



# National Aluminium Company Limited

(A Government of India Enterprise)

CIN: L27203OR1981GOI000920

Smelter Plant, Angul - 759145, Odisha

e-mail: [gyanendra.jha@nalcoindia.co.in](mailto:gyanendra.jha@nalcoindia.co.in),

## NOTICE INVITING TENDER (NIT)

Tender Ref. No: SMLT/MMP/402/3000009296, Dtd. 05/06/2024.

### GENERAL INFORMATION TO TENDERERS

Dear Sir(s),

National Aluminium Company Limited (NALCO) invites competitive Bids through e-tendering on domestic OPEN Tender basis for **Design, Engineering, Manufacture, Supply, erection, testing, commissioning and PG tests of Pipe (Siphon Tube) Cleaning Machine in Old LPC Shop** ON LSTK BASIS for our Smelter Plant at Angul, Odisha under single stage two part bid system from competent bidders meeting the Pre-Qualification Criteria (PQC) as detailed herein. The offers shall be submitted online with Digital Signatures in **Central Public Procurement Portal (CPPP)** as per NIT documents.

**1.0** The NIT documents pertaining to the subject project are enclosed herewith, which contain the followings:

(A) Prequal /Technical folder containing following annexures:

- i) **Annexure-I** : Bidder Pre-qualification Criteria.
- ii) **Annexure-II** : Brief Technical specifications .
- iii) **Annexure-III** : Deviation schedule to Technical Specification (01 page).
- iv) **Annexure-IV** : Standard terms and conditions of NIT.
- v) **Annexure-V** : Deviation schedule to standard terms and conditions of NIT (01 page).
- vi) **Annexure-VI** : Bidder compliance statement (agreed terms & conditions) (4 pages)
- vii) **Annexure-VII** : Environment, OHSAS Policy & SA:8000, ENERGY POLICY (1 page)
- viii) **Annexure-VIII** : Compliance to General Environment Requirement (01 page)
- ix) **Annexure - IX** : Compliance to SA 8000 Requirement (5 pages)
- x) **Annexure-X** : Format for Bank Guarantee for EMD (02 page)
- xi) **Annexure - XI** : Format for Contract-cum-Performance Bank Guarantee (02 pages)
- xii) **Annexure – XII** : List of standardized Banks (02 page)
- xiii) **Annexure-XIII** : New Vendor Registration Template (1 page)
- xiv) **Annexure-XIV** : Format of Integrity Pact (5 pages)
- xv) **Annexure – XV** : Purchase preference to Make in India order & declaration of local content.
- xvi) **Annexure – XVI** : Declaration confirming ANTI PROFITEERING clause (SEC 171 of GST Act) (01 page)
- xvii) **Annexure-XVII** : General Information of Suppliers (01 page)
- xviii) **Annexure-XVIII** : Format for online submission of earnest money deposit (EMD)
- xix) **Annexure-XIX** : ECS Mandate Form for e-payment (01 page)
- xx) **Annexure-XX** : Detailed Technical specifications
- xxi) **Annexure-XXI** : General Conditions of Contract

(B) Finance folder containing - **BOQ. - Annexure-XXII**

### **ORDER OF PRECEDENCE:**

In the event of any contradiction/repletion of clauses, the order of precedence (hierarchy for acceptance) shall be as follows:

- i. Technical Specifications
- ii. Special Conditions of Contract (SCC) of Technical Specifications
- iii. Price Schedule Format /BOQ
- iv. Agreed Terms & Conditions
- v. Standard Terms & Conditions of NIT
- vi. Annexures from VII to XIX of NIT
- vii. General Conditions of Contract

## **2.0 SUBMISSION OF ON-LINE BIDS / QUOTATION:**

Due date & time of bid submission:	<b><u>20/07/2024</u> At 10:00 AM</b>
Due date & time of bid opening:	<b><u>25/07/2024</u> At 10:00 AM</b>

### **2.1 On-line Submission of Bids in Central Public Procurement Portal:**

2.1.1 Bids / quotations complete in all respect should be submitted in the manner indicated in the Tender Document so as to be submitted / published in on-line mode through Central Public Procurement Portal (CPPP) website <https://eprocure.gov.in/eprocure/app>, **on or before the Bid submission date and time**. On-line Enrolment are to be done by the Bidders by themselves at Central Public Procurement Portal website <https://eprocure.gov.in/eprocure/app> using valid digital signature (DSC) with the e-token. No registration fee would be charged from the bidders. The registration should be in the name of the bidder, whereas DSC holder may be either bidder himself or his duly authorized person.

2.1.2 Various links such as "Help for Contractor", "Information about DSC", "FAQ", "and Resources required", "Bidders Manual Kit" etc. are available on home page of <https://eprocure.gov.in/eprocure/app> facilitating vendors to participate in the bidding process. Bidder are advised to download & utilize the available information / documents under these links for activities like Registration/ Enrollment in CPPP, obtaining User ID & Password, uploading & submission of e-bids, etc.

2.1.3 Bidders are advised in their own interest to carefully go through Instructions for E-tendering / Bidders Manual Kit and other related document available against various help links so as to ensure that bids are uploaded in E-tendering website well before the closing date and time of bid submission.

2.1.4 Bidder is required to complete certain activities like Registration / Enrollment in e-tender website, obtaining User ID & Password, enabling of Vendor and mapping of Digital Signature Certificate (DSC), etc. before they can upload their e-bid on website.

*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 / bidder to have a Digital Certificate (DC) also referred to as Digital Signature Certificate (DSC) with the e-token, of **Class II or above**, issued by a Certifying Authority (CA) of India licensed by Controller of Certifying Authorities (CCA) [refer <http://www.cca.gov.in>]. The e-token may be obtained from one of the authorized Certifying Authorities of India such as eMudhra CA/ GNFC/ IDRBT/ MtnTrustline/SafeScript/ TCS, etc.*

---

2.1.5 In the event of failure in bidder's connectivity with CPPP website during the last few hours on account of problem on bidders account, they are likely to miss the deadline for bid submission. Due date extension request due to this reason will not be entertained. In view of the same, bidders are advised to upload their bid / quotation well in advance.

2.1.6 Bidders are requested to get acquainted with the E-Tendering Website <https://eprocure.gov.in/eprocure/app> and upload their complete Bid well within the bid due date and time to avoid last minute hassles.

2.1.7 The Tender Inviting Authority (TIA) will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online in CPPP Portal by the bidders.

2.1.8 The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the bid is liable to be rejected.

2.1.9 The time settings fixed in the server site & displayed at the top of the tender site, will be valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system. The bidders should follow this time, during bid submission.

2.1.10 All the data being entered by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission & not be viewable by any one until the time of bid opening. Overall, the submitted tender documents become readable only after the tender opening by the authorized individual.

**NOTE:**

1. Minimum Requirements at Bidder's end

- Computer System with good configuration (1 GB RAM, Windows 7 and above)
- Broadband connectivity
- Microsoft Internet Explorer 7.0 or above
- Digital Signature Certificate Class II or above

2. Any further support and assistance in submission of on-line bids or registration, bidders are requested to contact the following:

**Central Public Procurement Portal Help Desk**

For any technical queries related to operation of the Central Public Procurement Portal please mail to [cphp-nic@nic.in](mailto:cphp-nic@nic.in), [support-eproc@gov.in](mailto:support-eproc@gov.in) or Call 24 x 7 Tel.: **+91-0120-4200462, +91-0120-4001002**, Mobile No : **+91-7978823226**.

**2.2 ON-LINE OFFER:** On-line Bids shall be submitted **in two parts** in Central Public Procurement Portal (CPPP) of Government of India <https://eprocure.gov.in/eprocure/app> in the following manner:

**2.2.1 Part-I Bid (i.e. Un-priced Bid) ("PREQUAL / TECHNICAL"):**

The **Part - I Bid i.e. Un-priced bid** should contain the following:

- (i) Proof of credentials, past experience, financial standing and all documents required to fulfill the Pre- Qualifying Criteria(PQC) as asked for in the tender documents (As per **Annexure - I**).
- (ii) All Technical details, Drawings, Data Sheets, Catalogues / Literatures etc. (As per Annexure – XX)
- (iii) Standard Terms & Conditions of NIT as per Annexure-IV is to be signed and stamped as token of having accepted all the Terms & Conditions in toto.
- (iv) Bidder compliance statement (as per Annexure-VI) duly filled in.

- (v) Acceptance to Environment, OHSAS Policy, SA:8000 & Energy Policy (as per Annex. VII) and Filled up statement towards General environmental requirement (Annexure - VIII) and SA 8000 format (Annexure-IX).
- (vi) Scanned copy of original EMD (As per Annexure - X)
- (vii) All certificates/ affidavits/ declaration asked for in the NIT.
- (viii) Duly filled in Annexure-XV, Annexure-XVI, Annexure-XVII
- (ix) Scanned copy of Original Integrity Pact (As per Annexure-XIV).
- (x) Un-priced copy of price bid **without price figures** (which will be exact copy of priced BOQ except for replacement of only price figures wherever appearing by word “**quoted**”).
- (xi) Tender documents duly signed as token of acceptance to tender’s terms & conditions.
- (xii) Deviation statement if any as per Annexure-III & V.
- (xiii) Tender documents including Corrigendum/Addendum, if any, and subsequent correspondences duly stamped and signed on each page as a token of acceptance.

**Note - The Part-I Bid (i.e. Un-priced Bid) shall be uploaded in “PREQUAL / TECHNICAL” folder in Central Public Procurement Portal (CPPP) of Government of India <https://eprocure.gov.in/eprocure/app>.**

For Un-priced Bid, the bidder must prepare all the required documents and then upload the soft copies of the documents in CPP Portal. However, wherever in the tender documents the bidder has been asked to submit the scanned copies and then send the original hard copy of the document/s in a sealed envelope (cover-1), the sealed envelope should be super scribed with the tender no. and list of documents should be clearly indicated. The sealed envelope should be sent to the address given below so as to reach us before the bid due date and time.

**GM (MATERIALS)  
NATIONAL ALUMINIUM COMPANY LTD.,  
PURCHASE, SMELTER PLANT  
ANGUL 759145. (ODISHA)**

#### **Cover - 1:**

The **Cover - 1 of the hard copy offer** should contain the following documents:

- i. Original EMD (As per Annexure - ~~X~~).
- ii. Integrity Pact (As per Annexure - ~~XIV~~).
- iii. Original copy of certificates/ undertakings/ affidavits/ declaration asked for in our NIT.
- iv. Original copy of any other information/details/documents/data required as per our NIT Documents.
- v. A certificate by the bidder stating that the hard copy of documents/certificates submitted is same as the on-line documents/certificates uploaded by them in *Central Public Procurement Portal (CPPP)*.

#### **2.2.2 Part-II Bid (i.e. Priced Bid) (“FINANCE”):**

**The Part-II Bid i.e. Priced Bid should contain the prices strictly as per the Annexure-XXII- BOQ / Price schedule Format attached with the NIT documents. Prices shall not appear anywhere else in the offer.**

**Note- The Part-II Bid (i.e. PRICED BID) shall be uploaded in “FINANCE” folder in Central Public Procurement Portal (CPPP) of Government of India <https://eprocure.gov.in/eprocure/app>. All fields in the BOQ must be filled by the bidders.**

2.2.3 In case of any difficulty in submission of on-line bid through CPPP portal, the bidders are requested to contact the following persons:

- (i) CPPP Portal help desk, e-mail: [cphp-nic@nic.in](mailto:cphp-nic@nic.in) , [support-eproc@gov.in](mailto:support-eproc@gov.in).  
Tel.: 0120-4200462, 0120-4001002.
- (ii) Mr. Shivaji, NIC E-mail: [shibaji009@gmail.com](mailto:shibaji009@gmail.com), **Mob.: 7978823226**



- (iii) Mr. Gyanendra Kumar Jha, DGM (Materials)  
National Aluminium Company Ltd.,  
Smelter Plant, Angul  
E-mail: [gyanendra.jha@nalcoindia.co.in](mailto:gyanendra.jha@nalcoindia.co.in)  
Mob: +91 9437562604

2.3 Bidders are requested to note that the only acceptable mode of tendering is online through Central Public Portal. Bids / Quotations received through any other mode like Hard copy by post/courier, E-mail or Fax shall NOT be accepted.

2.4 The details of all the documents to be submitted along with online Part-I Bid is mentioned above at clause 2.2.1. Therefore the submission of documents mentioned at clause 4.1 of Annexure - XXI : General Conditions of Contract shall be ignored.

2.5 On the scheduled "Due date & time of opening", only the part-I of offer i.e. Techno-commercial bids shall be opened. The on-line Part-II Bid i.e. PRICED BID of only those bidder whose Part-I bid is found to be techno-commercially acceptable will be opened.

### **3.0 EARNEST MONEY DEPOSIT (EMD):**

3.1 The bidders intending to participate in the tender should furnish Earnest Money Deposit (EMD) for ₹4,50,000/- (Rupees four lakh fifty thousands only).

3.2 The Part - I Bid must be accompanied by Earnest Money Deposit for value as mentioned above.

3.3 The EMD should be by way of Bank Guarantee and as per proforma enclosed (**Annexure–X**) with the Tender Documents. The BG should be furnished from any of NALCO approved Banks as per the list enclosed with the Tender Document (Annexure–XII). The wording of BG should be strictly as per proforma and no deviation to the same shall be permitted. Seller is required to ensure the same from the issuing bank. The issuing Bank should be advised to send a direct confirmation to NALCO, clearly indicating the Tender No., towards issue of the Bank Guarantee. The Bank Guarantee for Earnest Money Deposit shall remain un-discharged for such a period as may be specified for keeping the tender open. The EMD BG should have a validity of at least 09(nine) months beyond the period of validity of bid asked for in the tender document. The validity of the EMD BG may have to be extended by the bidder on request of NALCO, till the tender is finalized.

The original Bank Guarantee is required to be sent directly by the Bank under Speed Post or Registered Post to the addressee given in the tender document. The Bidder shall submit copy of Bank Guarantee duly self-certified mentioning dispatch reference of the Bank from where original Bank Guarantee has been sent.

3.4 The tenderer may also deposit the EMD by way of DD drawn in favor of "National Aluminium Co. Ltd" payable at SBI, Kandasar.

Bidders should upload the scanned copy of the BG/ DD along with their online Part - I - Bid. The original copy of the BG/ DD should be submitted as mentioned at Para – 2.2.1 above.

3.5 The bidder may also deposit the EMD by way of NEFT/RTGS/E-transfer. Bidder(s) submitting the EMD amount through NEFT/RTGS/E-transfer mode shall fill up the details of Annexure – XVIII after making the payment of EMD and send the scanned copy of the duly filled in and signed Annexure – XVIII along with the scanned copy of Transaction Slip/ receipt of the Bank **on the same day of payment** by e-mail to [aloktripathy@nalcoindia.co.in](mailto:aloktripathy@nalcoindia.co.in) with copy marked to [gyanendra.jha@nalcoindia.co.in](mailto:gyanendra.jha@nalcoindia.co.in).

---

The bidders should upload the scanned copy of the duly filled in and signed Annexure – XVIII along with the scanned copy of Transaction Slip/ receipt of the Bank with their On-line Part- I Bid.

The original copy of the duly filled in and signed Annexure– XVIII along with the Transaction Slip/ receipt should be submitted in cover - 1 of the hard copy offer as mentioned at Para – 2.2.1.

**3.6 Offer without EMD may be liable for rejection.** This deposit shall not carry any interest.

3.7 If the tenderer, after submitting his tender, revokes the offer or modifies the terms & conditions thereof, in a manner not acceptable to the Purchaser, the EMD BG shall be liable to be forfeited / enforced. In case the EMD has been paid in the form of DD, the EMD amount will not be refunded back in case of forfeiture of EMD. Any forfeiture of EMD made by NALCO will be with applicable GST.

3.8 State / Central Government organizations, Public Sector Undertakings, Firms registered with DGS&D/ NSIC/ District Industries Centers (DICs)/ Khadi & Village Industries Commission (KVIC)/ Khadi & Village Industries Board (KVIB)/ Coir Board/ Directorate of Handicrafts & Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises (registered for the tendered item) and NALCO's Ancillary units and all start-ups recognized by deptt. of policy & promotion, Ministry of commerce and Industry Govt. of India are exempted from furnishing EMD. However, they must submit notarized (by a public notary) valid copy of their registration certificate for claiming the exemption.

Bidders must upload the scanned copy of the notarized certificate and send the **hard copy documents of their offer**. In the absence of such certificate, the bidder's offer may be liable for rejection.

3.9 After finalization of the tender, the EMD BG of unsuccessful tenderers will be returned. In case the EMD was submitted in the form of DD, the EMD amount will be refunded through e-payment for which the bidders will have to submit the duly filled in Bank Mandate Form (Annexure-X) attached with the Tender Documents. The EMD of successful tenderer shall be returned after submission of Contract - cum - Performance Bank Guarantee. If the successful bidder accepts the order but fails to submit the CPBG, the EMD will be retained. In such case differential amount towards CPBG and EMD may be deducted from the bills of vendor, which shall be released after receipt of acceptable Contract- cum -Performance Bank Guarantee (CPBG). In the event of non-execution of Order, the EMD shall stand forfeited.

#### **4.0 CRITERIA FOR REJECTION OF OFFER**

1. Bids not fulfilling the Pre-qualification criteria.
2. Bids without EMD excepting those exempted.
3. Incomplete bid (s) either technical or Prequalifying/ Financial or commercial.
4. Bids not as per Technical specifications or not in the specified format.
5. Bids not in two parts as described earlier.
6. Bids not received within bid due date and time of offer submission.
7. Disclosure of Price anywhere in the Part-I bid i.e. techno-commercial bid.
8. Offer Prices not quoted in INR.

