Crushing Facilities (Pkg-064)” for Bhilai Steel Plant, Bhilai at Chhattisgarh”

VOLUME – II

PRICE BID FORMAT
**PRICE SCHEDULE (SUPPLY)**

Project: Augmentation of Fuel & Flux Crushing Facilities (Package No. 064) of Bhilai Steel Plant, Bhilai (SAIL)

(Different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width)

Our prices for the above package of above mentioned project as per the technical specifications, drawings, terms & conditions given in the tender enquiry are as given below:-

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description</th>
<th>Volume of work</th>
<th>Unit Price</th>
<th>Total Basic Price (4*5)</th>
<th>GST on 6</th>
<th>Inland Freight upto site</th>
<th>GST on 8</th>
<th>Transit Insurance</th>
<th>TOTAL PRICE</th>
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Page 1 of 2
### PRICE SCHEDULE (SUPPLY)

**Project:** Augmentation of Fuel & Flux Crushing Facilities (Package No. 064) of Bhilai Steel Plant, Bhilai (SAIL)

**Different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width**

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**TOTAL PRICE**

**TOTAL PRICE IN WORDS**

Note:

1. Bidders to indicate the Break-up of Taxes & Duties, etc. The break-up is also required for evaluation of offers and the position of L1. The unpriced copy of Price Bid should indicate the Break-up's i.e. "Quoted" or "Not Quoted" so as to facilitate evaluation of offers.

Signature with stamp
TENDER DOCUMENT

TENDER NO.: DLI/C&E/WI-675/312

FOR

Tender for “Manufacturing and Supply of “different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width” for the project of “Augmentation of Fuel & Flux Crushing Facilities (Pkg-064)” for Bhilai Steel Plant, Bhilai at Chhattisgarh”

VOLUME – III

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GENERAL

The following Technical Specification shall be read in conjunction with General Technical Specification (GTS) of Bhilai Steel Plant, SAIL. If there are any provisions in this Technical Specification, which are at variance with the provisions of General Technical Specification (GTS) of Bhilai Steel Plant, SAIL and General Specification, the provisions in this Technical Specification/approved drawings shall take precedence.

SCOPE OF SUPPLY

The scope of the supply includes manufacture, shop fabrication, assembly, testing and inspection at manufacturer’s works, packing, dispatch, transportation, delivery to site of ‘different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width’ as per specifications and scope defined in tender documents complete with all accessories.

CONVEYOR IDLERS

The idlers will be manufactured as per the approved GA drawings enclosed.

In addition to above drawings, IPSS and General Technical Specification of MECON may be referred for additional details.

Bought-out items shall be as per approved makes of MECON/BSP for Package 064.
INSPECTION

(CHAPTER-05)
GENERAL SPECIFICATION
FOR
QUALITY SYSTEM, INSPECTION &
TEST OF PLANT / EQUIPMENT AT
MANUFACTURER’S PREMISES
(GS – 05)

MECON LIMITED
RANCHI – 834002

JULY, 2007
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**ENCLOSURES:**

- i) Form No. 11.20.(DQM)F-09 Rev-0 - QAP for Structural & Mechanical Equipment
- ii) Form No. 11.20.(DQM)F-10 Rev-0 - QAP for Electrical Equipment
- iii) Form No. 11.20.(DQM)F-11 Rev-0 - QAP for Refractory Materials
- iv) Form No. 11.20.(DQM)F-5/2 Rev-0 - Inspection Call Proforma
- v) LIST OF MECON OFFICES and Contact Address Details
1.0 GENERAL

1.1 Inspection & testing of plant & equipment shall be carried out by Consultant/ Purchaser at the works of successful tenderer during manufacturing and/or on final product to ensure conformity of the same with the acceptable criteria of technical specifications, approved drawings, manufacturing drawings and applicable national / international standards.

2.0 QUALITY SYSTEM REQUIREMENTS

The successful tenderer must recognise the importance of quality and follow defined quality programme in all stages of manufacturing and quality control activities of the product. Contractor must define and implement the tasks and controls that will provide needed assurance, in case manufacturing of product is sub-contracted either partly or fully and/or for the procured components of the product. All bought-out equipment or component shall be procured from vendors which are duly approved by the project authority.

Consultant/ Purchaser reserve the right to verify the quality programme of tenderer & its vendors/sub- vendors to assure the effectiveness of the programme to meet the intended and specified quality of the product.

3.0 QUALITY ASSURANCE PLAN (QAP)

3.1 The successful tenderer shall furnish Quality Assurance Plan (QAP) for respective equipment after completion of detailed engineering and finalisation of billing schedule / equipment identification number for Consultant’s approval at least one month prior to start of manufacturing.

3.2 QAP shall be prepared & furnished by Contractor in Form Nos. 11.20(DQM) F-09,10, 11 (specimen copy enclosed) / detailed manufacturing QAP for structural & mechanical equipment, electrical equipment and refractory materials respectively, QAPs must be submitted in four (4) sets duly signed and stamped by tenderer for MECON approval.

3.3 The successful tenderer shall indicate procurement source and furnish to Consultant during the submission of QAP, copies of P.O., Sub-P.O., T.S., approved GA drawings/ data sheets & detailed manufacturing drawings, as backup reference materials for scrutiny & final approval by Consultant. The submission & subsequent approval of QAPs shall be ensured to be restricted to one round only.

3.4 Inspection and test requirements shall be decided with due consideration of factors like safety, duty cycle, operating conditions, equipment life, environmental conditions, place of installation and statutory regulations, as applicable, for a particular equipment. Any, additional type or special tests or routine tests if found necessary to establish the intended quality after detailed engineering then the same shall have to be incorporated in the QAP without any commercial implication.

3.5 Detailed QAP shall be prepared by the successful tenderer in consultation with their Sub-contractors / Manufacturers to avoid any complicacy later.
4.0 CALIBRATION OF MEASURING EQUIPMENT

4.1 All the measuring equipment used for inspection & testing shall be calibrated and appropriate accuracy class of measuring equipment shall be used. Calibration standards used for calibration of measuring equipment shall be traceable to national standards of National Physical Laboratory (NPL), New Delhi with unbroken chains of comparison.

4.2 Valid calibration certificate for all measuring equipment used during inspection and testing at manufacturer's works, with traceability to national standards of NPL/ NABL accredited laboratories shall be furnished prior to undertaking inspection by Consultant/ Purchaser.

Calibration certificate shall also indicate reference no. of calibration standards calibrated by NPL/NABL accredited laboratories and copies of such calibration certificates of calibration standards shall be included in the compiled dossiers of inspection/test results.

5.0 TEST CERTIFICATES AND DOCUMENTS

5.1 For each of the items being manufactured as per approved QAP, following test certificates and documents, as applicable for each of the equipment, in requisite copies including original, duly endorsed by the Manufacturer/successful tenderer with appropriate linkage to project, purchase order and acceptance criteria etc shall be submitted to Consultant/ Purchaser.


ii) WPS, PQR & WPQ documents as per applicable code.

iii) Details of stagewise inspection & rectification records for fabricated items, castings, forgings and machined articles.

iv) Control dimension chart with records of alignment, squareness etc.

v) Manufacturer's material and performance/relevant test certificates for all bought-out items.

vi) Details of heat-treatment and stress relieving charts as per specification.

vii) Non-Destructive Test reports as per respective code.

viii) Static/dynamic balancing certificate for rotating components/machines.

ix) Hardness test certificate.

x) Pressure/Leakage Test Certificates.

xi) Performance Test Certificates for all characteristics.

xii) Routine / type / calibration /acceptance / special test (Type Tests etc) certificates for electrical items.
xiii) Surface preparation and painting certificates.

xiv) Certificates from competent authority for the items coming under statutory regulations.

5.2 Where physical and chemical test certificates of material are not available, the successful tenderer/Sub-contractor shall arrange to have specimens and test samples of the materials, tested in his own laboratory at his cost and submit the copies of test results in requisite numbers to Consultant/Purchaser for review. Number of test samples against each heat/cast/lot or batch of materials, as applicable shall be as per relevant Indian or International Standards.

5.3 Where facilities for testing do not exist in the successful tenderer/Sub-contractor's laboratories or in case of any dispute, samples and test pieces shall be drawn by the successful tenderer/Sub-contractor in presence of Consultant/ Purchaser and sealed sample shall be sent to any Govt. approved /NABL accredited laboratory for necessary tests at former's own cost.

5.4 The Consultant/ Purchaser shall have the right to be present and witness all tests being carried out by the successful tenderer/Sub-contractor at their own laboratory or approved laboratories. Also, the Inspection Agency shall reserve the right to call for confirmatory test on samples, at his discretion.

6.0 INTERNAL INSPECTION BY SUCCESSFUL TENDERER/MANUFACTURER

6.1 Inspection and tests shall be carried out by Contractor/ Manufacturer in accordance with approved drawings, T.S., P.O., and approved QAP. They shall maintain records of each inspection and test carried out and signed documents shall be submitted to Purchaser/Consultant for verification.

6.2 The successful tenderer shall carry out their internal inspection & obtain clearance from statutory bodies e.g. IBR, CCE, TAC, Weights & Measures, safety, IE rules etc. prior to offering any equipment for Purchaser/Consultant's inspection in accordance with approved QAP.

6.3 The successful tenderer/ Manufacturers shall identify all the inspected equipment/component/raw materials & shall maintain the record of status of inspection viz. inspected & found acceptable, require rectification/rework, rejected etc.

6.4 The successful tenderer shall establish and maintain procedures to ensure that the product that does not conform to specified requirements, is prevented from inadvertent use or installation. The description of non-conformity that has been accepted subsequently by Consultant/ Purchaser by concession and/or of repairs, shall be recorded.

Repaired and reworked product shall be offered for re- inspection to Consultant/ Purchaser alongwith records of corrective action taken.

7.0 MANUFACTURING AND INSPECTION SCHEDULE

All contractors shall submit the schedule for manufacturing and inspection indicating equipment / components, sub-assembly/ assembly. Date of approval of drawings / data sheets. Address of manufacturer with contact person and scheduled date of inspection. Such reports shall be submitted to respective Consultant Inspecting Offices with a copy...
to Inspection Co-ordinating Office once in a month. These monthly reports shall state the
planning for next three months. Submission of first reports must commence one month
prior to commencement of manufacturing activities of the product.

8.0 METHOD OF UNDERTAKING INSPECTION & TESTING BY
CONSULTANT/PURCHASER

8.1 Inspection call shall be given only on readiness of the equipment/assembly/sub-assembly & after approval of all relevant drawings and QAP. In case, equipment/assembly/sub-assembly offered for inspection are found not ready, all the cost of visit of Consultant's engineer shall have to be borne by the successful tenderer.

If the equipment/assembly/sub-assembly after inspection found not acceptable, require rework and involve Consultant's re-inspection, all the cost of such re-inspections shall also have to be borne by the successful tenderer.

8.2 Inspection call shall be floated to Consultant, in the enclosed Form No.11.20(DQM)F-05/2.REV-0 duly filled in, with ten days clear margin, enclosing all documents like test Certificates, Internal Inspection Reports, P.O., Sub-P.O., T.S., Approved QAP, approved GA drawings/data sheets and manufacturing drawings. Inspection calls without above documents shall be treated as invalid and shall be ignored. The hard copy of such documents must also accompany a CD (comprising computer readable files) containing the identical documents.

8.3 The successful tenderer shall offer substantial quantities for economical inspection consistent with the size of order.