#### **5.0 AMENDMENT OF BID DOCUMENTS**

5.1 At any time prior to the bid due date, NALCO may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Document and issue amendment in the form of Corrigendum.

5.2 Any Corrigendum thus issued will become part of bidding document and bidder shall submit original Corrigendum / compliance letter duly signed and stamped as token of his acceptance.

---

5.3 In order to afford prospective Bidders, reasonable time in which to take the amendment into account in preparing their bids, NALCO may, at its discretion, extend the bid due date.

5.4 Bidder should download the complete set of tender documents which is available in our website [www.nalcoindia.com](http://www.nalcoindia.com) and/or in the website [www.eprocure.gov.in](http://www.eprocure.gov.in). Bidders are requested to visit the above websites regularly for any modification/addition/ bid due date extension for this tender. This information may not be published in Print Media.

## **6.0 IMPORTANT INSTRUCTIONS:-**

- i) Before submission of their bid, the Bidders must make themselves fully conversant with the Tender Document and other relevant information, so that no ambiguity may arise in any respect subsequent to the submission of the bid.
- ii) If any Bidder finds any discrepancies or omissions in the specifications and documents or is in doubt as to the true meaning of any part, she/he shall at once request in writing for an interpretation/ clarification to NALCO. However, for this reason, the tender opening date shall not be extended.
- iii) If the Bidder deliberately gives wrong information in his/her quotation to create circumstances for the acceptance of his/her bid, NALCO reserves the right to reject such bid at any stage.
- iv) Bid documents submitted are non-transferable.
- v) No part of The contract nor any share or interest therein shall, in any manner or degree, be transferred, assigned or sub-let by the contractor directly or indirectly to any person, firm or corporation whatsoever without the consent of NALCO in writing.
- vi) The tender documents are meant for the exclusive purpose of bidding against the subject requirement and shall not be transferred, reproduced or otherwise used for the purposes other than that for which these are specifically issued.
- vii) NALCO reserves the right to conduct price negotiation, if necessary, and the same shall be done with lowest acceptable tenderer only. Bidders are required to quote their lowest price in view of the fact that price negotiation, if any, shall be held with the lowest acceptable bidder only.
- viii) While comparing price, if the deviations taken can be quantified in monetary terms with reasonable accuracy w.r.t. STC, then proper loading factor on the quoted rates shall be considered for evaluation without any correspondence with bidders.
- ix) No correspondence, whatsoever until & unless called for by the buyer, shall be entertained after due date and time of receipt of tender and any uncalled for communication received later from the tenderers will be ignored. Any efforts by a bidder to influence NALCO in its bid evaluation, bid comparison or contract award decisions may result in rejection of the bidder's offer.
- x) NALCO reserves the right to accept or reject any or all tenders and to extend the due date for submission of Bids without assigning any reason thereof. However, a bidder may seek clarification regarding the bidding document provisions, bidding process and/ or rejection of his bid which shall be responded within a reasonable time.

**7.0** Incomplete offers and offer not confirming acceptance to NALCO's terms and conditions in toto, including validity period of offer, as stipulated in this tender may be liable for rejection.

**8.0** Please confirm that you are not been banned or de-listed by any Government or Quasi Government agencies or PSUs of India. If you have been banned or de-listed by any Government or Quasi Government agencies or PSUs, then this fact must be clearly stated. If this declaration is not furnished, your bid shall be treated as **non-responsive and liable for rejection**.

---

**9.0 LIST OF PARTNERS/ DIRECTORS & DECLARATION:** In Techno-commercial bid (Part-I), the bidders should furnish a list of its Partners/ Directors and a declaration that such Partners/ Directors have no interest in any other bidder(s) in respect of the same tender.

**10.0 Pre-bid/Pre-contract Agreement (Integrity Pact) & Independent External Monitor:**

10.1 The accompanying 'Integrity Pact' attached at Annexure - XIV of Tender documents is to be executed in two (02) Originals. Bidders may submit the Integrity Pact on its company's Letter Head/ A4 size paper, duly signed by the person(s) signing the bid.

10.2 All the pages of the Integrity pact are to be signed by the bidder. Bidders are required to clearly indicate the name and designation of the signatory as well as the name and address of the witnesses. The Bidders should not change the contents of the Integrity Pact.

10.3 The two (2) originals of Integrity Pact signed and stamped on each page by the bidder have to be submitted in sealed cover to the address as mentioned at Para – 2.2.1. The scanned copy of the Integrity Pact is to be uploaded along with their Online Part - I - Bid.

10.4 The two originals of Integrity pact will be signed by the representative of NALCO. One original of the Integrity pact will be retained by NALCO & the other original will be returned to the bidder through Post/Courier.

10.5 At present, there are 03 IEMs in NALCO. They are as below:

- (i) Smt. Deepa Krishan IRS (Retd.)  
C 2603, Sushant Lok – 1 Gurgaon , Haryana Pin-122002,  
E-mail: [deepakeishan@gmail.com](mailto:deepakeishan@gmail.com)
- (ii) Dr. Meeran C Borwankar IPS (Retd.)  
C 10/5, Vasant Vihar, Newdelhi- 110057  
E-mail: [mcborwankar@gmail.com](mailto:mcborwankar@gmail.com)
- (iii) Ms Archana Ranjan IRS (Retd.)  
A 4/1, Vasant Vihar,  
New delhi- 110057  
E-mail: [ranjan.archana@gmail.com](mailto:ranjan.archana@gmail.com)

Note:- (i) Bidder may write to either of the IEMs for their grievances related to Integrity pact, if any, giving details of the tender, name of the tender issuing officer etc. for quick identification of the tender by the IEM to resolve their grievances.

(ii) Only representation in respect of Integrity Pact need to be addressed to the IEMs and no query regarding tender terms and conditions should be address to the IEMs.

(iii) Any clarification regarding the tender details and terms & conditions should be addressed to NALCO's officials only.

**11.0 Provision for PREFERENCE TO MAKE IN INDIA**

Provision of the order No.P-45021/2/2017-PP(BE-II) dtd. 04.06.2020 issued with Revised 'Public procurement (Preference to Make in India), Order 2017 dated 16.09.2020 shall be applicable for this NIT towards purchase preference. The purchase preference as per Case-2(For non-divisible quantity) shall be considered

The 'Class-I local supplier'/ 'Class II-local supplier' as per this provision at the time of tender, bidding or solicitation shall indicate percentage of local content and provide certification that the item offered meets the local content requirement for 'Class-I local supplier'/ 'Class II-local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made.  
**Declaration to be given in the format given in the Annexure XV of the NIT documents.**

**12.0 REGISTRATION IN GEM (GOVERNMENT E-MARKETING ) PORTAL:** All bidders are requested to register themselves as a seller in GEM portal and share their unique ID.

---

### **13.0 PRE-BID MEETING:**

- 13.1 A pre –bid meeting will be arranged by the Owner at NALCO , SMELTER PLANT Angul Site on technical issues after two weeks of publication of tender i.e. on 20/06/2024. Following points are to be noted:
- a) All prospective bidders should submit a List of clarification required before the pre-Bid meeting if they require any clarification on the tender documents/drawings etc.
  - b) If the bidder feels that the Tender specification is with sufficient details they can attend the “Pre Bid meeting” without submitting the “List of clarification”.
  - c) It may be noted that no clarification will be replied or entertained by the owner during “Pre bid meeting” if not submitted earlier, except in exceptional cases.
  - d) All the bidders should come prepared for site visit at Angul, Odisha and they will be accompanied by authorized representative of the owner at Site.
- 13.2 Any failure by bidder to comply with the aforesaid requirement shall not excuse the bidder, after subsequent award of contract, from performing the work in accordance with the contract.
- 13.3 Response to queries/ clarifications raised will be sent as expeditiously as possible. The response shall not form part of the bidding document unless issued as an addendum/amendment.
- 13.4 Bidders are expected to resolve all their clarification/ queries to the bidding document and submit their bid in total compliance to bidding document without any deviation/ stipulation/ clarification.

### **14.0 AWARD CRITERIA**

The Owner will award the order to the successful bidder who have submitted bid fully in accordance with techno-commercial terms of NIT and have been determined as the bid having L-1 status to be qualified to satisfactorily perform the Order.

15.0 Concurrent Commitment is Not Applicable for this LSTK Project.

### **16.0 OWNER’S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

- 16.1 NALCO reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or Bidders or; any obligations to inform the affected Bidder or Bidders of the ground for the Owner’s action.
- 16.2 The submission of any bid connected with these documents and specifications shall constitute an agreement that the Bidder shall have no cause for action or claim, against the Owner for rejection of his bid. The Owner shall always be at liberty to reject or accept any bid or bids at his sole discretion and any such action will not be called into question and the Bidder shall have no claim in that regard against the Owner. However, a bidder may seek clarification regarding the bidding document provisions, bidding process and/ or rejection of his bid. NALCO shall respond to such queries within a reasonable time.

Thanking you.

Yours faithfully,  
For National Aluminium Company Limited

GM (Materials)

## ANNEXURE –I

### PRE-QUALIFICATION CRITERIA (PQC)

**JOB: Design, Engineering, Manufacture, supply, erection, testing and commissioning of Pipe (Siphon Tube) Cleaning Machine in Old LPC Shop**

<b>A) EXPERIENCE</b>	
<b>Eligibility Criteria</b>	<b>Documentary Proof Required</b>
<p>The bidder should have experience of having successfully completed "Similar Work" during the last fifteen years ending on last day of the month previous to the one in which NITs are invited, should be either of the followings;</p> <p>The work experience should be of "Working directly" and possess relevant experience as per the details given under experience criteria. "Working directly" implies, working as a Contractor under above authorities who is the Principal Owner of the work.</p> <p><b>"Similar Work"</b> means</p> <p>Bidder should have done design, engineering, manufacturing/ assembly, supply and commissioning of at least one no. Pipe (Siphon Tube) Cleaning Machine in any Aluminium Smelter Plant having capacity of equal to or higher than 8 Nos. of Siphon Tubes/ 8 Hours. Pipe (Siphon Tube) is an attachment to Tapping Ladle (Crucible) which is used to suck molten aluminium from the Pot to Tapping Ladle (Crucible). The supplied equipment should have been in satisfactory operation after commissioning for a minimum period of one year.</p> <p><b>OR</b></p> <p>The Vendor shall have the LSTK experience of supply, erection and commissioning of Aluminium Smelter Plant/part of Smelter Plant in which Pipe (Siphon Tube) Cleaning Machine is an equipment having capacity of equal to or higher than 8 Nos. of Siphon Tubes/ 8 Hours. Pipe (Siphon Tube) is an attachment to Tapping Ladle (Crucible) which is used to suck molten aluminium from the Pot to Tapping Ladle (Crucible). The supplied equipment should have been in satisfactory operation after commissioning for a minimum period of one year.</p> <p><b>Note:</b> Relaxation on 15 years time frame can be claimed by the vendor if they have executed similar job (mentioned in the Experience criteria) in NALCO.</p>	<p>The bidder has to submit copy of the following documents duly attested by a Notary public/concerned Embassy of the country in case of a Foreign Vendor.</p> <p>a) Order &amp; Amendments, Scope of Supply &amp; Bill of Quantity.</p> <p>b) Completion/ Commissioning Certificate indicating the date of commissioning and satisfactory post commissioning Performance Certificate issued by the Client in Letterhead and signed by authorized signatory with Contact Reference.</p> <p>c) In case of use of credentials from OEM/OES/OPM, authorization from them shall be submitted.</p> <p>d) If the Indian entity does not have any manufacturing facility in India, they may supply with a certificate/ agreement from OEM/OES/OPM for back to back guarantee/warranty support for the supply, Spares and Aftersales support.</p> <p>e) Bidders may be JV/Consortium and participate in the Tender complying terms and conditions of NIT.</p> <p>f) NALCO may use internal documents for evaluation of Bids.</p> <p><b>Note:</b> Completion / Commissioning / Performance Certificate shall be considered only when it bears the Name, Designation and Contact Reference of Issuing Authority. This is only applicable for Completion/ Commissioning /Performance certificate issued after 30/06/22.</p>



<b>B) FINANCIAL</b>	
<b>Eligibility Criteria</b>	<b>Documentary Proof Required</b>
<p>1) Average annual financial turnover of the bidder during the last three Financial years ending with 31<sup>st</sup> March of previous Financial Year should be at least <b>Rs.143.94 Lakhs</b> (Rupees One Crore Forty Three Lakhs and Ninety Four Thousands only) .</p> <p>Note: Turn Over shall be escalated @ 10% per annum (simple Interest) to bring them at the current price level. The turnover of the latest previous year shall not be considered for any weightage.</p> <p>2) The bidder should have minimum positive working capital of <b>Rs.119.95 Lakhs</b>. OR The bidder should make exclusive credit limit available from one or more Scheduled Commercial Banks for the proposed work and submit a line of confirmation from the bank/banks as a documentary evidence.</p> <p>3) The bidder should have minimum positive Net Worth of <b>Rs.239.90 Lakhs</b>.</p> <p>Note: For bids received prior to 30th June of any year, the financial figure for the previous to previous year may also be considered for evaluation. Whereas for bids submitted after 30th June, the bidder may also submit financial statement for the previous year certified by Chartered Accountant / Auditor of the entity for consideration of their bid.</p>	<p>a) The bidders have to submit the copies of audited financial statements / profit &amp; loss accounts of the relevant years duly certified by Notary Public / Chartered Accountant / Auditor in support of both the eligibility criteria.</p> <p>b) Letter from your Banker on Credit Limit under Para2 (For alternative condition) address to Nalco w.r.t. Tender document.</p>

#### **JOINT VENTURE/ CONSORTIUM CRITERIA:**

Bids from Joint Venture / Consortium shall be accepted subject to fulfilling the criteria as given below:

- a) Maximum 3 (three) partners/ members shall be allowed in case of Joint Venture/Consortium.
  - b) The bidder should submit an agreement for joint venture/ Consortium duly notarized so as to be legally valid and binding on the partners / members. The agreement should contain precise indication of the responsibility of all the partners of the Joint Venture/ Consortium in respect of planning, design, construction equipment, key personal, work execution and financing of the project duly indicating the percentage in financing of joint venture/ Consortium by each partner. This agreement shall be irrevocable and valid till successful completion of the contract. The format for the agreement is attached in the tender documents.
  - c) Any party can be a member only in one Joint Venture/ Consortium. In case any member participates in more than one joint venture or individually for this tender, all such bids with his participation shall be rejected.
  - d) One of the partners / members shall be nominated as Lead Partner being in-charge and the authorization shall be evidenced by submitting Power of Attorney in his favour duly signed by legal authorized signatories of all the partners / members.
  - e) The Lead partner shall be responsible for 100% participation in financing of the Joint Venture / Consortium.
  - f) The lead partner shall meet financial criteria singly and all the partners shall meet Experience criteria jointly as stipulated in Bidder' Qualifying Criteria.
  - g) In case of dissolution/failure of Joint Venture/ Consortium, the contract shall be voidable at the option of the owner and owner shall have right to execute the balance job at the risk and cost of the Joint Venture/ Consortium.
  - h) The Lead Partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the Joint Venture/ Consortium and entire execution of the contract and all the payments shall be made to Lead Partner only.
  - i) Lead partner of the Joint venture/ Consortium shall be fully responsible for carrying out the supervision and quality control of the work including the performance guarantee test to be executed by other partner/partners.
  - j) The orders shall be placed on Lead Partner. However all the partners of the Joint Venture/ Consortium shall be liable jointly and severally for the execution of the contract in accordance with the contract terms and conditions.
-

## **FORMAT FOR CONSORTIUM AGREEMENT**

This Consortium Agreement is made on \_\_\_\_\_ date \_\_\_\_\_ at \_\_\_\_\_ place \_\_\_\_\_ BETWEEN: (1) \_\_\_\_\_ Bidder-leader \_\_\_\_\_ (full address) (hereinafter called the First party -Bidder, which expression shall include its successor, administrators, Executors and permitted assigns, of the one part (2) \_\_\_\_\_ address of 1<sup>st</sup> associate (full address) hereinafter called the 2<sup>nd</sup> party- Associate, and (3) \_\_\_\_\_ address of 2<sup>nd</sup> associate (full address) herein after called the 3<sup>rd</sup> party- Associate, which expression shall include its successor, administrators, Executors and permitted assigns) of the 2<sup>nd</sup> part, WITNESSETH:

WHEREAS, the Owner M/s. National Aluminium Company Ltd., is a Government of India Undertaking, having its Office at NALCO Bhavan, P/1, Nayapalli, Bhubaneswar -751013, Odisha, (hereinafter referred to as NALCO) has floated Notice inviting tenders bearing No. for execution of work \_\_\_\_\_ description of work \_\_\_\_\_, inviting offers from the interested parties; AND

WHEREAS the said Notice Inviting tender, permits submission of bid on consortium basis subject to the stipulations specified in the Notice Inviting tender; AND

WHEREAS M/s \_\_\_\_\_ name of the leader-bidder \_\_\_\_\_ the 1<sup>st</sup> party-bidder will file the tender on consortium basis; taking the 2<sup>nd</sup> and 3<sup>rd</sup> party as the associate(s) for the said project as detailed in the bid documents No. \_\_\_\_\_ in order to meet the PQC criteria since M/s \_\_\_\_\_ Name of the leader-bidder \_\_\_\_\_ the 1<sup>st</sup> party-bidder itself is meeting all the Qualifying requirements except describe the work which the associate(s) is/are required to execute AND;

WHEREAS the 2<sup>nd</sup> and 3<sup>rd</sup> party associate(s) have the required men, materials, and establishment with the man eager to participate and execute the work covered by the NIT and WHEREAS parties to this consortium agreement have mutually agreed to execute the contract covered by the aforesaid bid document in this joint venture; if awarded to the 1<sup>st</sup> party-bidder;