8.4 On receipt of the Inspection call, pertaining to particular package/equipment/item, QA & Inspection group of Consultant, Ranchi (Overall co-ordinating office for Inspection activities) shall organize inspection visit or will issue Inspection assignment to other Consultant's office (based on nearness to the vendor's manufacturing works/relevant job expertise). For further inspection pertaining to the same package/equipment/item, successful tenderer may forward the subsequent inspection calls to the respective Consultant's offices (as identified per initial assignment), with a copy to QA & Inspection Section, Ranchi.

9.0 OBLIGATIONS OF SUCCESSFUL TENDERER

9.1 The successful tenderer shall provide all facilities and ensure full and free access of the Inspection Engineer of Purchaser/Consultant to their own or their Sub-Contractor's premises at any time, during contract period, to facilitate him to carry out inspection & testing of the product during or after manufacture of the same.

9.2 The successful tenderer shall delegate a Representative/Co-ordinator to deal with Consultant/Purchaser on all inspection matters. Representative of successful tenderer shall be present during all inspection at Sub-Contractor's works.

9.3 The successful tenderer shall comply with instructions of Consultant/Purchaser fully and with promptitude.

9.4 The successful tenderer/Sub-Contractor shall provide all instruments, tools, necessary testing & other inspection facilities to Consultant/Purchaser free of cost for carrying out inspection.

9.5 The cost of testing welds by ultrasonic, radiographic and dye penetration tests etc. in the fabrication workshop shall be borne by the successful tenderer. These tests need to be
witnessed by ASNT/ISNT Level-II qualified NDT personals

9.6 The successful tenderer shall ensure that the equipment/assembly/ component of the plant and equipment required to be inspected, are not dismantled or dispatched before inspection.

9.7 The successful tenderer shall not offer equipment for inspection in painted condition unless otherwise agreed in writing by Consultant/ Purchaser.

9.8 The successful tenderer shall ensure that the equipment and materials once rejected by the Consultant/Purchaser, are not re-used in the manufacture of the plant and equipment. Where parts rejected during inspection have been rectified as per agreed procedures laid down in advance, such parts shall be segregated for separate inspection and approval, before being used in the work.

10.0 STAMPING AND ISSUE OF INSPECTION DOCUMENTS

10.1 Inspection Memo: For rejected items/items, which do not conform to Technical Specification in one or more quality characteristics requiring rectification / rework, Inspection Memo shall be issued indicating therein the details of observation & remarks. All the non-conformities with respect to specification of the product shall be indicated in the Inspection Memo for further quality control by successful tenderer.

10.2 Inspection Certificate: On satisfactory completion of final inspection & testing, all accepted plant & equipment shall be stamped suitably and Inspection Certificate shall be issued by the Consultant for the accepted items.

11.0 GENERAL CLAUSE

11.1 Inspection & tests carried out by Consultant/Purchaser shall not absolve the responsibility of the successful tenderer/ Manufacturer to provide acceptable product as per the terms of contract nor shall it preclude subsequent rejection.

11.2 Purchaser/ Consultant reserve the right to inspect any product at any stage of manufacturing beyond pre-identified stages & hold points of approved QAP.
INSTRUCTIONS FOR FILLING UP:

1. QAP shall be submitted for each of the equipment separately with break-up of assembly/sub-assembly & part/component or for group of equipment having same specification.

2. Use numerical codes as indicated for extent of inspection & tests and submission of test certificates & documents. Additional codes & description for extent of inspection & tests may be added as applicable for the plant and equipment.

3. Separate identification number with quantity for equipment shall be indicated wherever equipment having same specification belonging to different facilities are grouped together.

4. Weight in tonnes (T) must be indicated under column 5 for each item. Estimated weights may be indicated wherever actual weights are not available.

CODES FOR EXTENT OF INSPECTION, TESTS, TEST CERTIFICATES & DOCUMENTS:

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<th>Description</th>
<th>Code</th>
<th>Description</th>
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<td>Friction Factor Test</td>
<td>36</td>
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<td>22</td>
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ABBREVIATIONS USED:

CONTR: CONTRACTOR
MFG: MANUFACTURER

EQUIPMENT DETAILS

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Test Certificates & documents to be submitted to MECON:

Acceptance Criteria Standards/BS/ASME/Norms and Documents

REMARKS/SAMPLING PLAN

For CONTRACTOR / SUB-CONTRACTOR

(Stamp & Signature)

For MECON (Stamp & Signature)

For MECON (Stamp & Signature)
| Sl. No. | Description (with equipment heading, place of use and brief specification) | Identification No. | Quantity | Manufacturer’s Name and Address | Expected Schedule of Final Inspection | Raw Material and Inprocess Stage Inspection | Final Inspection / Test by Documents | Test Certificates & Standards/IS/BS/ASME Norms and SAMPLING PLAN | Acceptance Criteria | REMARKS/
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*Q.A.P. NO. TO BE ALLOTTED BY MECON*

For CONTRACTOR / SUB - CONTRACTOR

for MECON (Stamp & Signature)

(Stamp & Signature)
### QUALITY ASSURANCE PLAN

**FOR**

**ELECTRICAL EQUIPMENT**

---

**INSTRUCTIONS FOR FILLING UP:**

1. QAP shall be submitted for each of the equipment separately with break-up of assembly/sub-assembly/part/component or for group of equipment having same specification.

2. Use numerical codes as indicated for extent of inspection & tests and submission of test certificates & documents. Additional codes & description for extent of inspection & tests may be added as applicable for the plant and equipment.

3. Separate identification number with quantity for equipment shall be indicated wherever equipment having same specification belonging to different facilities are grouped together.

4. Weight in tonnes (T) must be indicated under column 5 for each item. Estimated weights may be indicated where actual weights are not available.

---

### CODES FOR EXTENT OF INSPECTION, TESTS, TEST CERTIFICATES & DOCUMENTS:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
<th>Code</th>
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<td>12.</td>
<td>Routine test as per relevant IS/other standard.</td>
<td>26.</td>
<td>Flame proof Test</td>
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<td>Type tests as per relevant IS/other standard.</td>
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<td>Clearance and creepage distance.</td>
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<td>Acceptance Tests as per relevant IS</td>
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### ABBREVIATIONS USED:

**CONTR**: CONTRACTOR  
**MFG**: MANUFACTURER

---

### EQUIPMENT DETAILS

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<tr>
<th>Sl. No.</th>
<th>Description (with equipment heading, place of use and brief specification)</th>
<th>Identification</th>
<th>Quantity</th>
<th>Manufacturer’s Name and Address</th>
<th>Expected Schedule of Final Inspection</th>
<th>Raw Material and Inprocess Stage Inspection</th>
<th>Final Inspection / Test by MECON</th>
<th>Test Certificates &amp; documents to be submitted to MECON</th>
<th>Acceptance Criteria Standards/BS/ASTM/ASME/Norms and Documents</th>
<th>REMARKS/SAMPLING PLAN</th>
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</table>

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For CONTRACTOR / SUB-CONTRACTOR

(Stamp & Signature)

For MECON (Stamp & Signature)

(Stamp & Signature)

(Stamp & Signature)

(Stamp & Signature)

---

*Q. A. P. NO. TO BE ALLOTED BY MECON*

---

*REV.*
| Sl. No. | Description (with equipment heading, place of use and brief specification) | Identification No. | Quantity | Manufacturer’s Name and Address | Expected Schedule of Final Inspection | Raw Material and Inprocess Stage Inspection | Final Inspection / Test by Mecon | Test Certificates & documents to be submitted to Mecon | Acceptance Criteria Standards/IS/BS/ASME/Norms and Documents | REMARKS/
SAMPLING PLAN |
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</tbody>
</table>

For CONTRACTOR / SUB-CONTRACTOR for MECON (Stamp & Signature)
# QUALITY ASSURANCE PLAN

## FOR

REFRACTORY MATERIALS

### CODES FOR EXTENT OF INSPECTION, TESTS, TEST CERTIFICATES & DOCUMENTS:

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<tr>
<td>1</td>
<td>Visual</td>
<td>D1. Laboratory test report</td>
</tr>
<tr>
<td>2</td>
<td>Dimensions and geometry</td>
<td>D2. Dimensional drgs. showing plan, elevation, side view &amp; cross sectional view duly approved.</td>
</tr>
<tr>
<td>4</td>
<td>Apparent porosity</td>
<td>D4. Calibration Certificate of all measuring instruments and gauges.</td>
</tr>
<tr>
<td>5</td>
<td>True specific gravity</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bulk density/day density</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cold crushing strength</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Pyrometric cone equivalent</td>
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</tr>
<tr>
<td>9</td>
<td>Refractoriness under load</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Spalling resistance</td>
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</tr>
<tr>
<td>11</td>
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<td>12</td>
<td>Modulus of Rupture/ Flexural strength</td>
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<td>13</td>
<td>Reversible thermal expansion</td>
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<td>Resistance to dis-integration effect</td>
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### ABBREVIATIONS USED:

- CONTR : CONTRACTOR
- MFR : MANUFACTURER
- MECON : MANUFACTURER

### E Q U I P M E N T D E T A I L S

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<tr>
<th>Sl. No</th>
<th>Description (with equipment heading, place of use and brief specification)</th>
<th>Identification No. / M T</th>
<th>Quantity</th>
<th>Manufacturer’s Name and Address</th>
<th>Expected Schedule of Final Inspection</th>
<th>Raw Material and Inprocess stage Inspection</th>
<th>Final Inspection / Test by Documents</th>
<th>Test Certificates &amp; acceptance criteria to be submitted to MECON</th>
<th>Acceptance Criteria</th>
<th>REMARKS / SAMPLING PLAN</th>
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</tbody>
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<th>Test Certificate &amp; documents to be submitted to MECON</th>
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<th>REMARKS/</th>
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For CONTRACTOR / SUB-CONTRACTOR

For MECON (Stamp & Signature)

(Q.A.P. No. to be allotted by MECON)
<table>
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<th>Inspection Call No.</th>
<th>Purchaser</th>
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<tbody>
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<td>Contractor</td>
<td>Contractor's Order No. &amp; Date</td>
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<tr>
<td>Sub-Contractor</td>
<td>Place of Inspection with address, Fax &amp; Ph. No.</td>
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<tr>
<td>Proposed Date of Inspection</td>
<td>Name &amp; Designation of Contact Person with Ph. No.</td>
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<tr>
<td>Manufacturer's Off-day</td>
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**List of items offered for inspection:**

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<th>Item Identification No.</th>
<th>Item Description</th>
<th>Drawing No. with Revision</th>
<th>Drawing Approval Status A/AAN/INF</th>
<th>QAP No. &amp; Status</th>
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<th>Total Ordered</th>
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A = Approved, AAN = Approved as Noted, INF = Information Category

List of documents & Test Certificates enclosed in four (4) sets.