**NOW, therefore, it is agreed between the Parties as under:**

1. M/s \_\_\_\_\_ Name of the leader-bidder \_\_\_\_\_ the 1<sup>st</sup> Party bidder is the leader, of this consortium Agreement; and is answerable to the owner i.e. NALCO in all respects with regard to execution of such work. However the associate(s) are not absolved from any liability that may arise during the course of execution of such contract work.
2. M/s \_\_\_\_\_ name of the leader-bidder \_\_\_\_\_ the 1<sup>st</sup> party bidder and leader will participate in the above mentioned Bid with the Owner i.e. NALCO, and is authorized and competent to enter into negotiations and make all correspondence with the owner as he deems fit just and proper and the parties to this agreement shall be bound by the decisions or/and commitments made by the leader in that regard.
3. During the term of this Consortium agreement the parties shall not enter into any teaming arrangements with any other party for any component of the Bid covered under this Consortium Agreement.
4. This consortium agreement shall remain in force until finalization of the bid filed by the owner on consortium basis and in case of award of work, until completion of the awarded work including the defect liability period covered by the Bid documents, as the case may be.
5. The parties to this Consortium Agreement hereby mutually agree that both (all) of them shall remain as irrevocable members of the tie-up for the complete execution and completion of this project.
6. The parties to this Consortium Agreement agree that after mutual consultation and technical discussions, they have agreed and decided with regard to preparation of the final bid, authorizing their leader to bid for the work.
7. The Parties to this Consortium Agreement shall be jointly and severally liable for the consequences of non-execution of the Contract work satisfactorily covered by the aforesaid Bid document.
8. The parties to this Consortium Agreement do hereby declare that the leader 1<sup>st</sup> party M/s \_\_\_\_\_ name of the leader-bidder \_\_\_\_\_ shall have the authority to conduct all business for and on behalf of any and all the partners of the Consortium during the bidding process and in the event the Consortium is awarded with the Contract, during the entire Contract execution period.
9. It is hereby agreed that the leader M/s \_\_\_\_\_ name of the leader-bidder \_\_\_\_\_ shall be entitled to receive all instructions and communications from the owner i.e. NALCO, on behalf of the members of this Consortium Agreement. All such instructions and communications are deemed to have been made on all the parties to this consortium Agreement.
10. The parties do hereby agree that all of them shall sign the Contract agreement in case of its award with the owner i.e. NALCO.
11. The parties do hereby agree that the leader (1<sup>st</sup> party) \_\_\_\_\_ name of the leader-bidder \_\_\_\_\_ shall remain in-charge of the entire project if awarded by the owner i.e. NALCO, but however all of them shall make every endeavor to satisfactorily execute the Contract work in its entirety to the satisfaction of the owner i.e. NALCO.
12. The parties do hereby agree that the leader-1<sup>st</sup> party- \_\_\_\_\_ name of the leader-bidder \_\_\_\_\_ shall raise periodical bills with the owner for the works executed and the leader-1<sup>st</sup> party \_\_\_\_\_ name of the leader-bidder \_\_\_\_\_ shall only be eligible to receive payments from

the owner. The associate(s) does/do hereby declare that he/they does/donot have the authority to raise any bills in respect of the allotted Contract work, basing on this Consortium agreement. The associate(s) to this agreement can only make correspondence through the leader-1<sup>st</sup> party M/s name of the leader-bidder with the owner i.e. NALCO.

13. The parties do hereby declare that so far as NALCO is concerned, the 2<sup>nd</sup> Party and 3<sup>rd</sup> is/are only the agents/partners of the leader-1<sup>st</sup> party M/s name of the leader-bidder, though they are jointly and severally liable for the consequences those may arise during or after execution of the contract work in question.
14. The parties to this agreement covenant with each other that each of them shall be entitled to share the payments received from Nalco according to work executed by them respectively, without any reference to NALCO.
15. The parties to this Consortium Agreement shall mutually cooperate with each other, and shall not do or cause to be done or indulge in any sort of activity, which would impede or adversely affect the progress of the awarded contract work and in its completion satisfactorily.
16. In the event of the acceptance of the Bid and on award of work on the leader on the basis of this Consortium Agreement, the Contract work shall be executed by all of the parties to this consortium agreement as per the bidding documents and as per the Work Schedule given here under.

#### **WORKSCHEDULE**

Sl. No.	Name of Bidder/member of consortium/Joint venture.	Work Particulars	Completion schedule.

17. The leader of Consortium/Joint venture is hereby authorized to incur liabilities and receive instructions for and on behalf of any and all the consortium/Joint Venture members for the entire Contract Work.
18. This Consortium agreement having been exclusively entered into by the associates with their Leader-Bidder, the leader bidder shall alone be accountable and answerable to the associates concerning the execution of the contract work so awarded and NALCO the owner shall in no case be held liable or answerable to the associates, for all or any of the matters covered by this consortium agreement.
19. In the event of any default in the execution of the contract, i.e. execution of work in accordance with specifications and within the scheduled time by any member/ members of consortium/joint venture member, the rights and obligations of the consortium/joint venture shall continue to be in full force without being affected by any changes, until the final bill of the contract work of Nalco is settled. The leader shall ensure performance of the contract and if one or more associates fail to perform the irrespective portions of the contract, the same shall be deemed to be a default by all the members of the Consortium/Joint venture.
20. The parties to this consortium agreement/joint venture do hereby declare that they shall not cancel or amend this agreement unilaterally without the consent of the owner i.e. NALCO, which consent shall be obtained in writing.
21. It is agreed that the responsibility of all partners / members of the consortium/joint venture in respect of planning, design, construction equipment, key personnel, work execution and financing of the project has been decided and defined. The leader M/s- the name of the 1<sup>st</sup> party bidder shall be responsible for 100% participation in financing and execution.
22. The associated parties i.e. M/s NAME OF 1<sup>st</sup> ASSOCIATE, M/s NAME OF 2<sup>nd</sup> ASSOCIATE and M / s NAME OF 3<sup>rd</sup> ASSOCIATE IF ANY shall provide adequate finances, tools and tackles, transportation equipment, other plant and equipment, measuring and monitoring devices, men and machineries etc for proper and effective execution of the works undertaken by them as per this Consortium agreement.
23. This Consortium agreement shall be construed and Governed by laws of India and the parties hereby agree to submit themselves to the exclusive jurisdiction of Angul Courts within whose jurisdiction the contract work in question is to be carried out.
24. Any matter which is not stipulated in the consortium agreement shall be settled in good faith by discussion among the parties in the spirit of understanding and cooperation.
25. All disputes or differences whatsoever arising among the parties regarding this consortium agreement, shall be settled by arbitration, in accordance with arbitration and conciliation Act, 1996. The Arbitral Tribunal shall consist of a sole arbitrator who shall be nominated and appointed by the CMD of the leader 1<sup>st</sup> party on the request of either party to this consortium agreement. Since the contract work relates to S&P Complex NALCO, Angul, the Venue of Arbitration shall also be at the near by places of Angul in the District of Angul. With the consent of the parties, the arbitrator may hold sittings at any other place other than the venue agreed for the convenience of the parties.

In witness whereof, the parties here to have executed this Consortium Agreement in duplicate/ triplicate, today the \_\_\_\_\_ day of \_\_\_\_\_ 2024 at \_\_\_\_\_.

1<sup>st</sup> Party (leader)

2<sup>nd</sup> party (associate)

3<sup>rd</sup> party (associate)

WITNESSES

- 1.
- 2.

Drafted, Computer typed by me, as per the instructions of the parties. Read over and explained the contents of the agreement to the parties in presence of witnesses, to which they admitted the same to be true and correct and as per their instructions and signed the same in my presence and in presence of the witnesses.

Advocate

Note: The agreement should be duly attested by Notary Public. Bidder should upload the scanned copy of the agreement with their On-line Part-I-Bid. The original copy of the declaration should be submitted in Cover-I of the hard copy offer.

\*\*\*\*\*

**PROVEN TRACK RECORD****For****Design, Engineering, Manufacture, supply, erection, testing , commissioning and PG tests of  
Pipe (Siphon Tube) Cleaning Machine in Old LPC Shop**

DESCRIPTION	BIDDER'S REFERENCES		
	1	2	3
Client's Name Address  Tel. No. Fax E-mail Name of Contact person			
Project/ Location :			
Copy of Purchase Order from Client enclosed: Yes/ No			
Referred Pipe (Siphon Tube) Cleaning Machine as a standalone equipment : Yes/ No			
If no, reference of LSTK package in which Pipe (Siphon Tube) Cleaning Machine is a part			
Capacity in nos. of Pipe/Siphon Tube Assembly per 8 Hours			
Length of Pipe/Siphon Tube Assembly (in Meters)			
Month & Year of Commissioning			
Copy of Completion/ Commissioning Certificate from Client enclosed: Yes/ No			
Copy of Performance Certificate from Client (Satisfactory running of the supplied Machine for minimum One Year) enclosed: Yes/ No			
Bidder's Scope of supply and services Pipe (Siphon Tube) Cleaning Machine Package:			
- Basic Design (Yes/ No)			
- Detailed Design and Engineering (Yes/ No)			
- Procurement and manufacture (Yes/ No)			
- Shop Assembly, Inspection & Testing (Yes/ No)			

Signature of Authorised Personnel  
With seal



## Annexure-II

### TECHNICAL SPECIFICATIONS

Sl. No	Material Code	Description	UOM	Qty.
1	21105001000	<b>Design, Engineering, Manufacture, Supply, erection, testing, commissioning and PG tests of Pipe (Siphon Tube) Cleaning Machine in Old LPC Shop, NALCO SMELTER PLANT, ANGUL, ODISHA</b> (For Detailed Specification, Refer Tender Documents : Annexure-XX )	SET	01

### **ANNEXURE-III**

#### **DEVIATION TO TECHNICAL SPECIFICATIONS**

(To be filled in by the Tenderer and submitted with Techno-Commercial bid)

If the Bidder has got any deviation from technical specification, bidder shall tabulate those deviations in this schedule. Attach more sheets, if necessary. It is confirmed that except those deviations, as tabulated hereunder, the complete offer is in agreement with the specification requirement.

**NOTE:**

1. Deviation to Technical Specifications (Annexure-XX), if any, shall be indicated only in this schedule.
2. This shall be submitted along with the Un- priced Offer.
3. Deviation listed elsewhere shall not be taken cognizance of and shall be ignored.
4. No separate printed terms and conditions shall be considered and shall be totally rejected.
5. Deviations shall only be discussed during the tender discussions, if felt necessary, and no fresh additional deviations shall be entertained.
6. In respect of deviations, if any, on the Critical Provisions, the Bid shall be rejected without any indications.
7. In case of contradiction/ conflicting version found by NALCO at different places of offer, NALCO can choose any version or the offer may be rejected without any indications.

Sl. No.	Clause No. & Reference of Annexure-XX	Page No. of NIT	Technical Specifications of NIT	Deviation taken	Reasons for deviations

Signature:

Date:

Name:

Designation:

Seal:

---

## **Annexure - IV**

### **STANDARD TERMS AND CONDITIONS OF NIT (STC)**

#### **1. PRICE :**

- 1.1 The offer shall be made on F.O.R. Destination/Free Delivery at Site basis indicating Taxes, Duties, Levies, Packing & Forwarding, Freight charges etc., each indicated clearly and separately as per the attached price bid format. The quoted price must be inclusive of Marine cum Erection (MCE) Insurance charges as mentioned herein.  
Wherever the Taxes and Duties are not specifically indicated, it will be presumed as "Not Applicable" and no statutory variation will be payable by NALCO. The rate & amount of Taxes and Duties should be clearly mentioned.
- 1.2 Any condition or component of the NIT having a financial bearing on arriving at the landed price at NALCO or otherwise payable by NALCO, if not quoted or agreed to in the tender, shall be suitably loaded to the quoted price for comparison purpose.
- 1.3 Price loading on account of payment terms at variance with tender documents payment terms will be loaded for the relevant period. The interest rate for price loading on account of deviation to payment terms shall be prevailing MCLR(1-year tenor) of SBI plus 1% .
- 1.4 Bidders are requested to quote their best price considering the fact that price negotiation, if required, may be held with the lowest tenderer only.

#### **2. PRICE FIRMNESS :**

All prices quoted must remain firm and fixed till complete execution of the contract except for statutory variation in taxes and duties during contractual completion period. Any increase in taxes and duties after expiry of the completion period will be to Supplier's account.

#### **3. GOODS AND SERVICES TAX (GST):**

(A) The bidder shall indicate rate of GST with HSN code of material along with the GSTIN of the invoicing location.

(B) Rate variation in Taxes and any new promulgated taxes after last date of the submission of price bid only on the goods and/or services applicable to invoices raised on NALCO within the contractual delivery date /period (including extension approved if any) shall be on NALCO's Account against submission of documentary evidence.

(C) The bidder will be under obligation for quoting/charging correct rate of tax as prescribed under the respective Tax Laws. Further the bidder shall avail and pass on benefits of all exemptions/concessions/benefits/waiver or any other benefits of similar nature or kind available under the Tax Laws. In no case, differential Tax Claims due to wrong classification of goods and/or services or understanding of law or rules or regulations or any other reasons of similar nature shall be entertained by NALCO.

(D) To enable NALCO to avail ITC, the bidder/supplier shall submit any and all certificates, documents and declarations as are required by NALCO to avail of the ITC with respect to GST reimbursed by NALCO on materials sold to NALCO.

(E) The HSN Code under which the goods/service will fall should be clearly mentioned along with the Rate at the time of submission of invoice for releasing payment.

(F) In case, NALCO is not able to avail Input Tax Credit due to any noncompliance/default/negligence of the seller, the same shall be recovered from the pending bills/dues (including security deposit, BG etc.).

(G) Seller shall be responsible to indemnify NALCO for any loss, direct or implied, accrued to NALCO on account of supplier's failure to discharge his statutory liabilities like paying taxes on time, filling appropriate returns within the prescribed time etc.

---

#### **4. COMPLETION PERIOD :**

The total Completion period of the project in all respect as per Technical Specifications and Scope of supply and work of our NIT shall be 12 (Twelve) months from the effective date of contract..

#### **5. PAYMENT TERMS:**

##### **5.1 For Supply Portion :**

- a) 80% of the basic value of Design, engineering and supply order along with 100% applicable taxes and duties on pro-rata basis after receipt of material and equipments at site against submission of relevant bills as per approved billing schedule duly certified by Manager-In-Charge or his/her authorized representative.

Balance 20% of basic Design, engineering and supply order value (excluding Taxes & duties) shall be made as follows:

- b) 10% lump sum payment shall be made after completion of mechanical erection of total system and against mechanical completion certificate duly issued by Manager-In-Charge or his/her authorized representative.
- c) Balance 10% lump -sum payment shall be made after final handing over of the complete system including acceptance of PG test report and clearing all liabilities duly certified by Manager-In-Charge or his/her authorized representative

##### **5.2 For Site Work portion (i.e., unloading, storage, handling, erection, testing, commissioning and PG tests, etc. including dismantling and disposition of existing unit)**

- a) 80% of the basic works value along with 100% applicable taxes and duties on pro-rata basis after completion of erection of equipment at site against submission of relevant bills as per approved billing schedule on certification of Manager-In-Charge or his/her authorized representative.

Balance 20% of basic works value (Excluding Taxes & duties) shall be made as follows:

- b) 10% lump-sum payment shall be made after commissioning of total system and against mechanical commissioning certificate duly certified by Manager-In-Charge or his/her authorized representative
  - c) Balance 10% lump-sum payment shall be made after final handing over of the complete system including acceptance of PG test report and clearing all liabilities duly certified by Manager-In-Charge or his/her authorized representative
-

### **5.3 GST Payment**

Payment of GST is subject to reflection of the seller's invoice in GSTR 2A/Anx-2 [GST new return of NALCO].

### **5.4 NOTE:**

- I. If PG Tests could not be conducted within 06 months from commissioning, for reasons not attributable to Contractor, last 10% payment will be released against submission of a Bank Guarantee of equal amount valid for 12 months initially and extendable thereafter. This however, will not relieve the contractor from his obligations towards the PG Tests and any other contractual obligations.
- II. All Payment can be made through e-payment mode through SBI as well as NEFT / RTGS mode through designated enabled branches. Duly filled Bank Mandate form in duplicate should be furnished with due authentication from bidder's Banker.
- III. All payments are subject to submission of acceptable Contract-cum Performance Bank Guarantee (CPBG) )/ Terms of CPBG mentioned elsewhere in the document-
- IV. Within 01 month of receipt of Letter of Intent/PO, the contractor shall submit a billing schedule/billing break up for approval of NALCO, wherever required.

### **5.5 Documents to be enclosed with the Running Account (RA Bill)s:**

#### **5.5.1 For 80% payment for both Supply and Works portions :**

- i. Tax Invoice
- ii. RA Bill formats available with Manager-In-Charge
- iii. Guarantee/Warranty Certificate ( as applicable)
- iv. Material reconciliation certificate on Works Bill ( In case of Free issue material, if any)
- v. HRD Clearance in Works Bill
- vi. Any other document required by Manager-In-Charge or as per directive of statutory authority.

#### **5.5.2 Final Bill ( i.e. the last 10% of supply and works portion) shall be accompanied by :**

- i. Invoice
- ii. Completion certificate
- iii. Final Material reconciliation certificate on Works Bill ( In case of Free issue material, if any)
- iv. No Claim certificate in NALCO's format
- v. No dues Certificate from O&M department where project is done
- vi. PG Test report
- vii. Handing Over/Taking Over certificate
- viii. HRD Clearance
- ix. Royalty clearance certificate ( wherever applicable)

Note :

- i. The final bill shall be submitted by the contractor within three months of final handing over.
-

**6. PRICE REDUCTION SCHEDULE (PRS) FOR DELAY IN COMPLETION OF PROJECT :**

Time is the essence of the contract and the project should be completed within the completion period mentioned in the NIT. The PRS for delay in completion of the project attributable to the contractor, shall be levied @ ½% of the total basic contract value per week of delay in completion or part thereof subject to maximum of 5% of total basic contract value. Any deduction towards PRS shall be made with applicable GST at the time of settlement.

**7. RISK & COST PURCHASE:**

NALCO also reserves the right to procure the material/equipment from alternate sources at the Risk & Cost of the supplier, giving 15 days' notice to supplier, if the supplier fails to execute the contract as per the terms and conditions of the Contract. Any increase in taxes and duties after expiry of the contract period will be to Supplier's account. This will be without prejudice to the rights of NALCO for any other action including termination.

**8. PRE-DISPATCH INSPECTION AND TESTING PROCEDURE:**

Pre-dispatch inspection (PDI) and testing as mentioned in Annexure-XX shall be done by NALCO's representative(s) at supplier's works prior to dispatch with 15 days of prior intimation by the supplier. However, final inspection & testing shall be carried out by NALCO at NALCO, Smelter site and the result shall be binding on the supplier on whom order shall be placed.

**9. GUARANTEE:**

All the equipment and materials supplied by the Contractor shall be guaranteed against all defects in Design, Raw materials, manufacturing, Assembly, Workmanship and Performance etc. for a period of 12 (twelve) Months from the date of satisfactory completion of commissioning including the performance guarantee tests or 24 (twenty four) Months from the date of completion of erection(Mechanical Completion), whichever is earlier.

**10. CONTRACT CUM PERFORMANCE BANK GUARANTEE (CPBG):**

- 10.1 The Contractor shall furnish a Contract-cum-Performance bank guarantee (**CPBG**) of 10% of Total Basic Contract value including amendment if any, in Nalco's prescribed format (**Annexure-XI**) from any Bank approved by Nalco (**Annexure-XII**) towards guarantee/warranty of all the equipments, materials and components against trouble free operations up to guarantee period with claim period of three months. i.e. Contract-cum-Performance bank guarantee (**CPBG**) shall remain valid up to 03(three) months beyond the guarantee period.
- 10.2 The validity of CPBG initially shall be 27(twenty seven) months considering Project completion period (12 months), Guarantee/Warranty period (12 months) plus claim period (3 Months). However, the Contractor shall be asked to extend the validity of CPBG based on the actual project execution (if required) at a later date.
- 10.3 **The CPBG shall be submitted within 30 days from the date of Contract/LOI.** If Contractor fails to submit CPBG after placement of order, the equivalent amount shall be recovered from their bill(s). Subject to any deduction which Nalco is authorized to make, CPBG shall be released after satisfactory completion of guarantee/warranty period. On the breach of the contract by the supplier, CPBG shall be forfeited/encashed whether or not the Company has suffered a loss on this account and purchase order shall be rescinded. Forfeiture/encashment of CPBG does not prejudice Nalco's rights to make Risk and Cost purchases and recover damages on account of such risk and cost purchases.
- 10.4 The clause 19 - Security Deposit of Annexure-XXI (GENERAL CONDITIONS OF CONTRACT) is Not Applicable for this NIT. Also Security Deposit wherever mentioned in Annexure-XXI (GENERAL CONDITIONS OF CONTRACT) shall be read as Contract-cum-Performance Bank guarantee (**CPBG**).
11. **MANAGER IN-CHARGE:** GM (CRG), NALCO, Smelter shall be the Manager-In-charge and he or his representative shall be the certifying officer from NALCO for all requirements including Bill payment. He shall be the overall coordinating officer for the execution of contract.
-



**12. OFFER VALIDITY:**

The offer must be valid for a minimum period of 180 days from the date of opening of tender i.e. the date on which part-I bid will be opened in CPPP. If required NALCO may request for further extension of offer validity for a period of 90 days.

**13. EFFECTIVE DATE OF CONTRACT:**

Effective date of contract shall be the date of unqualified acceptance of the Purchase Order/LOI i.e. all contractual obligations shall commence from effective date of contract. Maximum time permitted for acceptance is 15 days from the date of receipt of PO/LOI through E-Mail by NALCO.

**14. FINAL HANDING OVER:**

The system shall be finally handed over to NALCO by the contractor after successful erection, commissioning, completion of PG test, handing over of As-Built drawings & documents, all type of spares, imparting Training at site to Nalco personnel as per terms and conditions of the contract.

**15. TERMINATION OF CONTRACT:** NALCO shall have the right to terminate the contract by giving 60 days notice without assigning any reasons thereof. However, in the event of any breach of terms of the contract, NALCO will have right to terminate the contract by written notice to the Seller.

**16. INSURANCE:** Marine cum Erection (MCE) Insurance will be arranged and borne by the Supplier. Marine cum Erection (MCE) insurance is in the scope of the Supplier/contractor i.e. all the supplied equipments and materials along with the accessories shall be completely insured by the supplier till the completion of erection, commissioning at NALCO site and handing over of complete system to NALCO . **The quoted price must include the aforesaid MCE insurance charges.**

**17. PREFERENCE TO MAKE IN INDIA**

Preference to Make In India products (For bids < 200 Crore):Preference shall be given to Class 1 local supplier as defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products. The minimum local content to qualify as a Class- I local supplier is 50% and for class-II local supplier the minimum local content is 20%. If the bidder wants to avail the Purchase preference, the bidder must upload a certificate (in case dealer from the OEM) regarding the percentage of the local content and the details of locations at which the local value addition is made in the format given in the Annexure XIII of the tender document along with their bid, failing which no purchase preference shall be granted. In case the bid value is more than Rs. 10.0 Crore, the declaration relating to percentage of local content shall be certified by the statutory auditor or cost auditor, if the OEM is a company and by a practicing cost accountant or a chartered accountant for OEMs other than companies as per the Public Procurement (preference to Make-in -India) order no.P-45021/2/2017-PP(BE-II) dated 16.09.2020. Only Class-I and Class-II Local suppliers as per MII order dated 16.09.2020 will be eligible to bid. Non - Local suppliers **as per MII order dated 16.09.2020 are not eligible to participate.**

**18. ANTI –PROFITEERING CLAUSE (SEC 171 OF CGST ACT) (APPLICABLE FOR INDIAN BIDDERS):**

In any new Tax/Taxes is introduced on sale of goods/services, either in lieu of existing tax/ taxes or as separate tax/taxes, then the overall incidence of tax/taxes on the Vendor on account of its inputs and outputs wherever less than the incidence of existing taxes, then the vendor shall pass on to Owner, the benefits thereof by way of commensurate reduction in the basic price w.r.t Input tax benefits and reduction in Tax chargeable to 'Nalco' w.r.t Output Tax benefits in connection with goods and/or services provided.

If on the other hand, the incidence of tax/taxes is in excess of the incidence of existing tax/taxes, the Owner on submission of satisfactory proof, shall reimburse the Vendor the additional incidence of tax provided they are within the contractual completion date.

The vendor has to provide a declaration (as per Annexure-XIV) along with the tender that they will abide by the requirements under CI 171 of CGST Act,2017

**19. FORCE MAJEURE:**

Any delay or failure to perform the contract by either party caused by acts of God or acts of Government or any direction or restriction imposed by Government of India which may affect the contract or the public enemy or contingencies like strikes, riots etc. shall not be considered as default for the performance of the contract or give rise to any claim for damage. Within 7 days of occurrence and

---

cessation of the event(s), the other party shall be notified. Only those events of force majeure which impedes the execution of the contract at the time of its occurrence shall be taken into cognizance.

## **20. ARBITRATION & JURISDICTION:**

In case of any dispute or difference arising out of the contract which cannot be resolved mutually between NALCO and Seller, it shall be referred to a Sole Arbitrator to be appointed by the CMD, NALCO. The CMD, NALCO, shall communicate/cause to communicate, a panel of three names of persons to Seller/NALCO as the case may be in this regard within 30 (thirty) days of notice of arbitration by the Seller/NALCO as the case may be, to select any one of them to be appointed as the Arbitrator. In case Seller/NALCO, as the case may be, has not communicated its selection as above within thirty days, CMD, NALCO will appoint any one of the persons from the panel as a Sole Arbitrator. The Arbitrator shall give a reasoned and speaking award. The award of the Arbitrator shall be binding on both the parties. The venue of arbitration shall be at Bhubaneswar. In case of any vacancy another Arbitrator will be appointed in the same manner as above.

The Arbitration and Conciliation Act, 1996 and rules made there under shall apply to the Arbitration Proceedings.

The contract shall be governed by and construed according to the laws in force in India and subject to exclusive jurisdiction of the Courts of Angul/Bhubaneswar (Odisha) only.

## **21. GUIDELINES FOR ELIGIBILITY OF A “BIDDER HAVING BENEFICIARY RELATIONSHIP FROM A COUNTRY WHICH SHARES A LAND BORDER WITH INDIA”:**

All the clauses of Order No. F.No. 6/18/2019-PPD dated 23.07.2020 & OM Dtd.08.02.2021 issued by Ministry of finance (dept of Expenditure) shall be applicable against the tender. The same is available at website <https://doe.gov.in/procurement-policy-divisions>

All the bidders are required to submit compliance certificate as asked in the above order No. F.No. 6/18/2019-PPD dated 23.07.2020 & OM Dtd. 08.02.2021. The model certificate is given below:

### **Model certificate for tenders:**

“We have read & understood the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. We certify that bidder M/s. \_\_\_\_\_ (name of the bidder) does not have beneficiary relationship from such a country or have beneficiary relationship from such a country, & has been registered with the Competent Authority. We hereby certify that bidder M/s. \_\_\_\_\_ (Name of bidder) fulfills all the requirement in this regard and is eligible to be considered against the tender.”

If the above certificate given by a bidder whose bid is accepted, is found to be false, this would be a ground for immediate rejection of bid/termination of contract and further legal action in accordance with law.

## **22. INCOME TAX CLAUSES**

(A) For supply Contracts / Purchase Orders / Supply portion of LSTK:

NALCO, being Buyer (under Section 194Q inserted in the Income Tax Act, 1961 vide Finance Act 2021) having total sales, gross receipts, or turnover from business above Rupees Ten Crores during the last Financial Year, will deduct TDS under Section 194Q, w.e.f. 01.07.2021, at the prescribed rate of 0.1% on the purchase value of any goods, aggregate of which is exceeding the threshold limit of Rs.50 Lakhs in a Financial year.

Accordingly, Vendors/Sellers are not to collect tax at source under section 206C (1H) of the Act w.e.f. 01.07.2021, in case provisions of section are applicable to them.

The above is as per the current status and is subject to modification(s) based on amendments/notifications under Income Tax Act, 1961, from time to time.

(B) For Other Contracts / Orders:

Income Tax TDS, as applicable at the prevailing rate on the gross amount billed shall be deducted from the contractor's bills.

### **UNDER INCOME TAX / BILLING CLAUSES:**

Vendor / Party categorised/designated as “specified person” under Section 206AB of Income Tax Act, 1961 shall be liable for TDS at higher rate as provided under the said section, by NALCO. So, Vendors/Contractors are advised to submit self-certified copies of Income Tax return (ITR) for each

---

of the Two Previous Years for which due date for filing of ITR has expired, along with the Invoice/Bill so as to facilitate NALCO, verify the applicability of Section 206AB.

### **23. CRIMINAL PROCEEDINGS/ CASES:**

**23.1** The bidder or its Proprietor/ Partner(s)/ Director(s) of the firm should not have been convicted by a court of Law for an offence involving moral turpitude in relation to business dealings during the past seven (7) years. The bidder shall give an affidavit to this effect. The affidavit must be affirmed before the competent judicial authority or attested by Notary Public. . Bidders should upload the scanned copy of the declaration with their On - line Part - I - Bid. The original copy of the declaration should be submitted in **cover - 1 of the hard copy offer**.

**23.2** The bidder has to furnish a declaration to the effect that they have not been banned or de-listed by any Government or Quasi Government agencies or PSUs of India. If they have been banned or de-listed by any Government or Quasi Government agencies or PSUs, then this fact must be clearly stated. The declaration should be in the bidder's official letterhead duly signed by the authorised signatory with official seal. . Bidders should upload the scanned copy of the declaration with their On - line Part - I - Bid. The original copy of the declaration should be submitted in **cover - 1 of the hard copy offer**.

**23.3** Bidder should not be under liquidation, court receivership or similar proceeding. Bidder has to submit **certificate/ Undertaking** in this respect in his official letterhead duly signed by the authorised signatory with official seal. Bidders should upload the scanned copy of the declaration with their On- line Part - I Bid. The original copy of the declaration should be submitted in **cover - 1 of the hard copy offer**.

**24. TAKING OVER:** Upon successful completion of all the tests to be performed at site on equipment and systems furnished and erected by the Contractor, the Engineer shall Issue to the Contractor a taking over certificate as a proof of the final acceptance of the equipment. Such certificate shall not relieve the Contractor of any of his obligations which otherwise survive by terms and conditions of the contract after issuance of such certificate.

**25. REJECTION OF DEFECTIVE PLANT:** If the completed plant or any portion thereof, it is taken over under the clause 'Taking Over', be found defective or fails to fulfill the requirements of the contract, the Engineer shall give the Contractor notice setting forth particulars of such defects or failure, and the Contractor shall forth wile make the defective plant good or to make it comply with the requirements of the contract. Should he fail to do so within a reasonable time, the Purchaser may reject and, replace at the cost of the Contractor the whole or any portion of the plant as the case may be, which is defective or fails to fulfill the requirements of the Contract. Such replacement shall be carried out by the Purchaser within a reasonable time and at a reasonable price, and where reasonably possible to the same specification and under comparative condition. The Contractor's full and extreme liability under the clause shall be satisfied by the payment to the purchaser of the original contract price including charges of erection and/or supervision of erection plus the difference if any between the replacement price of the equipment including charges for erection and /or supervision of erection and the original contract price including charges for erection and / or supervision of erection in respect of such defective plant.

In the event of such rejection, NALCO shall have the right to operate any and all equipment as soon as and as long as it is in operating condition, whether or not, such equipment has been accepted as complete and satisfactory, to enable him to obtain necessary replacement, except that this shall not be construed to permit operation of any equipment which may become damaged by such operation before any required alternations or repairs and/or replacement have been made. All repairs or alternations or replacement required of the Contractor shall be made by the Contractor at such times as directed and in such manner as will cause the minimum interruption in the use of the equipment by the Purchaser. Should the Purchaser not so replace the rejected plant within a reasonable time, the Contractor's full and extreme liability under his clause will be satisfied by the repayment of all money paid by the Purchaser to him in respect of such plant.

Nothing in this clause shall be deemed to deprive the Purchaser or affect any rights under the contract which he may otherwise have in respect of such defects or deficiencies or in any way relieve the Contractor of his obligations under the contract.

---

**26. LIMITATION OF LIABILITIES:** The final payment by the Owner in pursuance of this Contract terms shall not mean release of the Contractor from all his liabilities under the Contract. The Contractor will be liable and committed under this contract to fulfill all his liabilities and responsibilities, till such time Performance Bank **Guarantee is released by the** Owner. Notwithstanding the above, the maximum liability shall be 100% of contract value and the vendor will not be liable for any indirect consequential damages/losses.

**27. DEDUCTION FROM CONTRACT PRICE**

All costs, damages or expenses which the Purchaser may have paid, for which under the contract Contractor is liable, may be deducted by the Purchaser from any money due or be coming due by him to the Contractor under the contract, or may be recovered by action of law or otherwise from the Contractor. Further all legal and statutory deductions will be made and the Contractor is not entitled to any reimbursement or claim what-so-ever except only a tax deduction certificate. In the event of recovery to the necessary extent becoming impossible owing to insufficiency of the Bank Guarantee (BG) and withheld amounts, the balance due to the purchaser, may be recovered in any way the Purchaser may deem fit.

**28. SAFETY:** The supplier shall comply with all the statutory safety provisions of NALCO and get safety clearance from the Safety Department of NALCO, CPP for all the necessary jobs and also to obtain any other statutory & environment clearances for successful completion of the contract. The supplier shall take all necessary safety measures, at their own cost, to avoid any harm or injury to their workers & staff from the equipments, facilities, etc.

**29. WORKMEN COMPENSATION, PERSONAL ACCIDENTAL INSURANCE, LABOUR LAWS:** All persons engaged by the supplier at NALCO site shall be adequately insured by the supplier as per the statutory norms, statutory / contingency insurance coverage i.e., third party liability, ESI and under the workmen compensation insurance policy / personal accidental insurance policy, etc. The supplier shall comply with all applicable labor laws including payment of wages, etc.

**30. PRICE VARIATION COMPENSATION (PVC)**

1. The PVC clause shall be applicable for all LSTK Contracts with Duration more than 18 months and Contract value exceeding Rs.3 Crores. However, LSTK contracts with contractual completion period of less than 18 months but delayed beyond 18 months period due to the reasons not attributable to the vendor, will be governed by conditions as per Clause no:3.10.1.

**PVC Clause shall not be applicable for the LSTK Contracts having original Contract values upto Rs. 3 Crores.**

2. PVC shall be applicable to both Material and Service Components of BOQ .
  - a) Supply : Supply of materials for the LSTK Contracts
  - b) Service: Design, Engineering, Erection & Commissioning, Testing, Training, Material Transport, Port Handling etc
3. The following methodology shall be applicable for PVC clause both for **UPWARD/DOWNWARD** variation:

**3.1 Price variation shall not be applicable for the price of items indicated in *foreign currency* in the contract.**

**3.2** No price variation shall be applicable for the cost of Free Issue Materials issued by NALCO.

**3.3** Minimum percentage of variation, beyond which PVC clause will be admissible, is +/- 2% of the base price, calculated in quarterly basis.