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<th>Description</th>
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for Contractor/Sub-Contractor
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</thead>
<tbody>
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<td>1.</td>
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<td></td>
</tr>
<tr>
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<td>D.G.M. Inspection Section</td>
<td>Karnataka, A.P. &amp; Kerala</td>
</tr>
<tr>
<td></td>
<td>MECON Ltd., 89, South End Road, Basavanagudi, Bangalore-560 004 (Karnataka)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gram : MECONIND Fax : 080-6576352 Phone : 080-6571661-68/6576476 E-mail : <a href="mailto:bangalore@mecon.co.in">bangalore@mecon.co.in</a></td>
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<tr>
<td>2.</td>
<td><strong>BHILAI</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dy. General Manager MECON Ltd., Ispat Bhawan, 1st floor, Bhilai-490 001 (M.P.)</td>
<td>Bhilai, Nagpur, Raipur, Bilaspur, Bhopal, Satna &amp; Katni</td>
</tr>
<tr>
<td></td>
<td>Gram : MECON Fax : 0788-224452 Phone : 0788-220107/224101/224454 E-mail : <a href="mailto:bhilai@mecon.co.in">bhilai@mecon.co.in</a></td>
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<tr>
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<tr>
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<tr>
<td></td>
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<tr>
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<td>Phone : 033-22822381 to 83,22822284,22822857</td>
<td></td>
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<td>E-mail :<a href="mailto:kolkata@mecon.co.in">kolkata@mecon.co.in</a></td>
<td><a href="mailto:mecc-cal@datatone.in">mecc-cal@datatone.in</a></td>
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<tr>
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<tr>
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<td>Fax : 022-27812275</td>
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<tr>
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<td>Phone : 022-27812155 to 58, 27812276</td>
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<tr>
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<td>E-mail : <a href="mailto:mecon@bom5.vsnl.net.in">mecon@bom5.vsnl.net.in</a></td>
<td><a href="mailto:mumbai@mecon.co.in">mumbai@mecon.co.in</a></td>
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<tr>
<td>7.</td>
<td><strong>NEW DELHI</strong></td>
<td>Delhi, Punjab, Rajasthan</td>
</tr>
<tr>
<td></td>
<td>DGM Delhi, Punjab, Rajasthan Inspection Section, MECON Ltd., Scope Minar, 14th &amp; 15th Floor, North Tower, Laxmi Nagar, Delhi-110 092</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fax: 011-22401203,22041214, Phone: 011-22041201/22041315, 22041238</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E-mail: <a href="mailto:delhi@mecon.co.in">delhi@mecon.co.in</a></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td><strong>RANCHI</strong></td>
<td>Ranchi, Dhanbad, Jamshedpur, Allahabad, Naini and all over India, if need arises for whatever reason.</td>
</tr>
<tr>
<td></td>
<td>Mr. P. Dutta, DGM (I/C) QA &amp; Inspection Section MECON Ltd., Ranchi-834 002 (Jharkhand)</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td>Fax: 0651-2480216/2480002/2262194, Phone: 0651-2481002/2481216 Extn: 7330, 2482183 (P &amp; T) Direct</td>
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<td></td>
<td>E-mail: <a href="mailto:insp@mecon.co.in">insp@mecon.co.in</a>, <a href="mailto:pdutta@mecon.co.in">pdutta@mecon.co.in</a></td>
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</tbody>
</table>
STEEL AUTHORITY OF INDIA LIMITED
BHILAI STEEL PLANT

GENERAL SPECIFICATION
FOR
MATERIAL HANDLING AND HOISTING
(GS – 06)

MECON LIMITED
RANCHI – 834002

No. MEC/S/1901/11/38/00/00/F1889/R2    JULY, 2007
01 CONVEYOR SYSTEM & RELATED EQUIPMENT

01.00 Scope

1. The scope of work of the Tenderer shall include design, engineering, manufacture, fabrication, assembly, testing and inspection, packing, dispatch, transportation, transit insurance, delivery FOR Purchaser’s site, unloading, handling and storage at site, insurance during storage, erection supervision, testing, inspection, commissioning, guarantee testing and handing over to the client including all electrics and standard accessories the following components for all the conveyors indicated in the enclosed drawings.

   i) Motors
   ii) Gear boxes
   iii) Couplings
   iv) Pulleys with bearing blocks – head, trail, snub bend and take-up
   v) Idlers – carrying, return, impact, self-aligning and transition
   vi) Idler frames
   vii) Belt cleaning devices
   viii) Hold back devices
   ix) Electro-magnetic brakes
   x) Pull-cord switches with cord
   xi) Belt sway switches
   xii) Zero-speed switches
   xiii) Take up pulley frame with take up guides
   xiv) Bend pulley frame
   xv) Head pulley frame
   xvi) Tail pulley frame
   xvii) Drive base frame
   xviii) Guards – tail pulley, bend pulley, coupling
   xix) Discharge hood up to 500 mm below the discharge pulley platform
   xx) Skirt Boards
   xxi) Belt Weigh Scale – wherever required

2. The scope of the Tenderer shall be deemed to include all such items which although are not specifically mentioned in the specification, but are needed to make the equipment complete in all respect for its safe, reliable, efficient and trouble free operation.

3. The scope of supply and services of the Tenderer shall include the following:
   a) Mechanical
      - Each equipment shall be complete in all respect including, its drive units, cables, safety switches, structural, mechanical and other standard accessories.
      - Provision of necessary fixtures, supporting angles and brackets required for mounting and supporting the equipment.
   b) Electrical
      - LT AC motors and brakes with rectifier panels as required for the equipment.
      - Switches as necessary for interlocking and control and safe operation of equipment.
      - Complete flexible cable festoon arrangement with protective chain, cable guide & rollers, junction boxes etc. required for shuttle conveyors / carriages including power & control flexible cables and their termination up to junction boxes. Junction boxes for power and control supply shall be separate and shall be supplied by the Tenderer.
Any other mounted electrics that may be required for satisfactory operation and maintenance of equipment supplied by Tenderer.

01.01 Design Basis & Hierarchy of Specifications

The equipment shall be designed as per design criteria given below:

Hierarchy of Specifications

a) Technical Specification
b) General Technical Specification (GTS)
c) Inter Plant Standard for Steel Industries (IPSS)
d) Indian Standard (IS).
e) Indian Electricity Rules & statutory requirements of Central Govt. and State Govt.

Equipment complying with other recognised Standards such as IEC, BS, VDE, and IEEE will also be considered if it ensures performance equivalent to or superior to Indian Standards.

The components and materials used and the equipment supplied shall conform to high standards of design, engineering and workmanship and shall be suitable for efficient operation and reliable service in steel plant conditions.

Design Basis

- Utilisation of cross sectional area - 80 % of theoretical cross sectional area indicated in IS 11592-2000 (for computation of belt speed)
- Design capacity of belt conveyors- 20% more than rated capacity to be considered while calculating motor power
- Troughing angle - 35o
- Friction factor (for kW calculation) of belt conveyors- 0.03
- Belting
  a) Top cover thickness - 6 mm (Min)
  b) Bottom cover thickness - 3 mm (Min)
  c) Running tension < 80% of allowable belt tension
  d) Starting tension > 150% of allowable belt tension
- Idlers - 152.4 mm Outer Diameter with 5.0 mm shell thickness
- Flat return Idlers – 152.4 mm Outer Diameter.
- Carrying idler spacing - 1000 mm. Spacing in the convex curve position of conveyor shall be limited to half the normal spacing of carrying idlers
- Return idler spacing - 3000 mm spacing
- Training Idler spacing
  a) Carrying side - 15 m
  b) Return side - 30 m
- Impact idler spacing - 500 mm or less - (min. 6 Nos.)
- Deck plate - 3.15 mm thick wherever specified
- Drive pulley – 12 mm thk. vulcanized natural rubber lagging, minimum durometer hardness of 55o shore A scale. Pulley Shell thickness 16 mm minimum
- Tail/ Bend/take-up pulley – 10 mm thk vulcanized natural rubber lagging, minimum durometer hardness of 45o shore A scale, and shell thickness 12 mm minimum.
- Pulley face width - As per IS 8531-1986, Reaffirmed in 1993.
- Pillow blocks
  a) Material - cast iron / cast steel
  b) Bearing - Self aligning spherical roller bearing
  c) Life - 40,000 working hrs min
  d) Construction - Horizontal split type (one end fixed and the other end expn. type)
- Reducer
  a) Service rating of 1.5 times the calculated shaft kW and thermal capacity of gear box shall be better or equal to that of motor
  b) Material - fabricated or cast steel
  c) kW rating shall be not less than 1.25 times the motor kW. Higher value of `a' or `c' will be considered
  d) No worm gear except for traveling gate
- Brakes
  D.C. electromagnetic brakes on conveyors wherever required
  - To prevent roll back
  - Where stopping time regulation is required.
- Roller type hold back device - To be provided on all inclined conveyors to prevent roll back.

  Rating minimum 1.5 times the maximum calculated torque.

- Take up
  Screw take up - up to 40 m (with protected thread)
  Automatic take up travels as per I.S.

- High speed coupling - gear coupling/ resilient coupling less than 30 kW
- Fluid coupling for 30 kW & more
  (Pin bush coupling - Not Applicable)
- Low speed coupling - gear or resilient.
External scraper
Multi sprung blade type.
Material scraped shall fall into main chute.
Blade material – metallic blade with tungsten carbide tips

Internal scraper
V shaped, mounted on carrier assemblies with elasto-mount and non-metallic polyurethane blade.

Belt sway switch - At both ends and at 100 m interval (Approx.)
Belt slip and snap switch - away from the drive (1 No.)
Pull cord switch - at 30 m interval on both sides for each conveyor, starting from the drive end.

01.02 Belt Conveyor system

1. General

All equipment shall be designed, manufactured, supplied, erected, tested and commissioned in accordance with relevant Indian Standards, IPSS and International Standard where applicable in addition to the requirement mentioned herein.

The Supplier shall make his own calculation in respect of belt speed, motor kilowatt, belt tension etc. of belt conveyors to ensure satisfactory performance of the conveyor components and system as a whole. The drive motor selected shall not be of lesser kW than what is indicated and the belting chosen shall not be of inferior quality than what is specified. The starting torque of drive motor and the high speed coupling shall be so chosen as to allow soft start condition.

Adequate no. of locating pins and match marking shall be provided for easy assembly and dismantling.

Standardisation of components and assemblies shall be carried out to the maximum possible extent to ensure interchangeability.
All equipment shall be designed such that all components are easily accessible for inspection, repair and maintenance.

2. Conveyor Belting

Belting shall be designed for heavy duty condition and shall be suitable for 24 effective working hours operations per day and 365 working days per year. It shall be suitable for installation over conveyor system having 35° troughing angle and shall be suitable for operation at an ambient temperature of 50°C. It shall have sufficient resistant against exposure to open sunlight so that its qualities do not deteriorate while working in open sun. It also may have to work in rain and / or in conditions where relative humidity goes upto 100%. The fabric for belting shall be of Nylon/Nylon heavy duty type. The belting shall be pre-stretched, straight ply, skin coated with open ends. It shall have sufficient strength to give required tension at 10 safety factor and 80% tension utilisation. All belts shall be joined by vulcanized splicing.
The belt shall have sufficient lateral flexibility so that it suits the troughing angle requirements even when it is empty. The belt shall have sufficient longitudinal flexibility so that it can easily flex around different pulleys of the conveyor system. The belt shall have sufficient impact resistance to withstand impact at the loading points. The rubber cover used in the top and bottom cover of the belting generally shall be of M-24 grade. For material above 50 deg C cover shall be of HR grade and material above 100 degC & red hot FR grade belt shall be provided. The edge shall be of cut edge construction.

On the carrying surface, at interval of maximum 12 meters, the belting shall be marked as follows:

a) Manufacturer’s name and trade mark, if any.
b) Fabric designation as NN
c) Belt designation i.e. KN/m
d) Code of rubber cover i.e. M-24.
e) Last two digits of year of manufacturing.

Belt roll shall be packed in wooden drums. This packing should enable easy unreeling of the belting. On the body of the wooden drum the direction of belt and location of end of the belting should be indicated so that belting can be properly placed while unreeling.

The design, construction, testing and performance of the belting shall comply with all applicable codes and as per IS, IPSS and International Standards.

Before dispatch, the finished material shall be subject to inspection by the Purchaser/MECON. The inspection shall be carried out in the presence of Purchaser/MECON, in terms of up to date engineering practice and relevant IPSS, IS and International Standards in this respect, for which all facilities shall be provided by the Contractor at his cost. This shall interalia, include the following:

a) Full thickness belt test
   i) Breaking load, Kg/sq. cm for wrap and weft.
   ii) Elongation under reference load (%).
   iii) Elongation at break (%).

b) Rubber cover test (Top/Bottom)
   i) Tensile strength of cover , Kg/sq. cm
   ii) Elongation at break (%)
   iii) Adhesion between ply to ply and between covers and ply.
   iv) Abrasion loss of rubber cover

c) Physical dimension check

d) Flexibility Test

All relevant type test certificates shall have to be produced during inspection and along with supply for necessary verification and approval.

3. **Conveyor Pulleys**
All pulleys shall be of welded steel construction, stress relieved before boring and machining and statically balanced. Solid end discs shall be designed and provided to give maximum strength. Pulleys shall be designed as per relevant Indian Standard and IPSS where applicable. Pulleys shall be connected to the shaft preferably through keyless friction grip connections for HT motors and key connection for LT motors unless otherwise agreed.

Shell thickness of the pulley shall be suitable for taking bending loads on the pulley. This shall not be less than 16mm for drive pulley and 12 mm for tail and other pulleys.

Drive pulleys shall be covered with minimum 12mm thick diamond rubber lagging. Tail, bend and take-up pulleys shall be covered with minimum 10 mm thick diamond rubber lagging. The depth and width of the grooves in the lagging shall be 6 mm spaced at 30mm interval. The eccentricity of pulley shell shall not be more then ± 0.5% of the diameter prior to lagging. Drive pulleys shall be machined at steel faces prior to lagging. Shore hardness of rubber for drive pulleys shall be not less than 55 deg A and for other pulleys shall be not less than 45 deg A. All pulleys shall be statically balanced to minimize the vibration during running.

Rollered steel may be used for pulley shafts of diameter up to 140 mm. Forged steel shall be used for shafts above 140 mm diameter. The deflection slope of pulley shaft at bearings shall be restricted to 1/2000 under rated load condition. Combined stress value shall be restricted to 500kg/sq.cm. Shaft diameter shall be selected based on the maximum value. The shaft diameter shall be as per IPSS.

Pulley shafts shall be supported on self-aligning double row spherical roller bearings with adequate sealing and external lubrication arrangement in plunger blocks. One bearing for each shaft shall be fixed to prevent any movement of the shaft assembly and the other bearing shall be floating to have free axial movement. All lubricating nipples shall be readily accessible without removing the guards. All plunger blocks shall also have four mounting bolts.

Welding on the pulley shell shall be tested radio graphically or by ultrasonic method. Pulley shafts shall be ultrasonically tested. Checking of out of roundness and static balancing tests shall be carried out before dispatch of the pulleys.

4. **Idlers**

Three roll inline troughing idlers of equal length shall be used throughout. The angle of inclination of side rollers to horizontal shall be 35o. Troughing as well as return idlers shall be of reputed make and manufactured out of heavy duty seamless tube/ ERW tubes as per IS:9296-1983. Spindle - Class 4, IS :1875-1992. Frame - Rolled section. Troughing Idlers - in line equal rolls. Idlers shall be of “drop-in-slot” type. Minimum diameter of idlers shall be as follows:

Carrying Idlers – 114.3 mm Outer Diameter for 500 mm and 650 mm belt and 139.7 mm for higher width belt with 4.5 mm shell thickness. Transition idler at 10o and 20 o troughing at both head and tail end.

The eccentricity (diametrical run out) of troughing and return idlers shall not exceed ± 0.8 mm. Minimum shell thickness of idler tube shall be 5.0 mm. All idlers shall be fitted with either heavy duty deep groove ball bearings or seize resistant ball bearings. The bearings shall be held positively on the shafts. Multi-labyrinth seals shall be used for retention of grease. All bearings shall be greased and sealed for life against ingress of dust, water and escape of grease. All bearings shall be rated for minimum 40,000 working hours. Bearing - Taper roller bearing/ deep groove. Bearing housing of idler shall be made of pressed steel of CRCA sheet press fitted and preferably will be welded with idler tube.
Self-aligning troughing and return idlers with vertical guide rollers shall be of above specified construction. All self-aligning idlers shall be provided with grease lubricated anti-friction bearings at pivot points. All grease fittings shall be of the button head type or equivalent and shall be accessible from the walkway side of the conveyor by piping. The grease tubing shall be made of aluminium. The grease fittings shall have adequate protection against dust collection.

Impact cushioned idlers shall be of above specified construction. The rings or disc for impact idler shall be made of rubber. The minimum number of impact idlers at each loading point shall be six. The first impact idler shall be placed approx. 150 mm behind the loading point. Conveyor with multiple loading points shall also be provided with impact idlers at each loading points.

Transition idlers of above specified construction shall be used adjacent to head and tail drums to permit proper support of loaded belt near the head and tail pulleys without excessive stress and stretch of the belt edges. The transition idlers shall be installed in steps of 10°, 20° toughing angles. Horizontal carrying idlers for supporting flat loaded belts shall also be of above specified construction. Return idlers for wet or sticky material shall be of rubber disc type of two roller trough design. Flat return idlers only shall be used under the "V" scrapers and in high tension areas. One number disc type self cleaning idler shall be provided near discharge pulley.

Training idlers shall not be used close to belt-weighing scales.

Idler shaft shall be made of class -4, IS-1875 or EN-8, BS-970 or bright bar of equivalent grade suitable for the duty requirement. Idler frame shall be made of rolled/ formed steel with provision for securely bolting to the stringers of the conveyor frame. All fixing bolts shall have spring washers.

Clearance, gap etc. for the carrying and return idlers shall conform to the relevant IS/IPSS Standard to extent possible. The fixing arrangement of carrying and return idlers shall be such as to permit adjustment of idler sets for the purpose of belt training. Allowance for such adjustment shall be provided on both sides of the conveyor and the play shall not be less than 10 mm on either side.

All idler rollers shall be painted with 2 coats of red oxide primer and 2 coats of enamel finish paint.

Following tests shall be carried at random on the assembled idler roller in the presence of Purchaser / MECON:

a) Friction factor test
b) Idler running test at high speed.
c) Test for dust proof
d) Test for water proof
e) Quality test.
f) Alignment and co-axiality test.

5. **Belt Cleaners**

a) External belt cleaners

External belt cleaners shall be provided at the discharge pulley of the conveyors. The cleaner shall have sprung metallic blades (in segments) with tungsten carbide tips.
PAINTING

(CHAPTER-09)
GENERAL SPECIFICATION
FOR
PAINTING
(GS – 09)

MECON LIMITED
RANCHI - 834002

JULY, 2007
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01  GENERAL

01.01 This specification covers the materials, tools, facilities and quality requirement for surface preparation and painting of steel structures, equipment, piping, ducts, chutes, wood work etc.

01.02 This is only a general guideline of the painting scheme to be followed by the Tenderer. However, in case a specific painting procedure is stipulated in any tendering specification, then this general guideline shall be superceded. Any special case which may arise from time to time shall be dealt with individually on the merit of each case.

01.03 The term “painting” referred herein covers rust preventive, fungus/insects preventive and decorative coating along with surface protection of the following area but not limited to the areas indicated below.

i) Structural steel works
ii) Mechanical equipment
iii) Electrical equipment
iv) Instrumentation and control equipment.

v) Pipe work
vi) Oxygen plant, etc.

01.04 Surfaces made of asbestos, aluminum, brass, bronze, galvanized steel, stainless steel, cast iron and other corrosion resistant alloys and rubber/synthetic polymer/fiber reinforcement plastic and buried pipe work are not required to be painted unless specified except for aesthetic purposes or for identification bands, wherever relevant.

01.05 The complete paint system for any item includes the following basic activities:

i) Proper surface preparation
ii) Application of primer coats
iii) Application of intermediate coats
iv) Application of finished coats

All the above coats shall be of quality paint products and of approved make. The scope of work shall also include supply of all paint materials as per specification described herein.

01.06 If the contractor desires to adopt alternative paint system for any specific item for an improvement or equivalent to the system specified here-in or as per recommendations of paint manufacturer, may do so subject to purchaser’s approval in advance.

02  SURFACE PREPARATION

02.01 Surface preparation required for paint application, shall be such as to clean the surface thoroughly of any material which will be conducive to premature failure of the paint substrates.
02.02 All surfaces shall be cleaned of loose substances, and foreign materials, such as dirt, rust, scale, oil, grease, welding flux, etc. in order that the prime coat is rigidly anchored to the virgin metal surface. The surface preparation shall confirm to pictorial representation of surface quality grade of Swedish Standards Institution SIS – 055900 or equivalent standards such as SSPC – VIS – 1.67 or DIN 55928(Part 4) or BS 4232 or IS 1477 – 1971 (Part I).

02.03 The acceptable surface preparation quality / grade are described under each paint system. The procedures include solvent cleaning, hand tool cleaning, power tool cleaning, blast cleaning, wood surface cleaning, flame cleaning and pickling. This will ensure surface quality as required by the specific primer paint. For ready reference surface preparation quality grade to be adopted in respect of SIS 055900 and DIN 55928 (part-4) is given in Annexure-01.

02.03.01 Solvent Cleaning

The surface shall be cleaned by wiping, immersion, spraying or vapour contacting of a suitable solvent or washing with an emulsion or alkaline solution to remove oil, grease, dirt, old paint, etc. Solvent cleaning shall not remove rust, scales, mill scales or weld flux. Therefore, before application of paint, solvent cleaning shall be followed by other cleaning procedures as stated in subsequent clauses.

02.03.02 Hand Tool Cleaning

The surface shall be cleaned manually by vigorous wire brushing as per grade St-2 quality of Swedish Standard Institution SIS 055900 and DIN 555928. This method effectively removes loosely adherent materials, but would not affect residues of rust or mill scales that are intact and firmly adherent. Finally the surface is to be cleaned with a vacuum cleaner or with clean compressed air or with clean brush. After preparation the surface shall have a faint metallic shine. The appearance shall correspond to the prints designated St – 2.

02.03.03 Power Tool Cleaning

The surface shall be cleaned by electric or pneumatic tools, such as brushes, sanding machines, disc abrasive grinder, rotary disc scaler etc. to St – 3 quality. The tools shall be used carefully to prevent excessive roughening of surface and formation of ridges and burrs. This method will remove loosely adherent materials but would not affect residues of rust or mill scales that are firmly adherent and intact.

02.03.04 Blast Cleaning

The surface shall be cleaned by impingement of abrasive materials, such as graded sand at high velocity created by clean and dry compressed air blast as per the grade according to Swedish Standard Institution SIS 055900. This method will remove loosely adherent materials as well as adherent scales and mill scales. Prior to application of blast, heavy deposit of oil and grease are removed by solvent cleaning excessive
surface scales are removed by hand tools or power tool cleaning. The extent of removal of adherent scales is varied, depending on the application and are defined by the surface quality grades Sa1, Sa2, Sa2.5 and Sa3 in the order of increasing cleanliness. The blast cleaning is not recommended for sheet metal work.

02.03.05 **Flame Cleaning**

The surface is cleaned by rapid heating by means of oxyacetylene flame to loosen the adherent scales, followed immediately by wire brushing. This method will remove loosely adherent materials as well as most of the adherent scales and mill scales. In order to minimize or prevent distortion flame cutting shall not be used on members having thickness of 6 mm and lower.

02.03.06 **Pickling**

In this method the surface is cleaned of mill scales, rust or rust scales by chemical reaction or electrolysis or both.

03. **PAINT APPLICATION**

03.01 **Paints**

03.01.01 Paint shall be applied in accordance with paint manufacturer’s recommendations. The work shall generally follow IS 1477 – 1971 (Part II) for jobs carried out in India and SSPC-PA-1 or DIN 55928 or equivalent for jobs carried out outside India.