**3.4** 15% of the quoted price is considered as fixed and not subject to price variation.

**3.5** PVC is calculated based on indices for Material & Service Components as detailed below:

**Service Component:**

Base Index - AICPI-IW for the month prior to the base date.

Final Index - AICPI-IW for the month of execution.

**Material Component:**

---

Base Index - AIWPI for the month prior to the base date.

Final Index - AIWPI for the month prior to the month of delivery.

AIWPI of the applicable material group is to be applied.

Payments for each supply of materials & services would initially be made as per the base price mentioned in the contract and PVC should be submitted only quarterly, based on the above indices, provided it meets the minimum criteria of  $\pm 2\%$  variation as specified at Cl. 3.3 above.

- 3.6 For contracts where steel, cement, fuel & power are the main components, AIWPI for Steel, Cement, Fuel & Power may be applied in place of 'AIWPI for all Commodity'. 'AIWPI for all Commodity' shall be applicable for Price Variation calculation where there is no major Component of a particular material.
- 3.7 For Contracts involving supply of Electrical Transformers, IEEMA formula shall be used for these transformers. For other components, price variation formula with 'AIWPI for all Commodities' will be applicable.

- 3.8 PVC shall be applicable on both Supply of Material and Service portion. After Placement of PO, the vendor shall submit the Billing Break-up Schedule complying the % of Supply of Material and Service portion as indicated in Standard Terms & Conditions of NIT. Price Variation will be calculated based on following formula:

**3.8.1 For Labour/Service Component:**

$$P = 0.85 \times V \times \frac{L_x}{100} \times \frac{(L_1 - L_0)}{L_0}$$

Where,

P = Amount of Price variation

V = Value of work under consideration for PVC on pro-rata basis;

Lx = % of labour/service component to be considered for price variation.

L1 = values of corresponding labour index (AICPI – IW) as applicable for the month in which the work is executed;

L0 = values of the above mentioned labour index (AICPI-IW) is that of one month prior to the Base Date. Due date of opening of the Technical Bid is considered as the base date.

**3.8.2 For Material Component(s):**

$$P = 0.85 \times V \times \frac{M_x}{100} \times \frac{(M_1 - M_0)}{M_0}$$

Where,

P = Amount of Price variation

V = Value of work under consideration for PVC on pro-rata basis

Mx = % of material component to be considered for price variation.

M1 = values of corresponding material index (AIWPI) as applicable for the month, prior to the month, in which the material is delivered;

M0 = values of the above mentioned material index (AIWPI) corresponds to that of one month prior to the base date. Due date of opening of the Technical Bid is considered as the base date.

- 3.9 The ceiling on price variation shall not exceed the maximum limit as specified below:

- For Contract(s) where completion period as stipulated is more than 18 months but not more than 24 months: 12% (Twelve percent) of the order value;
- For Contract(s) where completion period as stipulated is more than 24 months but not more than 36 months: 15% (Fifteen percent) of the order price;
- For Contract(s) where completion period as stipulated is more than 36 months: 20% (Twenty percent) of the order price;

- 3.10 Price adjustment shall be allowed in the Contract Price for the variations in the agreed schedule and actual schedule of work, as follows:



- 3.10.1 When contractual “Time for Completion” of the Contract is up to eighteen (18) months and if completion of project is delayed beyond scheduled “Time for Completion” due to reasons attributable to NALCO and extension to the “Time for Completion” is granted, the extent of price adjustment, if any, shall be allowed in the Contract Price, for the upward or downward variations arising between the scheduled “Time for Completion” and actual time of completion of the respective item of work within the “Extended Time for Completion” of the Contract.
- 3.10.2 If completion of the project is achieved within the scheduled ‘Time for Completion’, as indicated in Contract Agreement, the price adjustment of the invoices shall be calculated on the basis of “AICPI/AIWPI Index” as explained in Cl. 3.8.
- 3.10.3 If completion of the project is delayed beyond scheduled “Time for Completion”, due to contractor's failure, notwithstanding the extension to the “Time for Completion” is granted, no price escalation shall be allowed in the Contract Price for the portion of work executed beyond scheduled “Time for Completion”. However, in case the indices during the extended completion time are lower, the same will also be applicable for calculating the price adjustment payable.
- 3.10.4 If completion of the project is delayed beyond scheduled “Time for Completion” due to reasons attributable to NALCO and extension to the “Time for Completion” is granted, price adjustment, upward or downward, if any, shall be allowed in the Contract Price, for the variations arising between the scheduled date and actual date of completion of the respective items of work within the “Extended Time for Completion” of the Contract.
- 3.10.5 If the completion of the project is delayed beyond scheduled “Time for Completion” due to reasons attributable to both the parties (in case of single executing agency), then the period for delay attributable to NALCO will be considered as initial delay and the price adjustment shall be applicable during this period whereas upward price variation will not be allowed for the period of delay attributable to the contractor beyond the period of initial delay.
- 3.10.6 For projects executed by multiple agencies and delayed beyond the scheduled “Time for Completion” due to reasons attributable to NALCO and other agencies, then the period of delay attributable to NALCO and other agency will be considered as initial delay and the price adjustment to the executing agency shall be applicable during this period whereas upward price variation will not be allowed for the period of delay attributable to the contractor beyond the period of initial delay.
- 3.10.7 If the delay is not attributable to either NALCO or the vendor, viz. force majeure, etc. price adjustment shall be applicable at the time of raising of the invoice as detailed below:
- 3.10.7.1 If force majeure is invoked before contractual completion date, then the revised Contract Period will be worked out as  
(Rev. Contract Period = Previous Contract Period + duration of force majeure)
- 3.10.7.2 PVC is applicable for the work after revocation of force majeure up to the revised Contract Period as per Cl. 3.10.2.
- 3.10.7.3 If force majeure is invoked after the Contractual Completion Date, PVC shall be applicable for the work done after revocation of force majeure as per Cl. 3.10.3, Cl. 3.10.4, Cl. 3.10.5 & Cl. 3.10.6.
- 3.11 Invoices raised beyond the contractual completion date will be processed without application of PVC. Price variation calculation will be made based on the final delay analysis.
- 3.12 PVC will not be applicable for any type of advance payment.
- 3.13 CPBG will be applicable on basic PO value/amended basic PO value (if any) and PVC clause shall not be applicable on CPBG.
- 3.14 PVC will not be applicable for retention amount.
- 3.15 If any amount is withheld due to non-compliance of supply/work as per recommendation of MIC/Authorized representative, PVC will not be applicable on release of the withheld amount. Same amount as with-held, shall be released.
-



- 3.16 PRS/LD shall be applicable on the price as varied by the operation of PVC.
- 3.17 Final Value of contract will be the awarded value with price variation.

**MODALITY OF PRICE VARIATION COMPENSATION (PVC) CALCULATION**

1. For Indigenous Tendering, one single line item in BOQ i.e. Design, Engineering, Manufacturing/Assembly, supply, Testing, Installation & Commissioning, PG Test, Training, Final Hand Over of the System” shall be published in NIT and the Vendor has to quote as Lump-sum price.
2. For Import Tendering, two line items in BOQ i.e. Design, Engineering, Manufacturing/Assembly, supply, Testing, Installation & Commissioning, PG Test, Training, Final Hand Over of the System” for Foreign Currency and INR shall be published in NIT. The Vendor has to quote as Lump-sum price against each BOQ items in Foreign Currency and INR. PVC shall not be applicable on the BOQ line item quoted Foreign Currency and PVC shall be applicable only on the BOQ line item quoted INR.
3. The % of Supply and % of Service (or sub break-ups, wherever applicable) has been specified in Standard Terms & Conditions of NIT. A typical example for % of break-up is given below:
  - a) **Single Major Component in Supply & Service:**
    - i. % of Supply : 70% of the total Lump sum Price
    - ii. % of Service : 30% of the total Lump sum Price
    - iii. Total = 100% of the total Lump sum Price
  - b) **Multiple major components in Supply and Single major component in Service:**
    - i. % of Supply :
      - A. % of Steel : 25 % of the total Lump sum Price
      - B. % of Other Components : 45% of the total Lump sum Price
      - C. Sub-Total % of Supply : 70% of the total Lump sum Price
    - ii. % of Service : 30% of the total Lump sum Price
    - iii. Total = (% of Supply +% of Service )= 100% of the total Lump sum Price
  - c) **Single Major component in Supply and Multiple major components in Service:**
    - i. % of Supply : 70% of the total Lump sum Price
    - ii. % of Service :
      - A. % of Design & Engg : 10 % of the total Lump sum Price
      - B. % of Other Components: 20% of the total Lump sum Price
      - C. Sub-Total % of Service : 30% of the total Lump sum Price
    - iii. Total = (% of Supply +% of Service )= 100% of the total Lump sum Price
  - d) **Multiple Major components in Supply and Multiple major components in Service:**
    - i. % of Supply :
      - A. % of Steel : 25 % of the total Lump sum Price
      - B. % of Other Components: 45% of the total Lump sum Price
      - C. Sub-Total % of Supply : 70% of the total Lump sum Price
    - ii. % of Service :
      - A. % of Design & Engg : 10 % of the total Lump sum Price
      - B. % of Other Components: 20% of the total Lump sum Price
      - C. Sub-Total % of Service : 30% of the total Lump sum Price
    - iii. Total = (% of Supply +% of Service )= 100% of the total Lump sum Price

4. After placement of PO/LOI, the vendor has to submit Billing Break-up Schedule (BBS) as per the % indicated in the NIT for scrutinisation of NALCO. There can be multiple items for supply as well as for service. However, the % stipulated for supply as well as for service shall not change for ease of PVC calculation. The mutually agreed BBS shall be put up for approval of Competent Authority of NALCO. Accordingly, Single PO with multiple BOQ items ( as approved BBS) or Separate Supply & Service POs with multiple BOQ items ( as approved BBS) shall be issued for claim of intermediate RA Bills and claim of PVC.

**The vendor shall submit BBS for processing of RA Bills as per Clause no. 5 – Payment terms mentioned above.**

**If the vendor desires separate BBS for Processing of RA Bills and Processing of PVC, they shall submit separate a BBS for calculation of PVC matching the % of Supply and Service Components indicated in the NIT before processing for any RA Bills for approval of NALCO.**

5. The PVC shall be calculated by the vendor for each RA Bills and to be submitted quarterly for release of the same. The vendor shall submit separate RA bills for Supply and Service components. The vendor shall submit PVC calculation sheet for each BOQ items indicating the date of supply of the material to NALCO (for Material Bills) or date of execution of work (for Service Bills). The MIC or his/her authorized representative shall verify the same with the internal documents and certify for payment.
6. Minimum percentage of variation, beyond which PVC clause will be admissible, is +/- 2% of the base price, calculated for each RA Bill.
7. Price Variation will be calculated based on following formula:

**A. For Labour/Service Component:**

$$P_s = 0.85 \times V_s \times \frac{L_x}{100} \times \frac{(L_1 - L_0)}{L_0}$$

Where,

$P_s$  = Amount of Price variation claimed for Service Bill

$V_s$  = Value of work under consideration for PVC on pro-rata basis;

$L_x = 100$

$L_1$  = values of corresponding labour index (AICPI – IW) as applicable for the month in which the work is executed;

$L_0$  = values of the above mentioned labour index (AICPI-IW) is that of one month prior to the Base Date. Due date of opening of the Technical Bid is considered as the base date.

**B. For Material Component(s):**

$$P_m = 0.85 \times \frac{V_m}{100} \times \frac{M_x}{M_0} \times \frac{(M_1 - M_0)}{M_0}$$

Where,

$P_m$  = Amount of Price variation Claimed for Supply of Material Bill

$V_m$  = Value of work under consideration for PVC on pro-rata basis

$M_x = 100$

$M_1$  = values of corresponding material index (AIWPI) as applicable for the month, prior to the month, in which the material is delivered;

$M_0$  = values of the above mentioned material index (AIWPI) corresponds to that of one month prior to the base date. Due date of opening of the Technical Bid is considered as the base date.

A typical example w.r.t Point 2 is given below:

**3(a) Single Major Component in Supply & Service**

**i. RAB-1 of Rs. 500/- for supply Materials, PV Formula shall be**

$$P_m = 0.85 \times 500 \times \frac{100}{100} \times \frac{(M_1 - M_0)}{M_0}$$

Where,

P<sub>m</sub> = Amount of Price variation

V<sub>m</sub> = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.500/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

M<sub>x</sub> = 100

M<sub>1</sub> = values of material index (AIWPI-For all Commodities) as applicable for the month, prior to the month, in which the material is delivered;

M<sub>0</sub> = values of the material index (AIWPI-For all Commodities) corresponds to that of one month prior to the base date. Due date of opening of the Technical Bid is considered as the base date.

**ii. RAB-2 of Rs. 200/- for rendering Service, PV Formula shall be**

$$P_s = 0.85 \times 200 \times \frac{100}{100} \times \frac{(L_1 - L_0)}{L_0}$$

Where,

P<sub>s</sub> = Amount of Price variation

V<sub>s</sub> = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.200/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

L<sub>x</sub> = 100

L<sub>1</sub> = values of corresponding labour index (AICPI – IW) as applicable for the month in which the work is executed;

L<sub>0</sub> = values of the above mentioned labour index (AICPI-IW) is that of one month prior to the Base Date. Due date of opening of the Technical Bid is considered as the base date.

**3(b) Multiple major components in Supply and Single major component in Service**

**i. RAB-1 of Rs. 500/- for supply of Steel, PV Formula shall be**

$$P_m = 0.85 \times 500 \times \frac{100}{100} \times \frac{(M_1 - M_0)}{M_0}$$

Where,

P<sub>m</sub> = Amount of Price variation

V<sub>m</sub> = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.500/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

M<sub>x</sub> = 100

M<sub>1</sub> = values of index for Mild Steel-Long products as applicable for the month, prior to the month, in which the material is delivered;

M<sub>0</sub> = values of index for Mild Steel-Long products (AIWPI) corresponds to that of one month prior to the base date. Due date of opening of the Technical Bid is considered as the base date.

**ii. RAB-2 of Rs. 400/- for supply of Other Materials, PV Formula shall be**

$$P_m = 0.85 \times 400 \times \frac{100}{100} \times \frac{(M_1 - M_0)}{M_0}$$

Where,

P<sub>m</sub> = Amount of Price variation

V<sub>m</sub> = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.400/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

$$M_x = 100$$

M1 = values of material index (AIWPI-For all Commodities) as applicable for the month, prior to the month, in which the material is delivered;

M0 = values of the material index (AIWPI-For all Commodities) corresponds to that of one month prior to the base date. Due date of opening of the Technical Bid is considered as the base date.

iii. **RAB-3 of Rs. 200/- for rendering Service, PV Formula shall be**

$$P_s = 0.85 \times 200 \times \frac{100}{100} \times \frac{(L_1 - L_0)}{L_0}$$

Where,

P<sub>s</sub> = Amount of Price variation

V<sub>s</sub> = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.200/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

$$L_x = 100$$

L1 = values of corresponding labour index (AICPI – IW) as applicable for the month in which the work is executed;

L0 = values of the above mentioned labour index (AICPI-IW) is that of one month prior to the Base Date. Due date of opening of the Technical Bid is considered as the base date.

**3(c) Single Major component in Supply and Multiple major components in Service:**

i. **RAB-1 of Rs. 500/- for supply of Materials, PV Formula shall be**

$$P_m = 0.85 \times 500 \times \frac{100}{100} \times \frac{(M_1 - M_0)}{M_0}$$

Where,

P<sub>m</sub> = Amount of Price variation

V<sub>m</sub> = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.500/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

$$M_x = 100$$

M1 = values of material index (AIWPI-For all Commodities) as applicable for the month, prior to the month, in which the material is delivered;

M0 = values of the material index (AIWPI-For all Commodities) corresponds to that of one month prior to the base date. Due date of opening of the Technical Bid is considered as the base date.

ii. **RAB-2 of Rs. 200/- for Design & Engg, PV Formula shall be**

$$P_s = 0.85 \times 200 \times \frac{100}{100} \times \frac{(L_1 - L_0)}{L_0}$$

Where,

P<sub>s</sub> = Amount of Price variation

V<sub>s</sub> = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.200/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

$$L_x = 100$$

L1 = values of corresponding labour index (AICPI – IW) as applicable for the month in which the work is executed;

L0 = values of the above mentioned labour index (AICPI-IW) is that of one month prior to the Base Date. Due date of opening of the Technical Bid is considered as the base date.

iii. **RAB-3 of Rs. 150/- for Other Service activities, PV Formula shall be**

$$P_s = 0.85 \times 150 \times \frac{100}{100} \times \frac{(L_1 - L_0)}{L_0}$$

Where,

$P_s$  = Amount of Price variation

$V_s$  = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.200/-

(The maximum value of  $V$  shall not exceed the value mentioned in the approved BBS)

$L_x = 100$

$L_1$  = values of corresponding labour index (AICPI – IW) as applicable for the month in which the work is executed;

$L_0$  = values of the above mentioned labour index (AICPI-IW) is that of one month prior to the Base Date. Due date of opening of the Technical Bid is considered as the base date.

Note: There are no separate indices for different service activities like Design, Engg, Erection, PG Test, Training etc available in AICPI-IW. Hence, for all service activities, only AICPI-IW to be considered for calculation.