03.01.02 General compatibility between primer and finishing paints shall be established by the paint manufacturer supplying the paints.

03.01.03 In the event of conflict between this general procedure on painting and the paint manufacturer’s specification, the same shall be immediately brought to the notice of the Purchaser. Generally in cases of such conflicts, manufacturer’s specifications/recommendations shall prevail.

03.01.04 Before buying the paint in bulk, it is recommended to obtain sample of paint and establish “Control Area of Painting”. On Control Area, surface preparation and painting shall be carried out.

03.01.05 If required, samples of paint shall be tested in laboratories to establish quality of paint with respect to:

(i) Viscosity
(ii) Adhesion/Bond of paint in steel surfaces
(iii) Adhesion/Simulated salt spray test.
(iv) Chemical analysis (percentage of solids by weight)
(v) Normal wear resistance as encountered during handling & erection.
(vi) Resistance against exposure to acid fumes, etc.

03.01.06 Whole quantity of paint for a particular system of paint shall be obtained from the same manufacturer.
03.01.07 The main Contractor shall be responsible for supply of paints and this responsibility shall not be passed on to the sub-contractor.

03.01.08 The painting material as delivered to the Contractor, must be in the manufacturer’s original container bearing thereon manufacturer’s name brand and description. Paint/Painting material in containers without labels or with illegible labels shall be rejected, removed from the area and shall not be used.

03.01.09 Thinners wherever used shall be those recommended by the paint manufacturers and shall be obtained in containers with manufacturer’s name and brand name of thinner legibly printed, failing which the thinner is liable to be rejected and shall not be used.

03.01.10 All paint containers shall be clearly labeled to show the paint identification, date of manufacture, batch number, special instruction, shelf life etc. The container shall be opened only at the time of use.

03.01.11 All paints shall be stored in accordance with the requirements of laid down procedure by the paint manufacturer.

03.01.12 All ingredients in a paint container shall be thoroughly mixed to break-up lumps and disperse pigments before use and during application to maintain homogeneity.

03.01.13 The proposed make, quality and shade of the paint shall have the approval of the client.

03.01.14 The colour code of the finishing paint to be followed shall be intimated to the successful Tenderer after finalisation of order. The undercoat shall have different tint to distinguish the same from the finishing coat.

03.01.15 The Contractor shall furnish paint manufacturer’s test report or technical data sheet pertaining to the paint selected. The data sheet shall indicate among other things the relevant standards, if any, composition in weight percent of pigments, vehicles, additives, drying time, viscosity, spreading rate, flash point, method of application, quality of surface preparation required, corrosion resistance properties and colour shades available.

03.01.16 For details of paint materials refer Annexure - 02

03.02 General

03.02.01 Each coat of paint shall be continuous, free of pores and of even film thickness without thin spots.

03.02.02 Each coat of paint shall be sufficiently dry before application of next coat.

03.02.03 Paint shall be applied at manufacturer’s recommended rates. The number of coats shall be such that the minimum dry film thickness specified is achieved. The dry film thickness of painted surfaces shall be checked with ELCOMETER of measuring gauges to ensure application of specified DFT.
03.02.04 Zinc rich primer paints which have been exposed several months before finishing coat is applied shall be washed down thoroughly to remove soluble zinc salt deposits.

03.02.05 The machine finished surfaces shall be coated with white lead and tallow before shipment or before being put out into the open air.

03.02.06 Areas which become inaccessible after assemble shall be painted before assembly (after obtaining painting clearance from the inspecting authority) after requisite surface cleaning as specified.

03.02.07 Paint shall not be applied when the ambient temperature is 5 deg C and below or 45 deg C and above. Also paint shall not be applied in rain, wind, fog or at relative humidity of 80 % and above unless the manufacturer's recommendations permit. Applications of paint shall be only be spraying or brushing as per IS 486 – 1983 and IS 487 – 1985.

03.02.08 Primer paint shall be applied not later than 2 – 3 hours after preparation of surface, unless specified otherwise.

03.02.09 Edges, corners, crevices, depressions, joints and welds shall receive special attention to ensure that they receive painting coats of the required thickness.

03.02.10 Surfaces which cannot be painted but require protection shall be given a coat of rust inhibitive grease according to IS 958 – 1975 or solvent deposited compound according to IS 1153 – 1975 or IS 1674 – 1960.

03.02.11 Surfaces in contact during shop assembly shall not be painted. Surfaces which will be inaccessible after assembly shall receive minimum two coats of specified primer.

03.02.12 Surfaces to be in contact with wood, brick or other masonry shall be given one shop-coat of the specified primer.

03.03 Site/Field Painting

03.03.01 Wherever shop primer painting is scratched, abraded or damaged, the surface shall be thoroughly cleaned using emery paper and power driven wire brush wherever warranted, and touched up with corresponding primer. Touching up paint shall be matched and blended to eliminate conspicuous marks.

03.03.02 If more than 50% of the painted surface of an item requires repair, the entire item shall be mechanically cleaned and new primer coats shall be applied followed by intermediate and finishing coats as per painting specification.

03.03.03 All field welded areas on shop painted items shall be mechanically cleaned (including the weld area proper, adjacent areas contaminated by weld spatter or fumes and areas where existing primer paint is burnt).
Subsequently, new primer and finishing coats of paint shall be applied as per painting specification.

03.03.04 The first coat of finish paint at site shall be applied preferable within three months of the shop paint.

03.04 Structural

03.04.01 All fabricated steel structure, fabricated steel pipes, etc. shall have a minimum of two coats of primer paint before dispatch to site.

03.04.02 Parts of steel structures embedded in concrete shall be given a protective coat of Portland cement slurry immediately after fabrication and after surfaces of this part is thoroughly cleaned from grease, rust, mill scales, etc. No paint shall be applied on this part.

03.04.03 All structures shall receive appropriate number of primer and finishing coats in order to achieve overall DFT as per design drawings/specification.

03.05 Hot Surfaces

03.05.01 Total DFT for heat resistant paints should not exceed 100 – 120 microns, otherwise flaking occurs (as per paint manufacturer’s recommendations).

03.05.02 Heat resistant paints should be applied by brush.

03.05.03 Primer coat should not be applied on the surfaces having temperature condition more that 120 deg C.

04 PAINTING SCHEMES

For a complete painting scheme of any item being printed, all types of paints are to be procured from the same manufacturer as approved by the purchaser.

04.01 Legend

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Type of paint products like P1 to P9, I1 to I4 and F1 to F10 have been specified under Annexure-02.

04.02 The painting scheme to be followed for various structure/equipment exposed to different condition is briefly given in Annexure-03 for guidance to the tenderer.
04.03 The colour code for different applications are indicated in Annexure-04. Wherever colour codes are not specified, the same is to be mutually agreed between the Purchaser and Contractor.

05. GUARANTEE

05.01 The Contractor shall guarantee that the physical and chemical properties of the paint materials conform with the specification of paint products.

05.02 The Contractor shall submit internal test reports from paint manufacturers regarding the quality of paint whenever asked by the Purchaser/Consultant.

05.03 Guarantee period shall commence from the date of completion of finishing coat of paint. The guarantee period will be indicated depending on the type of surface preparation and system of painting. To fulfill this obligations the Contractor may obtain from the painting manufacturer, guarantee for the performance of paint/painted surfaces.
# Annexure-01

## Surface Preparation Grade

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Surface Preparation</th>
<th>Swedish Std SIS 055900</th>
<th>DIN Std. Din 55928 (Part 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blast cleaning to white metal</td>
<td>Sa 3</td>
<td>Sa 3</td>
</tr>
<tr>
<td></td>
<td>Removal of all visible rusts, mill-scales, paint and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>foreign matters.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Blast cleaning to near white metal:</td>
<td>Sa 2.5</td>
<td>Sa 2.5</td>
</tr>
<tr>
<td></td>
<td>95% of any section of surface area is free from all</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rusts, mill-scales and visible residues.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Blast cleaning to commercial quality:</td>
<td>Sa 2</td>
<td>Sa 2</td>
</tr>
<tr>
<td></td>
<td>At least 2/3 of any section of the surface area is free</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>from all rusts, mill-scales and visible residues.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Brush-off blast cleaning:</td>
<td>Sa 1</td>
<td>Sa 1</td>
</tr>
<tr>
<td></td>
<td>Removal of all loose mill-scales, rust and foreign</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>matters etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Power tool cleaning:</td>
<td>St 3</td>
<td>St 3</td>
</tr>
<tr>
<td></td>
<td>Very thorough scrapping and wire brushing to remove</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>loose mill-scale, rust and foreign matters to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>have pronounced metallic shine.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Hand tool cleaning:</td>
<td>St 2</td>
<td>St 2</td>
</tr>
<tr>
<td></td>
<td>Removal by hand brushing of loose mill-scale, loose</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rust and foreign matters.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PAINT MATERIALS

01. PRIMER PAINTS (P)

Primer paint products shall be applied only on dry and clean surfaces.

01.01 Primer Paint – P1 (Phenolic – Alkyd Based)
A single pack air drying phenolic modified alkyd composition with zinc phosphate as a primer paint conforming generally to IS : 2074.

Air drying time - About 60 minutes (touch dry)
- Overnight (hard dry)

Dry film thickness (DFT)/Coat - 40 microns (min)

Temperature resistance - Upto 100°C dry heat

01.02 Primer Paint – P2 (Chlororubber Based)
A single pack air drying high build chlorinated rubber based zinc phosphate primer.

Percent chlororubber - 20 to 22 (% Chlorine above 65% in chlororubber)

Air drying time - About 15 minutes (touch dry)
- Overnight (hard dry)

DFT/Coat - 50 microns (min)

Temperature resistance - Up to 65°C dry heat

01.03 Primer Paint – P3 (PVC Copolymer Alkyd Based)
Polyvinyl chloride (PVC) - Alkyd zinc phosphate – redoxide based primer

Ratio : PVC copolymer + alkyd resin (1:1)

Pigments : Zinc phosphate & Fillers

Air drying time - 24 hours

DFT/Coat - 80 microns

Temperature resistance - Upto 80°C dry heat
01.04 **Primer Paint – P4 (Epoxy Based)**

A two pack air drying Epoxy polyamide resin based red oxide-zinc phosphate primer.

- Epoxy content (% wt.) - 15 to 18
- Air drying time - About 30 minutes (touch dry)
  - overnight (hard dry)
- DFT/Coat - 30 microns (min)
- Temperature resistance - Upto 120°C dry heat

01.05 **Primer Paint – P5 (Epoxy Based)**

A two pack air drying Epoxy polyamide with zinc dust of at least 92% zinc dust on the dry film

- Epoxy content (% wt.) - 8 to 10
- Air drying time - Less than 10 minutes (touch dry)
  - Less than 2 hours (hard dry)
- DFT/Coat - 40 microns (min)
- Temperature resistance - Upto 300°C dry heat

01.06 **Primer Paint – P6 (Poly – Vinyl Butyral Resin Based)**

A two pack air drying polyvinyl butyral resin based wash primer with rust inhibitive pigments.

- Air drying time - 5 to 7 minutes (touch dry)
  - 2 hours (hard dry)
- DFT/Coat - 8 microns
- Temperature resistance - Upto 65°C dry heat
- Application for - Galvanised iron, aluminium, light alloys etc. on which the adhesion of conventional paints are poor.

01.07 **Primer Paint – P7 (Ethyl Zinc Silicate, EZS Based)**

A two pack heavy duty zinc dust rich silicate primer which protects the surface with just a single coat.

- Total solids (3 wt) - 84 +/- 2
- Density (g/cc) - 3.07 +/- 0.05
Air drying time - To top coat 16 hours
DFT / coat - 60 microns
Temperature resistance - Upto 450 deg C dry heat

01.08 Primer Paint – P8 (High Build Coal Tar Epoxy)
A two pack cold cured H.B. epoxy coal tar coating – no primer is required.

Mixing ratio - Base: Hardener (4:1 by vol.)
Air drying time - 48 hours (hard dry) Full cure 7 days
DFT / Coat - 100 microns

01.09 Wood Varnish-P9
Treated oil based primer pigmented with suitable pigments:

Air drying time - 16 hours for application of top coat.
Coverage - 10 to 14 sq. m/litre

02. INTERMEDIATE PAINTS (I)
These paints shall be applied over primer coats as an intermediate layer to provide weather proof seal of primer coats.

02.01 Intermediate Paint-II (Phenolic alkyd based)
A single pack high build phenolic based paint with micaceous iron oxide (M10).

Air Drying Time - 4 to 6 hours (touch dry) - 2 days (hard dry)
DFT / Coat - 75 microns (min)
Temperature resistance - Upto 100 deg C dry heat
Compatible with - Primer P1

02.02 Intermediate Paint-I2 (Chlororubber based)
A single pack air drying high build chloro based paint with MIO.

Air Drying Time - 15 minutes (touch dry) - 24 hours (hard dry)
DFT / Coat - 70 microns (min)
Temperature resistance - Upto 65 deg C dry heat
Compatible with - Primer P2, P3 & P4

02.03 Intermediate Paint-I3 (PVC – Alkyd Based)
PVC Coploymer - Resin 1 : 1
Pigments - Micaceous iron oxide (MIO)
DFT / Coat - 80 microns (min)
Temperature resistance - Upto 80 deg C dry heat
Compatible with - Primer P2 & P3

02.04 **Intermediate paint-I4**

A two pack air drying high build epoxy resin based paint with MIO.
Air drying time - 6 to 8 hours (touch dry)
- 7 days (full cure)
DFT / coat - 100 microns
Temperature resistance - Up to 180°C dry heat
Compatible with - Primer P4 & P5

03. **FINISH PAINTS (F)**

Finish paint costs shall be applied over primer coats and intermediate coats after proper cleaning and touch up of primed surface.

03.01 **Finish Paint – F1**

A single pack air drying high gloss phenolic alkyd modified synthetic enamel paint suitably pigmented.
Air drying time - 3 to 4 hours (touch dry)
- 24 hours (hard dry)
DFT/Coat - 25 microns (min)
Temperature resistance - Upto 100°C dry heat
Compatible with - Primer P1
- Intermediate I1
Colour - Generally all shades

03.02 **Finish Paint – F2**

A single pack air drying polyurethane enamel of high gloss and hard finish suitably pigmented.
Air drying time - 2 to 2 ½ hours (touch dry)
- 6 hours (hard dry)
DFT/Coat - 30 microns (min)
Temperature resistance - Upto 100°C dry heat
Compatible with - Primer P1 & P8 and
- Intermediate I1
Colour - Generally all shades
03.03 **Finish Paint – F3**

A two pack air drying bituminous aluminum paint.

- **Air drying time**
  - 1 to 2 hours (touch dry)
  - 21 hours (hard dry)

- **DFT/Coat**
  - 25 microns (min)

- **Temperature resistance**
  - Upto 100°C dry heat

- **Compatible with**
  - Primer P1 and Intermediate I1

- **Colour**
  - Bright metallic

03.04 **Finish Paint – F4**

A ready mixed oil-alkyd based synthetic enamel paint of high gloss and hard wearing properties.

- **Air drying time**
  - 6 to 8 hours

- **Coverage**
  - 14 to 16 Sq. m /litre

- **Temperature resistance**
  - Upto 60°C dry heat

- **Compatible with**
  - P8

- **Colour**
  - Generally all shades

03.05 **Finish Paint – F5**

A single pack air drying plasticized chlororubber paint suitably pigmented.

- **Air drying time**
  - 30 minutes (touch dry)
  - 24 hours (hard dry)

- **DFT/Coat**
  - 35 microns (min)

- **Temperature resistance**
  - Upto 65°C dry heat

- **Compatible with**
  - Primer P2 & P3,
    Intermediate I2 & I3

- **Colour**
  - Nearly all shades except few.
03.06 **Finish Paint – F6**

A PVC – Copolymer alkyd based enamel.

- Density: 1.17 ± 0.05
- Total solids (1 wt): 55 ± 2
- DFT/Coat: 40 microns
- Compatible with: P2 and P3

03.07 **Finish Paint – F7**

A two pack air drying epoxy polyamide enamel suitably pigmented.

- Air drying time: 2 to 3 hours (touch dry), 7 days (full cure)
- DFT/Coat: 40 microns (min)
- Temperature resistance: Up to 130°C dry heat
- Compatible with: Primer P4 & P5, Intermediate I4
- Colour: Generally all shades.

03.08 **Finish Paint – F8**

A single pack synthetic rubber based aluminium paint.

- Air drying time: 2 hours (touch dry), 24 hours (hard dry)
- DFT/Coat: 25 microns (min)
- Temperature resistance: Upto 200°C dry heat
- Compatible with: No Primer paint except primer P6 is applicable in case of non-ferrous substrate.
- Colour: Smooth aluminium.
## Painting Scheme

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Painting Scheme</th>
<th>Total DFT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>At Shop At Site</td>
<td></td>
</tr>
<tr>
<td>1.0</td>
<td><strong>Steel Structures</strong> <em>(Temp. not exceeding 80°C)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Technological steel structures for plant and equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indoor</td>
<td>SP – Sa 2.5</td>
<td>CRT 2F1</td>
</tr>
<tr>
<td></td>
<td>Outdoor</td>
<td>SP – Sa 2.5</td>
<td>CRT 2F1</td>
</tr>
<tr>
<td>1.2</td>
<td>Fabricated steel structures at site for rung ladders, cat-ladders, gates,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rolling shutters, etc. <em>(Springs/rubbing surfaces excluded)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Indoor / Outdoor</td>
<td>SP – St-2 and/or St-3</td>
<td>CRT 2F1</td>
</tr>
<tr>
<td>1.3</td>
<td>Walkways, stairs, platforms etc. which are of wearing surface</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Indoor</td>
<td>SP – St-2 and/or St-3</td>
<td>CRT 2F1</td>
</tr>
<tr>
<td></td>
<td>- Outdoor</td>
<td>SP- St2 and/or St-3</td>
<td>CRT 2F1</td>
</tr>
<tr>
<td>1.4</td>
<td>Steel doors and windows</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Indoor / outdoor</td>
<td>SP–St-2 and / or St-3</td>
<td>CRT 2F2</td>
</tr>
</tbody>
</table>

### Sl. No. Description Painting Scheme Total DFT

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Painting Scheme</th>
<th>Total DFT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>MECHANICAL EQUIPMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td>Mechanical equipment <em>(Temp. not exceeding 80°C)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Static equipment like storage tanks, vessels,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bins, bunkers, heat exchangers, coolers,</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### General Technical Specification

#### Painting Scheme

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Painting Scheme</th>
<th>Total DFT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cyclones, scrubbers, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Indoor</td>
<td>SP – Sa 2.5 2P2/2P3</td>
<td>CRT 2F5/2F6</td>
</tr>
<tr>
<td></td>
<td>- Outdoor</td>
<td>SP – Sa 2.5 2P2/2P3+1I2/1I3</td>
<td>CRT 2F5/2F6</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Rotary/moving equipment and machineries like crushers, mills, vibratory screens, bin activators, blowers, fans, air/gas compressors, pumps, gear boxes, machine housings etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Indoor</td>
<td>SP – Sa 2.5 2P3/2P4</td>
<td>CRT 2F6/2F7</td>
</tr>
<tr>
<td></td>
<td>- Outdoor</td>
<td>SP-Sa 2.5 2P3 + 1I3/1I4</td>
<td>CRT 2F6/2F7</td>
</tr>
</tbody>
</table>

#### Sl. No. Description Painting Scheme Total DFT

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Painting Scheme</th>
<th>Total DFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td>Pipe / Duct work (Overground)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Non – insulated (temperature up to 80°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Indoor</td>
<td>SP – St2 and or St3 2P1</td>
<td>CRT 2F1</td>
<td>130</td>
</tr>
<tr>
<td>- Outdoor</td>
<td>SP – St2 and / or St3 2P1 + 1I1</td>
<td>CRT 2F1</td>
<td>205</td>
</tr>
<tr>
<td>3.2</td>
<td>Insulated (hot)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Indoor/Outdoor</td>
<td>SP- St2 and/ or St3 1P1</td>
<td>Remove paint and insulate</td>
<td></td>
</tr>
</tbody>
</table>

#### Sl. No. Description Painting Scheme Total DFT

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Painting Scheme</th>
<th>Total DFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>Oxygen Plant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Outdoor steel structures</td>
<td>SP – St2 and / or St3</td>
<td>CRT</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Description</td>
<td>Painting Scheme</td>
<td>Total DFT</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>-----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>At Shop</td>
<td>At Site</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2P1 + 1I1</td>
<td>2F3</td>
</tr>
<tr>
<td>4.2</td>
<td>Rotary equipment like air compressors</td>
<td>Sa 2.5</td>
<td>CRT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2P4</td>
<td>2F7</td>
</tr>
<tr>
<td>5.0</td>
<td>Others</td>
<td>As per manufacturer’s standards</td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Standard mobile equipment like chasis of trucks, dumpers, crawler cranes, bulldozers, railway rakes, chasis of slag cars, ladle cars, etc.</td>
<td>Stove enamelling</td>
<td>CRT</td>
</tr>
<tr>
<td>5.2</td>
<td>Laboratory equipment like ovens, screens, magnetic stirrers, samplers, etc.</td>
<td>SP – Sa 2.5</td>
<td>CRT</td>
</tr>
<tr>
<td>5.3</td>
<td>Steel structures partly immersed in water</td>
<td>2P8</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. Painting scheme of all fabricated steel structures, fabricated pipe work, building structure, conveyor galleries, pipe trestles etc. is indicated in the Technical Specification of steel structures.

2. Primer Paint

   Primer coat shall be suitable for intended temperature applications as per manufacturer’s recommendation. The primer selection shall be generally in line with the specification laid down in Annexure-02.