**3(d) Multiple Major components in Supply and Multiple major components in Service**

i. **RAB-1 of Rs. 500/- for supply of Steel, PV Formula shall be**

$$P_m = 0.85 \times 500 \times \frac{100}{100} \times \frac{(M_1 - M_0)}{M_0}$$

Where,

$P_m$  = Amount of Price variation

$V_m$  = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.500/-

(The maximum value of  $V$  shall not exceed the value mentioned in the approved BBS)

$M_x = 100$

$M_1$  = values of index for Mild Steel-Long products (AIWPI) as applicable for the month, prior to the month, in which the material is delivered;

$M_0$  = values of index for Mild Steel-Long products (AIWPI) corresponds to that of one month prior to the base date. Due date of opening of the Technical Bid is considered as the base date.

ii. **RAB-2 of Rs. 400/- for supply of Other Materials, PV Formula shall be**

$$P_m = 0.85 \times 400 \times \frac{100}{100} \times \frac{(M_1 - M_0)}{M_0}$$

Where,

$P_m$  = Amount of Price variation

$V_m$  = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.400/-

(The maximum value of  $V$  shall not exceed the value mentioned in the approved BBS)

$M_x = 100$

$M_1$  = values of material index (AIWPI-For all Commodities) as applicable for the month, prior to the month, in which the material is delivered;

$M_0$  = values of the material index (AIWPI-For all Commodities) corresponds to that of one month prior to the base date. Due date of opening of the Technical Bid is considered as the base date.

iii. **RAB-3 of Rs. 200/- for Design & Engg, PV Formula shall be**

$$P_s = 0.85 \times 200 \times \frac{100}{100} \times \frac{(L_1 - L_0)}{L_0}$$

---

Where,

Ps = Amount of Price variation

Vs = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.200/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

Lx = 100

L1 = values of corresponding labour index (AICPI – IW) as applicable for the month in which the work is executed;

L0 = values of the above mentioned labour index (AICPI-IW) is that of one month prior to the Base Date. Due date of opening of the Technical Bid is considered as the base date.

iv. **RAB-4 of Rs. 150/- for Other Service activities, PV Formula shall be**

$$Ps = 0.85 \times 150 \times \frac{100}{100} \times \frac{(L1 - L0)}{L0}$$

Where,

Ps = Amount of Price variation

Vs = Value of work under consideration for PVC on pro-rata basis, i.e. Rs.200/-

(The maximum value of V shall not exceed the value mentioned in the approved BBS)

Lx = 100

L1 = values of corresponding labour index (AICPI – IW) as applicable for the month in which the work is executed;

L0 = values of the above mentioned labour index (AICPI-IW) is that of one month prior to the Base Date. Due date of opening of the Technical Bid is considered as the base date.

Note: There are no separate indices for different service activities like Design, Engg, Erection, PG Test, Training etc. available in AICPI-IW. Hence, for all service activities, only AICPI-IW to be considered for calculation.

8. For Import Tendering, the vendor shall submit the BBS for calculation of PVC for BOQ items containing price in INR only as per the % of supply & Service indicated in NIT.
9. AIWPI for Steel shall be taken as Index for only “Mild Steel-Long products” unless other wise specified in NIT .
10. AIWPI for Cement shall be taken as Index for only “Manufacture of cement, lime and plaster” unless other wise specified in NIT .

### **PVC APPLICABILITY FOR THE CURRENT NIT**

1. The Mode of the Tendering : Indigenous Open Two part Tendering
2. % of Supply Component : 69
3. % of Service Component : 31
4. All the relevant Clauses indicated in the NIT shall be applicable depending on case to case basis.
5. PVC shall be calculated as per the modality indicated in the “Modality of calculation of PVC” as applicable depending on case to case basis.

### 31. **SPECIAL NOTES:**

- a) In Techno-commercial bids, the bidders should furnish a list of its Partners/Directors and a declaration that such Partners/Directors have no interest in any other bidders in respect of the same tender.
- b) No part of the Contract nor any share or interest therein shall, in any manner or degree, be transferred, assigned or sub-let by the Seller directly or indirectly to any person, firm or corporation whatsoever without the consent of NALCO in writing.
- c) Drawings and samples if forwarded shall become property of the NALCO.
- d) Complete specifications with relevant Indian/International Standards, Manufacturer's name/brand name and country of origin with catalogues and drawings if any should be sent with the offer. Offer without adequate technical specifications/information shall liable to be rejected.
- e) NALCO reserves the right to accept any tender or to reject any or all tenders/ extend the due date for submission of offers without assigning any reasons thereof.
- f) In case the tenderer has entered into Rate Contract with DGS&D/EPM, a copy of Rate Contract must be sent along with the tender.
- g) The seller shall ensure to dispatch the materials only through NALCO's authorized transporters where the contract is entered on ex-works/F.O.R. dispatching point delivery term. In case order is placed on FOT destination basis and payment is to be negotiated through bank, the material should be dispatched preferably through NALCO's authorized/approved transporters.
- h) The tenderer has to comply with the Environmental, Social Accountability and Energy policy of NALCO.
- i) During evaluation of bid, NALCO may, at its discretion, ask the bidder for clarifications on the bid. The clarifications shall be sought by registered/speed post/E-mail and the bidder has to respond/comply within the specified date mentioned in the communication. In case of noncompliance, his bid will liable to be rejected and will not be considered further. No change in prices or substance of the bid shall be sought, offered or permitted. No post bid clarification at the initiative of the bidder shall be entertained. So far as the submission of documents is concerned with regard to prequalification criteria, after submission of the bid, only related shortfall documents may be asked for and considered. For example, if the bidder has submitted a supply/ works order/contract document without its completion/performance certificate, the certificates can be asked for and considered. However, no new supply /works order/contract document shall be considered to qualify the bidder.

GEN. MANAGER (MATERIALS)

**We agree to all the above 31 points of the 'STANDARD TERMS & CONDITIONS OF NIT OF NALCO'S Tender Ref. No: SMLT/MMP/402/3000009296 dt.\_\_\_\_\_/2023.**

DATE:

SIGNATURE OF THE TENDERER  
WITH SEAL



**DEVIATION SCHEDULE TO TERMS & CONDITIONS OF NIT**

(To be filled in by the Tenderer and to be submitted with Techno-Commercial bid)

If the Bidder has got any deviation from the standard terms & conditions of NIT, bidder shall tabulate those deviations in this schedule. Please attach more sheets, if necessary. It is confirmed that except those deviations, as tabulated hereunder, the complete offer is in agreement with the NIT requirement.

**NOTE:**

1. Deviation to the standard terms & conditions (Annexure-IV) and bidder compliance statement (Annexure-VI), if any, shall be indicated only in this schedule.
2. Deviation listed elsewhere shall not be taken cognizance of and shall be ignored.
3. No separate printed terms and conditions shall be considered and shall be ignored.
4. In respect of deviations, if any, the Bid shall be rejected without any indications.
5. In case of contradiction/ conflicting version found by NALCO at different places of quotation, NALCO can choose any version or the bid may be rejected without any indications.

Sl. No.	Annexure No.	Clause No.	Page No. of NIT	Deviation Taken against NIT condition	Reasons for deviation

Signature:

Date:

Name:

Designation:

Seal:

**BIDDER COMPLIANCE STATEMENT**  
**AGREED TERMS & CONDITIONS OF TENDER**

**IMPORTANT**

1. This bidder compliance statement must be filled in against all Serial nos. & uploaded with the Un-priced offer in '**PREQUAL / TECHNICAL**' folder in *Central Public Procurement Portal (CPPP)*. Non submission or submission of incomplete questionnaire may lead to rejection of the offer.
2. All commercial terms except the deviations to Standard Terms & Conditions and other attachments to NIT must be given in this questionnaire itself and not elsewhere in the quotation. In case of contradiction, the terms given below shall prevail. The deviations to Terms & Conditions and other attachments to NIT, if any, must be listed in a Deviation Annexure.

Sl. No.	Descriptions	Bidder's Confirmations
1.	(i) We M/s. _____ (please specify your company name) have understood the complete Technical specifications and scope as per Annexure-II and Annexure-XX of the NIT documents and confirm acceptance of the same in toto.	
	(ii) In case of deviations to technical requirement, please confirm that the same has been mentioned separately as per format at Annexure-III	
	(iv) Confirm that technical data sheets have been attached, wherever required.	
2.	Documentary evidence towards Pre-qualification criteria (PQC), scanned documents uploaded in Central Public Procurement Portal (CPPP) and documents in originals also submitted in hard copy sealed cover offer through posts/ courier/ any other means.	
3.	<b>PRICE</b> (as per Clause No.1.0 of Annexure-IV): Confirm that the quoted prices are based on F.O.R. destination point / free delivery at NALCO, Smelter plant site basis including packing & forwarding, taxes & duties, loading & transportation charges up to NALCO, Smelter plant angul, ODISHA .	
	Indicate dispatching station.	
4.	<b>PRICE FIRMNESS:</b> Please confirm that quoted prices are firm and fixed till complete execution of the contract except for statutory variations in Taxes and duties within the contractual completion period which will be paid at actual against submission of documentary evidence.	
5.	<b>VALIDITY:</b> Confirm that the quoted prices are valid for acceptance up to 180 days from the date of opening of tender.	
6.	Please confirm submission of following documents with offer: i) Valid GST registration and GSTIN No. ii) HSN Code: iii) SAC code iv) Copy of PAN	
7.	<b>FREIGHT &amp; MODE OF TRANSPORT:</b> Equipment/Materials to be dispatched by road on freight pre-paid basis and on door delivery basis through any registered common carrier approved by IBA. Please confirm that firm freight charges up to NALCO , Smelter Plant , Angul is quoted separately in the price bid/BOQ.	
8.	(i) Confirm submission of a copy of Price Bid/BOQ <b>deleting Price portion</b> in Part-I Bid.	
	(ii) <b>Confirm that the quoted prices are strictly as per the price bid format as at BOQ/Annexure- XXII of tender documents.</b>	
9.	<b>LOADING:</b> It may be noted that deviations to terms & conditions	

Sl. No.	Descriptions	Bidder's Confirmations
	shall lead to loading of prices or rejection of offer. Any Deviation to NALCO's requirements shall be loaded while evaluating and comparing of prices. Accordingly L-1 price shall be derived.	
10.	<b>Completion Period:</b> Confirm acceptance to completion period as mentioned in Annexure IV Clause No. 4.	
11.	<b>PRICE REDUCTION SCHEDULE (PRS) FOR DELAY IN Completion</b> (as per clause No. 6 of Annexure IV): Please Confirm acceptance of Price Reduction Schedule for delay in completion of project .	
12.	<b>RISK &amp; COST PURCHASE</b> (as per clause No. 7 of Annexure IV ): NALCO reserves the right to procure the material/equipment from alternate sources at the Risk & Cost of the supplier, giving 15 days notice. Please confirm your acceptance.	
13.	<b>INSPECTION &amp; TESTING</b> (as per clause No. 8 of Annexure- IV ): Confirm acceptance of relevant terms of PDI & testing as per clause 8 of Annexure-IV	
14.	<b>GUARANTEE:</b> Please Confirm acceptance of Guarantee as per clause 9 of Annexure IV.	
15.	<b>CPBG:</b> Please Confirm submission of Contract cum Performance/ Performance Bank Guarantee(CPBG) as per clause 10 of annexure-IV.	
16.	<b>PAYMENT TERM:</b> Please Confirm acceptance of Payment terms as per the clause 5 of Annexure-IV of NIT documents.	
17.	<b>EFFECTIVE DATE OF CONTRACT:</b> Please confirm acceptance of clause No.13 of Annexure-IV .	
18.	<b>INSURANCE</b> (as per Annexure IV cl. No. 16): Please confirm that your quoted price is inclusive of MCE insurance charges as mentioned at clause 16 of Annexure-IV.	
19.	<b>FORCE MAJEURE</b> (as per Annexure IV cl. No. 19): Please confirm acceptance of clause 19 of Annexure-IV of NIT	
20.	<b>ARBITRATION</b> (as per Annexure IV cl. No. 20): Please confirm acceptance of clause 20 of Annexure-IV of NIT	
21.	Please Confirm in case of delay on account of Supplier, any new or additional taxes and duties imposed after contractual completion period shall be to seller's account.	
22.	Confirm that quoted prices are inclusive of all inspection & testing charges as per NIT.	
23.	(i) All other terms & conditions shall be as per NIT documents and its attachments. Please Confirm. (ii) In case of deviations, confirm clause wise comments have been specified in Annexure-V. (iii) All the terms & conditions have been indicated in this format including Annexure and have not been repeated elsewhere. <b>It is noted that terms &amp; conditions indicated elsewhere shall be ignored.</b>	
24.	<b>Anti –Profiteering Clause</b> (Sec 171 of CGST Act) (as per Clause 18 of Annexure -IV). Please confirm the clause and submission of required declaration (as per Annexure-XVI)	
25.	<b>i). Provision for PREFERENCE TO MAKE IN INDIA</b> (as per Cl. 11.0 of General information to Tenders & Clause 17 of Annexure - IV): Pl. Confirm your acceptance to the said provisions.	
26.	<b>(ii). Declaration by the bidder of percentage of local content</b> (as per Cl. 11.0 General information to Tenders): Please confirm submission of signed copy of Declaration by the bidder of percentage of local content as per Annexure-XV.	
27.	The vendor is required to state whether any of the Directors of vendor is a relative of any of the Directors of Owner or the vendor is a firm in which any Director of Owner or his relative is a partner or the vendor is a Private Company in which any of the Directors of	

Sl. No.	Descriptions	Bidder's Confirmations
	Owner is a member or Director.	
28.	Confirm submission of a <b>list of partners/ Directors</b> and declaration that such partners/ Directors have no interest in any other bidder with respect to same tender.	
29.	<b>SHARING LAND BORDER WITH INDIA:</b> Confirm submission of declaration as per Clause 21 of Annexure –IV.	
30.	<b>INCOME TAX / BILLING CLAUSES:</b> Confirm relevant terms of income tax clause and billing clause as per Clause 22 of Annexure –IV.	
31.	The bidder or its Proprietor/ Partner(s)/ Director(s) of the firm should not have been convicted by a court of Law for an offence involving moral turpitude in relation to business dealings during the past seven (7) years. The bidder shall submit Affidavit to this effect as per cl. no. 23.1 of Annexure –IV.	
32.	Please confirm that you have not been banned or de-listed by any Government or Quasi Government agencies or PSU and declaration to this effect has been submitted as per cl. no. 23.2 of Annexure –IV.	
33.	Bidder should not be under liquidation, court receivership or similar proceeding. Certificate/Undertaking in this respect in bidder's official letterhead duly signed by the authorised signatory with official seal submitted as per cl. no. 23.3 of Annexure –IV.	
34.	<b>EARNEST MONEY DEPOSIT</b> (as per Clause No. 3.0 of General Information to Tenderers): Confirm submission of interest free EMD of <b>₹4,50,000/-</b> .	
35.	Dully filled in Integrity Pact submitted as per format at Annexure - XIV.	
36.	Import permit/ License, if required shall be the responsibility of the Seller and any expenditure towards the same shall be borne by the Seller. Please confirm.	
37.	In case of any Imported supply, same to be quoted in INR only. Please confirm that all variations in Customs duty and Foreign Exchange till complete execution of the contract shall be to Seller's account.	
38.	Please furnish name and address of the official to whom correspondence should be sent including telephone number/ fax number and e-mail id as per Annexure-XVII.	
39.	<b>REJECTION OF OFFER:</b> NALCO reserves the right to reject the offer, in case the bidders past performance in any of the NALCO's previous contract is not found to be satisfactory.	
40.	<b>PACKING:</b> Standard roadworthy packing shall be given by the supplier for all the equipments and materials to avoid damage during transportation and also for suitability to withstand outdoor conditions from dispatch up to complete installation at site.	
41.	<b>WORKMEN COMPENSATION, PERSONAL ACCIDENTAL INSURANCE, LABOUR LAWS:</b> All persons engaged by you at NALCO site shall be adequately insured by you as per the statutory norms and under the workmen compensation insurance policy/ personal accidental insurance policy, etc. The supplier shall comply with all applicable labour laws including payment of wages, etc. Please confirm that the quoted prices are inclusive of all statutory/ contingency insurance coverage e.g. third party liability, ESI, workman compensation, etc.	
42.	<b>SAFETY:</b> The supplier shall comply with all the statutory safety provisions of NALCO and get safety clearance from the Safety Department of NALCO, CPP for all the necessary jobs and also to obtain any other statutory & environment clearances for	

Sl. No.	Descriptions	Bidder's Confirmations
	successful completion of the contract. The supplier shall take all necessary safety measures, at their own cost, to avoid any harm or injury to their workers & staff from the equipments, facilities, etc.	
43.	<b>INCIDENTAL EXPENSES:</b> During execution of the contract, the travel, boarding, lodging & other incidental expenses of the personnel and representatives assigned by the supplier/ contractor for the execution of the contract/ PO shall be borne by the supplier/ contractor.	
44.	<b>INCOME TAX Return:</b> Please confirm submission of copy of the latest Income tax return with the offer.	
45.	<b>REGISTRATION IN GEM (GOVERNMENT E-MARKETING) PORTAL:</b> Bidders are requested to register themselves as a seller in GEM portal and share their unique ID.	

Place:  
Date:

Signature:  
Name :  
Designation :  
Seal

**SOCIAL ACCOUNTABILITY POLICY**

We at NALCO are committed to provide a socially accountable work environment to all employees and uphold ethical business practices by respecting employees' rights.

We shall achieve these by adopting a companywide culture, which will help to promote:

- ✚ Involvement of all employees in sustenance of SA 8000 standard;
- ✚ Continual improvement initiatives in all social issues;
- ✚ Learning and training opportunities to all employees;
- ✚ Fulfillment of relevant statutory rules & regulations, ILO requirements, applicable international instruments and their interpretation.