3. Finish Paint

   In case of Aluminium cladding final painting will not be required.
**ANNEXURE - 04**

**COLOUR CODE**

The colour codes are mentioned for all the items including pipe work. Shades of finish coat of paint applied over respective item indicated below are tentative and subject to alteration as per Purchaser’s request or due to compatible paint system adopted. The service for which colour code/bands are not specified are to be mutually agreed for by the Purchaser & the Contractor.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Items Painted</th>
<th>Colour</th>
<th>Colour No. of IS:5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Structures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building frames including bracings, side girts, louvers etc.</td>
<td>Aircraft grey</td>
<td>693</td>
</tr>
<tr>
<td></td>
<td>Crane girders</td>
<td>Azure blue</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>Crane stops</td>
<td>Post office red</td>
<td>538</td>
</tr>
<tr>
<td></td>
<td>Gutters</td>
<td>Black bituminous aluminium</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Fire escape platforms ladders, etc.</td>
<td>Signal red</td>
<td>537</td>
</tr>
<tr>
<td></td>
<td>General hand railing, top runners</td>
<td>Lemon yellow</td>
<td>355</td>
</tr>
<tr>
<td></td>
<td>Rung ladders</td>
<td>Lemon yellow</td>
<td>355</td>
</tr>
<tr>
<td></td>
<td>All members blocking passages for movement</td>
<td>Lemon yellow</td>
<td>355</td>
</tr>
<tr>
<td></td>
<td>Trestles, towers and pipe bridges</td>
<td>Dark admiralty grey</td>
<td>632</td>
</tr>
<tr>
<td></td>
<td>Conveyor gallery structures</td>
<td>Aircraft grey</td>
<td>693</td>
</tr>
<tr>
<td></td>
<td>Steel chimneys</td>
<td>Aluminium</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Equipment and Machinery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General indoor equipment</td>
<td>Light grey</td>
<td>631</td>
</tr>
<tr>
<td></td>
<td>General outdoor equipment</td>
<td>Dark admiralty</td>
<td>632</td>
</tr>
<tr>
<td></td>
<td>Crane bridges, trolleys, hooks etc. and other mobile equipment</td>
<td>Base: Lemon yellow</td>
<td>355</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stripes: Black (100 mm wide)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Furnaces</td>
<td>Aluminium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tanks</td>
<td>Base: Same as for general equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire-fighting equipment</td>
<td>Base: Same shade as for piping around the tank at half the tank height</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td><strong>Pipe work</strong></td>
<td>Signal red</td>
<td>537</td>
</tr>
</tbody>
</table>

Colours shall be as given below. The base colour shall be applied throughout entire length except on surfaces of materials such as asbestos, aluminium, brass, bronze, galvanized steel, stainless steel and other corrosion resistant alloys and rubber / synthetic polymers. In such cases identification colour bands of at least 500mm width shall be provided near each branch, valve and at distances not exceeding 10m either as local colour coatings or coloured adhesive type of suitable material or label attached to the pipe work. Additional identification bands superimposed over the base colour shall be provided near each branch, valve and at distance not exceeding 10m. The bands shall be atleast 25mm wide except in case of double bands where the first band shall be about 100mm wide. Direction of flow shall be clearly marked on the pipelines at intervals not exceeding 10m and all branches and change of directions.
<table>
<thead>
<tr>
<th>Service</th>
<th>Colour</th>
<th>Colour No. of IS:5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea or river water (untreated)</td>
<td>Base – Sea green</td>
<td>217</td>
</tr>
<tr>
<td></td>
<td>Band - White</td>
<td></td>
</tr>
<tr>
<td>Cooling water</td>
<td>Base – Sea green</td>
<td>217</td>
</tr>
<tr>
<td></td>
<td>Band - White</td>
<td>166</td>
</tr>
<tr>
<td>Boiler feed water</td>
<td>Base – Sea green</td>
<td>217</td>
</tr>
<tr>
<td>Condensate</td>
<td>Base – Sea green</td>
<td>217</td>
</tr>
<tr>
<td></td>
<td>Band – Light brown</td>
<td>410</td>
</tr>
<tr>
<td>Drinking water</td>
<td>Base – Sea green</td>
<td>217</td>
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<tr>
<td></td>
<td>First band - French blue</td>
<td>166</td>
</tr>
<tr>
<td></td>
<td>Second band – Signal red</td>
<td>537</td>
</tr>
<tr>
<td>Industrial water</td>
<td>Base – Sea green</td>
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<tr>
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<td>Band – Light orange</td>
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<tr>
<td>Compressed air</td>
<td>Base – Sky blue</td>
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<tr>
<td>Instrument air</td>
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<tr>
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<td>Band – Light brown</td>
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<tr>
<td>Drainage</td>
<td>Base – Black</td>
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<tr>
<td>Fuel oil</td>
<td>Base – Light brown</td>
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<td>Band – Signal red</td>
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<tr>
<td>Coke oven/BF gas/other fuel gases</td>
<td>Base – Canary yellow</td>
<td>309</td>
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<td>Band – Signal red</td>
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<td>Argon</td>
<td>Base – Canary yellow</td>
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<td>Band – French blue</td>
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<td>Acetylene</td>
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<td>Band – Dark violet</td>
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<td>LP Gas (LPG)</td>
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<td>Second band – Traffic green</td>
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<td>Nitrogen</td>
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<td>Oxygen</td>
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<td>Non-acidic slurries</td>
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<tr>
<td>Fire-fighting system</td>
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<td>Rain water down pipes</td>
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<td>Band – Sky blue</td>
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<tr>
<td>Duct work</td>
<td>Base – Aluminium</td>
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**Note**: For these services, hazard marking as per fig. 4C of IS:2379 shall also be provided.
TENDER DOCUMENT

TENDER NO.: DLI/C&E/WI-675/312

FOR

Tender for “Manufacturing and Supply of “different types of Idler Sets, Frames & Idlers for Conveyor 1200mm and 1400mm Belt Width” for the project of “Augmentation of Fuel & Flux Crushing Facilities (Pkg-064)” for Bhilai Steel Plant, Bhilai at Chhattisgarh”.

VOLUME – IV

DRAWINGS

ENGINEERING PROJECTS (INDIA) LIMITED
(A GOVT. OF INDIA ENTERPRISE)
Core-3, Scope Complex, 7, Lodhi Road,
New Delhi-110003
TEL NO. 011-24361666 FAX NO. 011-24363426
Email: core@engineeringprojects.com
### List of Drawings

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Drawing Ref. No.</th>
<th>Rev</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.</td>
<td>BSP-EPI-02-064-02-009-55-DE-00603 (Sheet 03, 04, 07 &amp; 08)</td>
<td>3</td>
<td>Typical General Arrangement of Carrying Idler</td>
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<td>2.</td>
<td>BSP-EPI-02-064-02-009-55-DE-00604 (Sheet 03 to 05)</td>
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<td>Typical General Arrangement of Impact Idler</td>
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<td>3.</td>
<td>BSP-EPI-02-064-02-009-55-DE-00605 (Sheet 02, 04 &amp; 05)</td>
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<td>Typical General Arrangement of 2 Roll Return Idler</td>
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<td>4.</td>
<td>BSP-EPI-02-064-02-009-55-DE-00606 (Sheet 02, 04 &amp; 05)</td>
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<td>Typical General Arrangement of Self-Aligning Carrying Idler</td>
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<td>5.</td>
<td>BSP-EPI-02-064-02-009-55-DE-00607 (Sheet 02, 04 &amp; 05)</td>
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<td>6.</td>
<td>BSP-EPI-02-064-02-009-55-DE-00609 (Sheet 02, 04 &amp; 05)</td>
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<td>Typical General Arrangement of Self-Cleaning Return Idler</td>
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</table>
INTERNAL DETAIL OF ROLLER

NOTE:-
FOR CONVEYOR NO & QUANTITY OF IDLERS REFER DRAWING NO: BSP-EPH-02-064-02-009-005-DE-00613.SHEET NO: 2/4

S.NO | DESCRIPTION | QTY. | MATERIAL | GRADE |
--- | --- | --- | --- | --- |
1 | ROLLER SHELL (6.3mm THK.) | 1 | ERW PIPE | IS: 9295 OR IS: 210 |
2 | BEARING HOUSING | 2 | CRCA SHEET | IS: 513 |
3 | DOUBLE LABYRINTH SEAL | 2 | NYLO-PLAST | --- |
4 | RAIN CAP | 2 | NYLO-PLAST | --- |
5 | SHAFT | 1 | EN-8 / 4028 | BS-970 / IS: 1530 |
6 | CIRCLIP | 4 | --- | IS: 3078 |
7 | BALL BEARING | 2 | --- | FOR SIZE REFER PARTICULAR IDLER DRAWING |
8 | BACK SEAL | 2 | NYLO-PLAST | --- |
9 | DUST RETAINER | 2 | MILD STEEL | IS: 2062 Fe: 410 NA/B |

NOTES:-
1. ALL DIMENSIONS ARE IN mm.
2. 3. THE SIZE OF THE FILLET WELD (LEG LENGTH) FOR IDLER ROLLER WITH BEARING HOUSING SHALL BE 3 mm.
3. THE SIZE OF FILLET WELD (LEG LENGTH) FOR IDLER FRAME SHALL BE 6 mm.
4. ALL IDLER TUBES ARE OF 6.3 mm THK. (Minimum) ERW PIPE AS PER IS: 9295.
5. HOUSING SHALL BE MADE OF CRCA SHEET OF 3.15mm.
6. ALL ROLLER SHAFTS ARE CLASS-4 AS PER IS:1875 OR EN-8 AS PER BS-970.
7. MOUNTING DIMENSIONS ARE AS PER IS:8528 EXCEPT IDLERS.
8. ALL ROLLERS ARE DROP IN TYPE & LIFE SEALED LUBRICATED.
9. ALL BRGS. FOR ROLLERS ARE DEEP GROOVE BALL BRG AND SKF/TAG MAKE ONLY WITH DOUBLE LABYRINTH SEAL ON EXTERNAL SIDE & CONTACT NYLON SEAL ON INNER SIDE.
10. PAINTING AS PER PAINTING SPEC.
11. THE FRAME SHALL BE MADE UP OF CHANNEL.
### Internal Detail of Roller

**Notes:**

1. All dimensions are in mm.

2. a) The size of the fillet weld (leg length) for idler roller with bearing housing shall be 3 mm.
   b) The size of fillet weld (leg length) for idler frame shall be 6 mm.

3. All idler tubes are of 6.3 mm THK. (Minimum) ERW pipes as per IS: 9285.

4. Housing shall be made of pressed steel of CRCA sheets of 3.15 mm.

5. All roller shafts are class-4 as per IS:1875 or EN-8 as per BS:970.

6. Mounting dimensions are as per IS:8588 except idlers.

7. All roller are drop in type & life sealed lubricated.

8. All bgrs. for rollers are deep groove ball bgr and SKF/FAG make only with double labyrinth seal on external side & contact nylon seal on inner side.

9. Painting as per painting specs.

10. For all idlers, max runout (TIR) of roller shall be 0.8mm.

11. The base frame shall be made up of channel.

---

### Table of Materials

<table>
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<tr>
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<th>Material</th>
<th>Grade</th>
<th>Remarks</th>
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<td>ERW Pipe</td>
<td>IS: 9285</td>
<td>Rounded &amp; welded with bearing steel housing</td>
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<td>2</td>
<td>Bearing Housing</td>
<td>2</td>
<td>CRCA Sheet</td>
<td>IS: 513</td>
<td>Pressed Steel</td>
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<td>3</td>
<td>Double Labyrinth Seal</td>
<td>2</td>
<td>NYLO-PLAST</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Rain Cap</td>
<td>2</td>
<td>NYLO-PLAST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Shaft</td>
<td>1</td>
<td>EN-B / 40CB</td>
<td>BS:970 / IS:1570</td>
<td>Bright Bar</td>
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<tr>
<td>6</td>
<td>Circup</td>
<td>4</td>
<td>IS: 3075</td>
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<td>7</td>
<td>Ball Bearing</td>
<td>2</td>
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<td>For size refer particular idler drawing</td>
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<td>Back Seal</td>
<td>2</td>
<td>NYLO-PLAST</td>
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<tr>
<td>9</td>
<td>Dust Retainer</td>
<td>2</td>
<td>MILD STEEL</td>
<td>IS:2062, Fe 410 W/GB</td>
<td>Galvanised</td>
</tr>
</tbody>
</table>

---

**FOR REFERENCE ONLY**

**SIGN**

**NAME**

**DATE**
The arrangement has been checked for adequacy & accuracy of design of individual components and their quality shall be the responsibility of equipment supplier.

For Reference Only

Show: 09/09/12

Name: B.M. Sawant

Samrat

M.H. Section

Mecon Limited

Ranka Bldg.

Note: For conveyor no. 1, quantity of rollers refer drawing no. 839-49/08-005-02-007/06-06-07-06-06-013 sheet no. 24.
### Internal Detail of Roller

<table>
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<th>S.No.</th>
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<th>Grade</th>
<th>Remarks</th>
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<td>ROLLER SHELL (6.3mm THK.)</td>
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<td>ERW PIPE</td>
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<tr>
<td>2</td>
<td>BEARING HOUSING</td>
<td>2</td>
<td>CRC SHEET</td>
<td>IS: 513</td>
<td>PRESSED STEEL</td>
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<tr>
<td>3</td>
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<td>NYLO-PLAST</td>
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</tr>
<tr>
<td>4</td>
<td>RAIN CAP</td>
<td>2</td>
<td>NYLO-PLAST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SHAFT</td>
<td>1</td>
<td>EN-8 / 40Cr</td>
<td>BS:970 / IS:1570</td>
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<tr>
<td>6</td>
<td>CIRCLIP</td>
<td>4</td>
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<td>IS: 3075</td>
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<tr>
<td>7</td>
<td>BALL BEARING</td>
<td>2</td>
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<td></td>
<td>FOR SIZE REFER PARTICULAR IDLER DRAWING</td>
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<td>NYLO-PLAST</td>
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<tr>
<td>9</td>
<td>DUST RETAINER</td>
<td>2</td>
<td>MILD STEEL</td>
<td>IS:2062</td>
<td>GALVANISED</td>
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**NOTES:**

1. ALL DIMENSIONS ARE IN mm.
2. a) THE SIZE OF THE FILLET WELD (LEG LENGTH) FOR IDLER ROLLER WITH BEARING HOUSING SHALL BE 3 mm.
   b) THE SIZE OF FILLET WELD (LEG LENGTH) FOR IDLER FRAME SHALL BE 6 mm.
3. ALL IDLER TUBES ARE OF 6.3 mm THK. (Minimum) ERW PIPES AS PER IS: 9295, HOUSING SHALL BE MADE OF PRESSED STEEL OF CRC SHEETS OF 3.15mm.
4. ALL ROLLER SHAFTS ARE CLASS-4 AS PER IS:1875 OR EN-8 AS PER BS:970.
5. MOUNTING DIMENSIONS ARE AS PER IS:8598 EXCEPT IDLERS.
6. ALL ROLLERS ARE DROP IN TYPE & LIFE SEALED LUBRICATED.
7. ALL BRGS. FOR ROLLERS ARE DEEP GROOVE BALL BRG AND SKF/FAG MAKE ONLY WITH DOUBLE LABYRINTH SEAL ON EXTERNAL SIDE & CONTACT NYLON SEAL ON INNER SIDE.
8. PAINTING AS PER PAINTING SPECS.

### SIGNATURES

3. 10-07-12 DRS. REVISED AS PER MECON'S COMMENTS
2. 09-01-12 DRS. REVISED AS PER MECON'S COMMENTS
1. 24-09-12 DRS. REVISED AS PER MECON'S COMMENTS
ELEVATION

SIDE VIEW

ENLARGED VIEW-Z

TYP. DET. OF ROLLER

Only the arrangement has been checked. Adequacy & accuracy of design of individual component and their quantity shall be the responsibility of equipment supplier.
Only the arrangement has been checked. Adequacy & accuracy of design of individual components and their assembly shall be the responsibility of equipment supplier.

### Table

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<td>CRCA SHEET</td>
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<td>MILD STEEL</td>
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### Notes:

1. ALL DIMENSIONS ARE IN mm.

2. a) THE SIZE OF THE FILLET WELD (LEG LENGTH) FOR IDLER ROLLER WITH BEARING HOUSING SHALL BE 3 mm.

   b) THE SIZE OF FILLET WELD (LEG LENGTH) FOR IDLER FRAME SHALL BE 6 mm.

3. ALL IDLER TUBES ARE OF 6.3 mm THK. (Minimum) ERW PIPES AS PER IS: 9295.

4. HOUSING SHALL BE MADE OF PRESSED STEEL OF CRCA SHEETS OF 3.15mm.

5. ALL ROLLER SHAFTS ARE CLASS-4 AS PER IS:1875 OR EN-8 AS PER BS:970.

6. MOUNTING DIMENSIONS ARE AS PER IS:8530 except IDLERS.

7. ALL ROLLER ARE DROP IN TYPE & LIFE SEALED LUBRICATED.

8. ALL BRGS. FOR ROLLERS ARE DEEP GROOVE BALL BRG AND SKF/FAG MAKE ONLY WITH DOUBLE LABYRINTH SEAL ON EXTERNAL SIDE & CONTACT NYLON SEAL ON INNER SIDE.

9. PAINTING -- AS PER PAINTING SPECS.

10. FOR ALL IDLERS, MAX RUNOUT (TIR) OF ROLLER SHALL BE 0.8MM.

11. THE BASE FRAME SHALL BE MADE UP OF CHANNEL.
ELEVATION

SIDE VIEW

VIEW - AA

ENLARGED VIEW - Z

GUIDE ROLLER DETAIL

ENLARGE VIEW OF L

Only the arrangement has been checked. Adequacy & accuracy of design of individual component and their quantity shall be the responsibility of equipment supplier.
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<th>REMARKS</th>
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**NOTES:**

1. ALL DIMENSIONS ARE IN mm.

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   b) THE SIZE OF FILLET WELD (LEG LENGTH) FOR IDLER FRAME SHALL BE 6 mm.

3. ALL IDLER TUBES ARE OF 6.3 mm THK. (Minimum) ERW PIPES AS PER IS: 8925,
   4. HOUSING SHALL BE MADE OF PRESSED STEEL OF CRCA SHEETS OF 3.15mm.
   5. ALL ROLLER SHAFTS ARE CLASS 4 AS PER IS:1875 OR EN 8 AS PER BS:970.
   6. MOUNTING DIMENSIONS ARE AS PER IS:8598 EXCEPT IDLERS.
   7. ALL ROLLER ARE DROP IN TYPE & LIFE SEALED LUBRICATED.
   8. ALL BBS FOR ROLLERS ARE DEEP GROOVE BALL BRS AND SKT/FAQ MAKE ONLY WITH DOUBLE Labyrinth SEAL ON EXTERNAL SIDE & CONTACT NYLON SEAL ON INNER SIDE.

9. PAINTING: AS PER PAINTING SPECS.
10. FOR ALL IDLERS, MAX RUNOUT (TR) OF ROLLER SHALL BE 0.8mm.
11. THE BASE FRAME SHALL BE MADE UP OF CHANNEL.
**FOR CONVEYOR NO & QUANTITY OF IDLERS REFER DRAWING NO:**
BSP-EPI-02-064-02-009-55-DE-00013-SHEET NO:4/4

**TECPRO SYSTEM LTD.**
Only the arrangement has been checked. Adequacy & accuracy of design of individual components and their quality shall be the responsibility of equipment suppliers.

<table>
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<th>S.NO</th>
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<tr>
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<td>5</td>
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<td>4</td>
<td></td>
<td>IS: 3075</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>BALL BEARING</td>
<td>2</td>
<td></td>
<td></td>
<td>FOR SIZE REFER PARTICULAR IDLER DRAWING</td>
</tr>
<tr>
<td>8</td>
<td>BACK SEAL</td>
<td>2</td>
<td>NYLO-PLAST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>DUST RETAINER</td>
<td>2</td>
<td>WILD STEEL</td>
<td>IS:2062 Fe 410</td>
<td>GALVANISED</td>
</tr>
</tbody>
</table>

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. a) THE SIZE OF THE FILLET WELD (LENGTH) FOR IDLER ROLLER WITH BEARING HOUSING SHALL BE 3 MM.
   b) THE SIZE OF FILLET WELD (LENGTH) FOR IDLER FRAME SHALL BE 6 MM.
3. ALL IDLER TUBES ARE OF 6.3 MM THK. (Minimum) ERW PIPES AS PER IS: 9295,
4. HOUSING SHALL BE MADE OF PRESSSED STEEL OF CIRC SHEETS OF 3.15MM.
5. ALL ROLLER SHAFTS ARE CLASS-4 AS PER IS:1575 OR EN-8 AS PER BS:970.
6. MOUNTING DIMENSIONS ARE AS PER IS:8598 EXCEPT IDLERS.
7. ALL ROLLER ARE DROP IN TYPE & LIFE SEAL LACRUGATED.
8. ALL BROS. FOR ROLLERS ARE DEEP GROOVE BALL BRG AND SKF/FAG MAKE ONLY WITH DOUBLE Labyrinth SEAL ON EXTERNAL SIDE & CONTACT NYLON SEAL ON INNER SIDE.
9. PAINTING :- AS PER PAINTING SPECS.
10. FOR ALL IDLERS, MAX RUNOUT (TR) OF ROLLER SHALL BE 0.8MM.
11. THE BASE FRAME SHALL BE MADE UP OF CHANNEL.
TYP. DET.
OF ROLLER

SLOTTED FOR
DROP IN FITTING

Enlarged View - Z

Only the arrangement has been checked. Adequacy & accuracy of design of individual component and their quantity shall be the responsibility of equipment supplier.

FOR REFERENCE ONLY

SIGN
NAME
DATE
DESIGN

NOTE:
FOR CONVEYOR NO 6 & 17 ONLY REFER DRAWING NO:
BSP-EP-08-03-04-410-55-06-07G-00615 SHEET NO: 3-6

TELERO SYSTEMS LTD.
ONLY THE ARRANGEMENT HAS BEEN CHECKED. ADEQUACY & ACCURACY OF DESIGN OF INDIVIDUAL COMPONENT AND THEIR QUANTITY SHALL BE THE RESPONSIBILITY OF EQUIPMENT SUPPLIER.

ELEVATION

SIDE VIEW

ENLARGED VIEW-Z

TYP. DET. OF ROLLER

NOTE:
FOR CONVEYOR NO. 10 QUANTITY OF BEARS REFER DRAWING NO. RS2-1040-0010-06-06-06-06-06-06. SHEET NO. 3/4

FOR REFERENCE ONLY

DATE: 07.09.2016

NAME: B.M. GANDHAKA

DESIGN: M.H. SECTION

MECON LIMITED

FOR SELF-CLEANING RETURN OERT (COAL HANDLING PLANT)

REFERENCES

3 10106-12 ORG. REVISION AS PER MECON'S COMMENTS

2 10106-12 ORG. REVISION AS PER MECON'S COMMENTS

1 24.10.12 ORG. REVISION AS PER MECON'S COMMENTS

RPT. DATE: 25.02.2011

TCS IPD SYSTEMS LTD
INTERNAL DETAIL OF ROLLER

NOTE:

1. ALL DIMENSIONS ARE IN mm.

2. THE SIZE OF THE FULL W/M TO (LEG LENGTHS) FOR ROLLER HOUSING SHOULD BE 3.5 mm.

3. ALL ROLLER TIRES ARE OF 6.5 mm THK. THE MOUNTING RPM RATES AS PER IS 1875 EXCEPT ROLLERS.

4. HOUSING TIRES ARE AS PER INSERT SHEET S1411117.

5. ALL ROLLER HOUSING TIRES SHALL BE MADE OF PRESSED STEEL OR B.D. AS PER.

6. CONTACT MOLD SEALS ON INNER KNOBS TO PASS.

7. FANCY PARTS ARE ANY PER ROLLER SHAFTS OR PER.

8. THE HOSE PUMP & ANDO FOR USE IN ERG-SH.

9. ALL HOSES ARE LONGER THAN THE HOSE SHAFT LENGTH.

10. THE HOSE PUMP & ANDO FOR USE IN ERG-SH.

11. THE HOSE PUMP & ANDO FOR USE IN ERG-SH.