\*\*\*\*\*

**ENVIRONMENT POLICY**

In recognition of the interests of the society in securing sustainable industrial growth, compatible with a wholesome environment, NALCO affirms that it assigns high importance to promotion and maintenance of a pollution-free environment in all its activities.

**OBJECTIVES:**

- ✚ To use non-polluting and environment-friendly technology.
- ✚ To monitor regularly air, water, land, noise and other environmental parameters.
- ✚ To constantly improve upon the standards of pollution control and provide a leadership in environment management.
- ✚ To develop employees' awareness on environmental responsibilities and encourage adherence to sound environmental practices.
- ✚ To work closely with the Government & local authorities to prevent or minimize adverse consequences of the industrial activities on the environment.
- ✚ To comply with all applicable laws governing environment protection through appropriate mechanisms.
- ✚ To actively participate in social welfare and environmental development activities of the locality around its Units.

\*\*\*\*\*

**OCCUPATIONAL HEALTH & SAFETY POLICY**

NALCO is committed to maintain a Safe, Healthy and Sustainable work environment in all its operations. This shall be achieved by:

- ✚ Focusing on prevention of Accidents and Occupational Health issues.
- ✚ Complying with all legal requirements & other requirements related to Safety and Occupational Health of persons and establishing clearly defined goals & procedures to achieve the same.
- ✚ Ensuring Safety & Health of all employees and contract workers in its premises, including those involved in transportation, cleaning and other such activities.
- ✚ Conducting Periodic Safety Audits, Environment Audits, Health Check-ups and Risk Assessment by both internal and external qualified persons.
- ✚ Considering aspects related to Safety and Health of personnel as well as environmental issues at the time of procurement of equipment and selection of technologies.
- ✚ Ensuring health of persons in the peripheral locations, likely to be affected by our operations.
- ✚ Periodically monitoring and reviewing safety & occupational health issues at relevant levels, including the highest levels.
- ✚ Communicating Safety Hazards and health related issues to all concerned through suitable means, including training.
- ✚ Involving the workmen in Policy implementation as well as identification of potential issues.
- ✚ Considering Health & Safety performance of individuals at different levels during their career advancement as per NALCO's policy.
- ✚ Establishing and maintaining suitable set-up with competent persons to monitor and bring to the notice of the management any issues related to unsafe conditions & practices.
- ✚ Striving for continual improvements, exceeding statutory compliance levels, wherever feasible.

\*\*\*\*\*

**ENERGY POLICY**

Enhancing Energy Performance, comprehensively optimising Energy Use, Energy Consumption and Energy Efficiency, is a major imperative for an Energy Intensive industry like ours. In recognition of this, we will focus on continual improvement of all round Energy Performance with special focus on areas of significance by way of having in place Energy Objectives based on the enshrined Guiding Principles.

**Guiding Principles:**

- To endeavour for reduction in Specific Consumption of Energy in all forms in areas of significance.
- To ensure availability of correct information in time and to make available necessary resources for achieving the Objectives and Targets.
- To comply with all applicable legal and other statutory/ regulatory requirements related to our energy use, consumption and efficiency.
- To espouse Energy Efficient Technology encompassing procurement of Energy Efficient products & services and design for energy performance improvement.
- To carry out Energy audits and Energy reviews at planned intervals, to improve energy performance.

\*\*\*\*\*

**Annexure to Bid/ Offer**

**STATEMENT OF COMPLIANCE WITH GENERAL ENVIRONMENTAL REQUIREMENTS**

To  
DGM (Materials),  
National Aluminium Company Ltd.,  
Smelter plant, Angul, Odisha, India

This is with reference to your Tender Reference no. \_\_\_\_\_  
dtd. \_\_\_\_\_ for items \_\_\_\_\_.

I ☐ We confirm that our product(s) **manufacturing/assembly sites** at \_\_\_\_\_  
possess valid **consents/** licenses/authorizations eg \_\_\_\_\_  
\_\_\_\_\_ from \_\_\_\_\_.

**Or**

☐ No consents/ licenses/authorizations from the Statutory Authorities is required/ applicable  
as \_\_\_\_\_.

II. We confirm that our product(s) shall not contain more than max. allowable limit (as per Regulations) of asbestos materials, arsenic and its compounds, lead and its compounds, mercury and its compounds, cadmium and its compounds.

III. We confirm that our product(s) **packaging** will use materials of bio-degradable nature or re-cyclable nature to the maximum possible extent, and will not use environmentally damaging or hazardous materials.

IV. We confirm that our product(s) packaging will be adequate for preventing leaks/ spills/ exposure during handling or transportation.

**Packaging brief description:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

V. We confirm that our product(s) **labeling and marking** shall be as per recognized national/international standards and will include all relevant symbols/instructions for handling, safety, disposal etc as needed.

VI. ☐ A 'buy-back' scheme is available for the type of product(s) on offer which is enclosed

**Or**

☐ Presently, no 'buy-back' scheme is available for the type of product(s) on offer.

Date:

Authorised Signatory

For M/s \_\_\_\_\_



## Social Accountability 8000 Compliance Format

**A. Basic information**

Name of the organization		
Address		
Telephone No		
Name of the Proprietor		
Nature of Business		
License Number and date of expiry		
Employees	Staff (Total Number)	Workmen (Total Number)
• Permanent		
• Casual		
• Badli		
• Temporary		
• Contracted		

**B. Information regarding Social Accountability**

- What is the minimum age required to join \_\_\_\_\_  
Years  
your organization?
- What types of certificates (Like mark sheet, \_\_\_\_\_  
Copy / Xerox  
birth certificate) you keep with you? Original
- Do you require to keep any kind of deposit  
Yes/No  
inform of cash at the time of employment?
- Do you provide safe & healthy work environment  
Yes/No  
as per statutory requirement?
- If directly not provided by you, do you get \_\_\_\_\_  
health & safety benefits from NALCO? Yes/No
- Are you certified for SA 8000? \_\_\_\_\_  
Yes/No

If Yes, please submit a copy of SA8000 Certificate along with this filled up questionnaire

Have you undergone Code of Conduct Audit (COC Audit)

Yes/No

in last 2 years ?

If yes, please submit a copy of Code of Conduct Audit Report along with this filled up questionnaire

Have your sub-suppliers been certified for SA 8000?

Yes/No

Have your sub-suppliers undergone Code of Conduct Audit

Yes/No

(COC Audit) in last 2 years?

- Do you provide personal protective equipment(s) to your employees free of cost? Yes/No

- Do you provide safety training to your employees?

Yes/No

- Do you ensure canteen facility for your employees?

Yes/No

- If not, do you get the facilities from NALCO Yes/No

- What types of medical benefits you provide to your employees?

---

---

---

- Do you allow trade union and collective bargaining in your organization?

Yes/No

If no, how do you ensure freedom of expression?

---

---

---

- Incase of non-performance of any employee, how do you deal with such situations?

---

---

---

- What are the procedures of hiring/promotion/ remuneration in your organization?

---

---

---

- Do you provide appointment letter to your employees?  
Yes/No

- Do you maintain a documented terms and conditions of employment? Yes/No

- Do you maintain a disciplinary procedure?  
Yes/No

- If no, how do you terminate your employee?

---

---

---

- How do you ensure that your employees are not discrimination on the basis of  
cast creed, gender, religion, age and dieses?

---

---

---

- How many shift you have? \_\_\_\_\_ shifts

- What is the official working time? \_\_\_\_\_ hours

- Which day is off day in your organization? \_\_\_\_\_

- In case, a person works in off day or holiday, how is he/she compensated?

---

---

---

- Do you pay overtime to your employees as per law?  
Yes/No
- What is the lowest amount (salary/wage) you pay to  
Rs.\_\_\_\_\_-/-  
your employees?

- Is there any case of deduction in wage?  
Yes/No

- In case, it is yes, what are the general reasons for such deduction?

---

---

---

- Is there any apprentice period in your organization?  
Yes/No

- If yes, what is the apprentice period in your organization?

---

- Do you have any international certification Yes/No

- If yes, please specify

---

---

- Do you receive, handle or promote goods and/or services  
Yes/No  
from supplier/subcontractors or sub-suppliers

- Do you receive, handle or promote goods and/or services  
Yes/No  
from supplier/subcontractors or sub-suppliers who are  
classified as home worker?

- If yes, what steps you have taken to ensure that they get similar level of  
protection as           afforded to directly employed employees?

---

---

---

- Have you taken care to look into issues related to child labor  
Yes/No  
Forced labor, health & safety, working hours and remuneration  
of your suppliers

We do hereby declare that our organization is committed to social accountability. We will promptly implement remedial/corrective actions identified against the requirement and promptly inform your organization. We also declare that the sub contractors/sub supplier's performances are monitored by us. Moreover, we declare that if invited, we shall participate in awareness program as well as monitoring program organized by you.

We declare that the above-mentioned information is correct.

Signature:

Designation:

Date:

Seal of the organization

**BANK GUARANTEE FOR EARNST MONEY DEPOSIT**

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

B. G. No. \_\_\_\_\_

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

1. WHEREAS M/s National Aluminium Company Limited (A Government of India Enterprise), having its Unit/Office at .....(UNIT/OFFICE ADDRESS ISSUING THE TENDER) (hereinafter called "The Company" which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) has issued Tender paper vide its Tender No..... dt.....for .....(hereinafter called "the said tender") to M/s. ....(hereinafter called the said Tenderer(s)" which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns and as per terms and conditions of the said tender, the tenderer shall submit a Bank Guarantee for ` .....(Rupees .....only) towards earnest money in lieu of cash.
  2. WE .....Bank having its branch office at .....do hereby undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Company stating that in the opinion of the company which is final and binding, the amount claimed is due because of any withdrawal of the tender or any material alteration to the tender after the opening of the tender by way of any loss or damage caused to or would be caused or suffered by the Company by reason of any breach by the said tenderers(s) of any of the terms and conditions contained in the said tender or failure to accept the Letter of Intent Agreement or that the amount covered under this Guarantee is forfeited. Any such demand made on the Bank by the Company shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding ` ..... (Rupees.....only).
  3. We undertake to pay to the Company any money so demanded notwithstanding any dispute or disputes raised by the tenderer(s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under this present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under. Our liability to pay is not dependent or conditional on the Company proceeding against the tenderer.
  4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said tenderer(s) but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said contract(s)/ Order(s) are fulfilled.
  5. WE .....Bank Ltd. further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the finalization of the said tender and that it shall continue to be enforceable till the said tender is finally decided and order placed on the successful tenderer(s) and or till all the dues of the company under or by virtue of the said tender have been fully paid and its claims satisfied or discharged or till a duly authorised officer of the company certifies that the terms and conditions of the said tender have been fully and properly carried out by the said tenderer(s) and accordingly discharges the guarantee.
  6. That the Company will have full liberty without reference to us and without affecting this guarantee to postpone for any time or from time to time. The exercise of any of the power of the Company under the tender.
-

7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....  
(Rupees.....only) and shall remain in force till.....Unless a demand or claim  
under this Guarantee is made on us within three months from the date of expiry, we shall be  
discharged from all the liabilities under this guarantee.
8. We ..... Bank, further agree that this Guarantee shall be invocable at our place of business  
at Angul/Bhubaneswar (Bank Name),.....(Branch name and address  
of the Branch), Odisha, Pin-751...
9. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with  
the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed  
from time to time at the request of Consultant.

Date.....

.....Bank

Corporate Seal of the Bank

By its constitutional Attorney

IFS Code: .....

Signature of duly Authorised person

On behalf of the Bank With seal & signature code

Details of Persons Issuing the BG:

Name-----

Address for Correspondence: -----

Telephone & Fax No.

E-mail :

Note: -

- 1) BGs to be furnished from any of the approved banks of NALCO and processed through SFMS.
- 2) BG confirmation must be sent to our Banker through SFMS with the followings details.
  - BENEFICIARY : NATIONAL ALUMINIUM COMPANY LIMITED., SMELTER DIVISION
  - BANKER : STATE BANK OF INDIA (SBI)
  - BRANCH : KANDSAR (NALCONAGAR)
  - IFSC Code : SBIN0008279



**PROFORMA FOR CONTRACT CUM PERFORMANCE GUARANTEE BY SELLER/ CONTRACTOR.**

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

B. G. No.....

Date.....

1. WHEREAS National Aluminium Company Limited (A Government of India Enterprise) having its Unit/Office at ..... (UNIT/OFFICE ADDRESS WHERE THE WORK IS EXECUTED) (hereinafter referred to as "The Company" which expressions shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) has entered into a contract with M/s. .... has placed a purchase order on M/s.....( hereinafter referred to as "Contractor(s)/Seller(s)" which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns) for .....(work/assignment description) on the terms and conditions as set out inter alia, in the Company's contract No./ P.O. No. ....dated .....and various documents forming part thereof hereinafter referred to as the "said contract" which expression include all amendments, modifications and/ or variations thereto and whereas the Contractor(s)/Seller(s) has agreed for due execution of the entire contract and guarantees its performance including any parts executed through any other agencies/subcontractors.

AND WHEREAS one of the conditions of the "said contract" is that "contractor(s)/seller(s) shall furnish to the Company a Bank Guarantee from a bank for ....% (.....percent) of the total value of the "said contract" against due and faithful performance of the "said contract" including defect liability obligations and the performance guarantee obligations of the contractor(s)/seller(s) for execution/ supplies made under the "said contract."

2. We .....Bank having its branch office at .....do hereby agree and undertake to pay the amount due and payable under this guarantee without any demur merely on a demand from the Company stating that in the opinion of the Company, which is final & binding, the amount claimed is due by reason of default made by the Contractor(s)/Seller(s) in performing any of the terms & conditions of the said Contract including defect liability obligations, in fulfilling the performance guarantee obligation or loss or damage caused to or would be caused to or suffered by the Company by reason of any breach by the said Contractor(s)/Seller(s) of any of the terms & conditions of the contract. Any such demand made on the Bank by the Company shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However our liability under this guarantee shall be restricted to ` ..... (Rupees.....only).
3. We undertake to pay to the Company any money so demanded notwithstanding any dispute or disputes raised by the contractor(s)/Seller(s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under this present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under. Our liability to pay is not dependent or conditional on the Company proceeding against the Contractor(s)/Seller(s).
4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said Contractor(s)/Seller(s) but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said contract(s)/Order(s) are fulfilled.
5. We .....Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract(s)/Order(s) and that it shall continue to be enforceable till all the dues of the company under or by virtue of the said Contract(s)/Order(s) have been fully paid and its claims satisfied or discharged or till a duly authorised officer of the Company certifies that the terms and conditions of the said Contract(s)/Order(s) have been fully and properly carried out by the said contractor(s) and accordingly discharges the guarantee.
6. We .....Bank further agree with the Company that the company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract(s)/Order(s) or to extend the time of performance by the said Contractor(s)/Seller(s) from time to time or to postpone for any time or from time to time any of the

powers exercisable by the Company against the said Contractor(s)/Seller(s) and to forbear or enforce any of the terms and conditions relating to the said Contract(s)/Order(s) and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s)/Seller(s) or for any forbearance, act or omission on the part of the Company or any indulgence by the Company to the said Contractor(s)/Seller(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have affect of so relieving us.

7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry, we shall be discharged from all the liabilities under this guarantee.
8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time at the request of Contractor(s)/Sellers(s).
9. We \_\_\_\_\_ Bank further agree that this Guarantee shall be invocable at our place of business \_\_\_\_\_ at \_\_\_\_\_ (Bank Name), \_\_\_\_\_ (Branch Name and address of the branch), Bhubaneswar , Odisha-751\_\_\_\_\_.

Date.....  
Corporate Seal of the Bank

.....Bank  
By its constitutional Attorney  
Signature of duly Authorised person  
On behalf of the Bank With seal & signature code

Details of Persons Issuing the BG:

Name-----

Address for Correspondence: -----

Telephone & Fax No.

E-mail:

Note: 1 : BGs to be furnished from any of the approved banks of NALCO.

Note 2: BG confirmation must be sent to our Banker through SFMS with the followings details :

Beneficiary : NATIONAL ALUMINIUM CO LTD

Banker : State Bank of India

Branch : Kandsar(Nalco Nagar)

A/C No : 00000010657908589

IFSC Code : SBIN0008279

Address of Bank : AT/P.O – Kandsar,P.S - Nalco Nagar,Dist – Angul ,ODISHA,,Pin - 759145

**LIST OF STANDARDISED BANKS FOR BG**

Any domestic Guarantee issued by PSU Bank (or) Private Bank (or) Foreign Bank operating in India must be operational and invocable in Bhubaneswar only. For Guarantee to be operational in Bhubaneswar the issuing bank must designate a specified Bank Branch in Bhubaneswar.

**I-SCHEDULED PUBLIC SECTOR BANKS (INDIAN)**

1	Bank of Baroda	7	Punjab & Sind Bank
2	Bank of India	8	Punjab National Bank
3	Bank of Maharashtra	9	State Bank of India
4	Canara Bank	10	UCO Bank
5	Central Bank of India	11	Union Bank of India
6	Indian Bank		

**II SCHEDULED PRIVATE SECTOR BANKS (INDIAN)**

1	HDFC Bank Ltd.	10	The Karur Vysya Bank Ltd.
2	ICICI Bank Ltd.	11	The Karnataka Bank Ltd.
3	Axis Bank Ltd.	12	IDFC Bank
4	Kotak Mahindra Bank Ltd.	13	RBL Bank
5	YES Bank	14	The Lakshmi Vilas Bank Ltd.
6	IndusInd Bank Ltd.	15	Tamilnad Mercantile Bank Ltd.
7	The Federal Bank Ltd.	16	City Union Bank Ltd.
8	The Jammu & Kashmir Bank Ltd.	17	IDBI Bank Ltd.
9	The South Indian Bank Ltd.		

### Annexure - XIII

Account Type	Title	Name of Vendor	Name of Vendor (cont.)	Search Term	Address	Address contd	Address contd	Address contd	Pincode	City Name
Acc Type	Title	Name 1	Name 2	Search term 1	Street/House number	Street 2	Street 3	Street 4	Postal Code	City
Select from List	M/s	Use CAPS only and upto 40 Characters	Use CAPS only and upto 40 Characters	Short Name. Use CAPS only& upto 20 Characters	Address. Use CAPS only& upto 60 Characters	AddressContd. Use CAPS only& upto 40 Characters	AddressContd. Use CAPS only& upto 40 Characters	AddressContd. Use CAPS only& upto 40 Characters	Pincode of City 6 Char	Name of City upto 40 Char
Mandatory		Mandatory			Mandatory				Mandatory	Mandatory

Country	State	Telephone Number	Mobile Number	Mail ID	GST Vendor Class	GSTIN	Recon Account	Payment Terms	MSE Indicator	Check for Double Inv	Wh Tax Country	Withholding Tax Type	Withholding Tax Cd	Liable for Tax	Reception Type	Incomes 1	Incomes 2
Country	Region	Telephone	Mobile Phone	E-Mail	GST Vendor Class	Tax Number 3	Recon. account	Payt Terms	Minority Indic	Chk Double Inv	WH Tax Country	With T T	W/t ax Code	Liable	Rec Ty	INC O 1	INC O 2
Standard	Select from List	Mention only STD Code without 0 and number ex: 674230 0999	Mention 10 digit mobile number only	Mail ID	Select from List	GSTIN	Fixed	4 characters	Select from List	Standard	Standard	Select All from List	Select All from List	Standard	Select from List	Incomes 1 (FOT, FOR, EXW)	Incomes 2
	Mandatory		Mandatory	Mandatory	Mandatory	Mandatory			Mandatory								
				-													

(This format is available in Central public procurement portal in separate Attachment)

**PRE- CONTRACT INTEGRITY PACT**

**General**

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on \_\_\_\_\_ day of the month of \_\_\_\_\_ 2023, between, on one hand, the National Aluminium Company Limited (NALCO), a company registered under the Companies Act 1956 and a Government of India Enterprise, having its Registered Office at NALCO Bhawan, P/1, Nayapalli, Bhubaneswar- 751013, Odisha, India (referred to as NALCO) acting through Shri U. R. Mishra, DGM(Materials) (hereinafter called the "BUYER", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s. \_\_\_\_\_ represented by Shri \_\_\_\_\_, Chief Executive Officer (hereinafter called the "BIDDER / Seller" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns ) of the Second Part. WHEREAS the BUYER proposes to procure \_\_\_\_\_ and the BIDDER/Seller is willing to offer/has offered the stores and WHEREAS the BIDDER is a private company / public company /Government undertaking/ partnership /registered export agency, constituted in accordance with the relevant law in the matter and the BUYER is a Company under the administrative control of the Ministry of Mines, Govt. of India.

**NOW THEREFORE**

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence / prejudiced dealings prior to during and subsequent to the currency of the contract to be entered into with a view to :-

Enabling the BUYER to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will comment to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

**Commitments of the BUYER**

- 1.1 The BUYER undertakes that no official of the BUYER, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person or organisation or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.
- 1.2 The BUYER will, during the pre-contract stage, treat all BIDDERS alike and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERS.
- 1.3 All the officials of the BUYER will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

2. In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the BUYER with full and verifiable facts and the same is prima facie found to be correct by the BUYER, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the BUYER and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the BUYER the proceedings under the contract would not be stalled.

---

## **Commitments of BIDDERS**

3. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following :-

3.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER, connected directly or indirectly with the bidding process, or to any person, organisation or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.

3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the Government.

3.3 BIDDERS shall disclose the name and address of agents and representatives and Indian BIDDERS shall disclose their foreign principals or associates.

3.4 BIDDERS shall disclose the payment to be made by them to agents / brokers or any other Intermediary, in connection with this bid / contract.

3.5 The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the BUYER or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.

3.6 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.

3.7 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.

3.8 The BIDDER shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the BUYER as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.

3.9 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable fact.

3.10 The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.

3.11. If the Bidder or any employee of the Bidder or any person acting on the behalf of the Bidder, either directly or indirectly, is a relative of any of the officers of the Buyer, or alternatively, if any relative of an officer of the Buyer has financial interest/stake in the Bidder's firm, the same shall be disclosed by the Bidder at the time of filing of tender. The term "relative" for this purpose would be as defined in Section 6 of the Companies Act 1956.

3.12. The Bidder shall not lend to or borrow any money from or enter into monetary dealings or transactions, directly or indirectly, with any employee of the Buyer.

3.13 Bidder(s)/ Contractor(s) who have signed the integrity pact shall not approach the courts while representing the matter to IEMs and shall wait for their decision in the matter.

---

#### **4. Previous Transgression**

4.1. The Bidder declares that no previous transgression occurred in the last three years immediately before signing of this integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could Justify Bidder's exclusion from the tender process.

4.2. The Bidder agrees that if it makes incorrect statement on this subject, Bidder can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

#### **5. Sanctions for Violations :**

5.1. Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle of the BUYER to take all or any one of the following actions, wherever required: -

(i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER(s) would continue.

(ii) The Earnest Money Deposit ( in pre-contract stage) and/or Security Deposit / Performance Bond ( after the contract is signed) shall stand forfeited either fully or partially, as decided by the BUYER and the BUYER shall not be required to assign any reason therefore.

(iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.

(iv) To recover all sums already paid by the BUYER, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the BUYER in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

(v) To en-cash the advance bank guarantee and performance bond / warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.

(vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation / rescission and the BUYER shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.

(vii) To debar the BIDDER from participating in future bidding processes of NALCO for a minimum period of five years, which may be further extended at the discretion of the BUYER.

(viii) To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.

(ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the BUYER with the BIDDER, the same shall not be opened.

(x) Forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

5.2 The BUYER will be entitled to take all or any of the actions mentioned at para 5.1(i) to (x) of this Pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in Chapter IX of the Indian Penal Code 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

5.3 The decision of the BUYER to the effect that a breach of the provisions of this Pact has been committed by the BIDDER shall be final and conclusive on the BIDDER. However, the BIDDER can approach the independent Monitor(s) appointed for the purposes of this Pact.

---



## **6. Independent External Monitors (IEMs):**

6.1. The BUYER has a panel of Independent External Monitors (hereinafter referred to as IEMs) for this Pact in consultation with the Central Vigilance Commission as mentioned in NALCO's NIT/NALCO's website ([www.nalcoindia.com](http://www.nalcoindia.com)).

6.2 The task of the IEMs shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.

6.3 The IEMs shall not be subject to instructions by representatives of the parties and perform their functions neutrally and independently.

6.4 Both the parties accept that the IEMs have the right to access all the documents relating to the project / procurement including minutes of meetings.

6.5 As soon as the IEM notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the BUYER.

6.6 The BIDDER(s) accepts that the IEM has the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the IEM, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The IEM shall be under contractual obligation to treat the information and documents of the BIDDER / Subcontractor(s) with confidentiality.

6.7 The BUYER will provide to the IEM sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the IEM the option to participate in such meetings.

6.8 The IEM will submit a written report to the designated Authority of BUYER / Secretary in the Department / within 8 to 10 weeks from the date of reference or intimation to him by the BUYER / BIDDER and should be occasion arise, submit proposals for correcting problematic situations.

## **7. Facilitation of Investigation:**

In case of any allegation of violation of any provisions of this Pact or payment of commission, the IEMs shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

## **8. Law and Place of Jurisdiction:**

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the BUYER.

## **9. Other Legal Actions:**

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

## **10. Validity:**

10.1 This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by CMD, NALCO.

10.2 Should one or several provisions of this Pact turn out to be invalid, the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

11. If the bidder/ Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members

---

12. The parties hereby sign this Integrity Pact at \_\_\_\_\_ on \_\_\_\_\_.

For & on behalf of

For & on behalf of

BUYER

BIDDER

Name of the Officer:

Designation:

Company:

NALCO

Official Seal

Witness

Witness

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

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

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

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

**PREFERENCE TO MAKE IN INDIA**  
**ORDER NO. P-45021/2/2017-PP (BE-II) DT. 16.09.2020**

- 1.0 For the purpose of this order dtd. 16.09.2020:-
- 1.1 Local content means the **amount of value added in India** which shall, unless otherwise prescribed by the nodal ministry, **be the total value of the item procured** (excluding net domestic indirect taxes) **minus the value of imported content in the item** (including all customs duties) **as a proportion of the total value, in percent.**
- 1.2 Class- I local supplier means a supplier or service provider whose goods, services or works offered for procurement has local content equal to or more than 50%, as defined at clause 1.1 above.
- 1.3 Class- II local supplier means a supplier or service provider whose goods, services or works offered for procurement has local content equal to or more than 20% but less than 50%, as defined at clause 1.1 above.
- 1.4 Non-local supplier means a supplier or service provider whose goods, services or works offered for procurement has local content less than 20%, as defined at clause 1.1 above.
- 2.0 '**Margin of purchase preference**' means the maximum extent to which the price quoted by a "Class-I Local supplier" may be above the L1 for the purpose of purchase preference. The margin of purchase preference shall be 20% against the tender.
- 3.0 Subject to the provisions of the above order and to any specific instructions issued by the Nodal Ministry or in pursuance of this order, purchase preference shall be given to 'Class-I Local supplier' in procurement undertaken by procurement entities in the manner specified here under:-
- 4.0 **CASE-I (FOR DIVISIBLE QUANTITY):** All the provisions of the order No.P-45021/2/2017-PP(BE-II) dtd. 16.09.2020 shall be applicable for this tender towards purchase preference.  
 However, in case of participation by MSE & ancillary units, the tender quantity reserved for MSE & ancillary units as per purchase preference policy of NALCO for MSEs as mentioned at cl \_\_ of tender document shall take precedence over the purchase preference against the above mentioned order **(to be mentioned, if applicable).**
- 4.1 In the procurement of goods or works which are divisible in nature, the 'Class-I Local Supplier' shall get purchase preference over 'Class-II local supplier' as per the following procedure:
  - a) Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract of full quantity will be awarded to L1.
  - b) If L1 bid is not a 'Class I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter. the lowest bidder among the 'Class I Local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to Class-I local supplier's quoted price falling within the margin of purchase preference and contract for that quantity shall be awarded to such 'Class-I Local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I Local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I Local supplier', within the margin of purchase preference shall be invited to match the L1 price for the remaining quantity and so on and the contract shall be awarded accordingly. In case some quantity is still left uncovered on 'Class-I Local supplier, then such balance quantity may also be ordered on the L1 bidder.
- 4.2 'Class-II local supplier' will not get purchase preference in any procurement undertaken by procuring entities.
- 4.3 **CASE-II (FOR NON-DIVISIBLE QUANTITY):** All the provisions of the order No.P-45021/2/2017-PP (BE-II) dtd. 16.09.2020 shall be applicable for this tender towards purchase preference.
- 4.4 In the procurement of goods or works which are not divisible in nature, the 'Class-I Local Supplier' shall get purchase preference over 'Class-II local supplier' as per the following procedure:
  - a) Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.
  - b) If L1 bid is not a 'Class I local supplier', the lowest bidder among the 'Class I Local supplier' will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference and contract shall be awarded to such 'Class-I Local supplier' subject to matching the L1 price.
  - c) In case such lowest eligible 'Class-I Local supplier' fails to match the L1 price, 'Class-I Local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I Local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.

- 4.5 'Class-II local supplier' will not get purchase preference in any procurement undertaken by procuring entities.
- 5.0 **Verification of local content.**
- 5.1 The 'Class-I local supplier' / 'Class II-local supplier' at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier' / 'Class II-local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made. **Declaration to be given in the format given in the following format.**
- 5.2 In case of procurement for a value in excess of Rs. 10 Crores, the 'Class-I local supplier' / 'Class II-local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of the companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
- 5.3 Decisions on complaints relating to implementation of this order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.
- 6.0 **Only "Class-I local suppliers and Class-II local suppliers", as defined under the order, shall be eligible for participation against this tender. The offers of 'Non-Local Suppliers' shall not be considered for evaluation against this tender.**
- 7.0 **However as per office order no. P-45021/102/2019-BE-II-Part(1), dated. 04/03/2021 of Ministry of Commerce and industry, the bidder can't claim themselves as class-I local supplier/class-II local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training and after sales service support like AMC/CMC etc. as local value additions.**
- 

**(Declaration by the bidder on their letter head)**

To,  
GM (Materials) ,  
M/s. National Aluminium Company Limited,  
Smelter Plant  
Dist.- Angul, Odisha-759145

Sub: Declaration of Local content  
Ref. No: Gol order No. P-45021/2017-PP (BE-II), Dated: 16/09/2020.

Dear Sir,  
We, M/s. \_\_\_\_\_, the statutory auditor(or as the case may be) of M/s \_\_\_\_\_ (the bidder) hereby certify that M/s \_\_\_\_\_ (the bidder) having its registered office at \_\_\_\_\_ (address) has quoted vide offer no \_\_\_\_\_, Dt \_\_\_\_\_ against NALCO's tender no \_\_\_\_\_, Dt \_\_\_\_\_ and the percentage of local content in the said bid is \_\_\_\_% .

Following is/are the location(s) at which local value addition is made:

\_\_\_\_\_  
\_\_\_\_\_

**Signature with Date and name of person representing the statutory auditor(or as the case may be) with seal of the audit firm.**

**Anti-Profiteering Clause (Sec 171 of CGST Act) (Applicable for Indian Bidders)**

If any new Tax/Taxes is introduced on sale of goods/services, either in lieu of existing tax/taxes or as separate tax/taxes, then the overall incidence of tax/taxes on the Vendor on account of its inputs and outputs wherever less than the incidence of existing taxes, then the Vendor shall pass on to Owner, the benefits thereof by way of commensurate reduction in the basic price w.r.t. Input Tax benefits and reduction in Tax chargeable to 'Nalco' w.r.t. Output Tax benefits in connection with goods and/or services provided.

If on the other hand, the incidence of tax/taxes is in excess of the incidence of existing tax/taxes, the Owner on submission of satisfactory proof, shall reimburse the Vendor the additional incidence of tax provided they are within the contractual completion date.

The Vendor has to provide a declaration along with the Tender that they will abide by the requirements under CI 171 of CGST Act, 2017.

**Format:- (To be submitted with NIT)**

**ANTI-PROFITEERING DECLARATON FORMAT**

To whomsoever it may concern.

I, Mr. \_\_\_\_\_, proprietor / \_\_\_\_\_ (other authorized signatories) of M/s. \_\_\_\_\_, hereby solemnly and sincerely declare that, while giving this quotation to 'Nalco' against Tender No \_\_\_\_\_ Dt. \_\_\_\_\_, me/my firm/my company has abided by all Tax Laws and Rules including but not limited to Section 171 of the Central Goods and Services Tax Act, 2017.

I, hereby solemnly and sincerely further declare that me/my firm/my company will continue to abide by the said laws, including but not limited to Section 171 of the Central Goods and Services Tax Act, 2017, as applicable from time to time during the life of the tender and during execution of any order placed with reference to the said tender.

I further declare that, me/my firm/my company, in furtherance and in compliance to the said section, will make commensurate reduction in the basic prices w.r.t. Input Tax benefits and reduction in Tax charged to 'Nalco' w.r.t. Output Tax benefits in connection with goods and/or services provided.

I further declare that the foregoing is true and correct and the same is a legal obligation and failure to fulfil it could result in penalties under the law.

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

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

To be signed by the authorized person under the firm's seal

**GENERAL INFORMATION OF SUPPLIERS**

(To be filled in by the Tenderer and submitted with Techno-Commercial bid)

NAME & COMPLETE ADDRESS  
OF THE SUPPLIER :

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NAME OF CONTACT PERSON :

\_\_\_\_\_

TELEPHONE No. :

\_\_\_\_\_

FAX NO. :

\_\_\_\_\_

MOBILE No. :

\_\_\_\_\_

E-MAIL ADDRESS :

\_\_\_\_\_

LOCATION OF UNIT :

\_\_\_\_\_

SIGNATURE

\_\_\_\_\_

NAME

\_\_\_\_\_

DESIGNATION

\_\_\_\_\_

DATE:

BIDDER'S SEAL

**FORMAT FOR ONLINE SUBMISSION OF EARNEST MONEY DEPOSIT (EMD)****DETAILS TO BE FURNISHED BY NALCO**

1)	TENDER NO.	<b>SMLT/MMP/402/3000009296</b>
2)	DATE	
3)	DESCRIPTION OF TENDER	PIPE (SIPHON TUBE) CLEANING MACHINE IN OLD LPC SHOP OF SMELTER PLANT (NALCO), ANGUL, ODISH
4)	EMD AMOUNT (IN RS.)	4,50,000/-
5)	SBI ACCOUNT NO	10657908114
6)	SBI BRANCH CODE	08279
7)	SBI IFSC CODE	SBIN0008279
8)	BRANCH NAME	KANDSAR
9)	BRANCH PLACE	NALCONAGAR
10)	BRANCH CITY	ANGUL

**DETAILS TO BE FURNISHED BY BIDDER**

1)	NAME OF THE BIDDER	
2)	NALCO VENDOR CODE	(FOR EXISTING VENDOR)
3)	AMOUNT DEPOSITED	
4)	DATE OF DEPOSIT	
5)	NAME OF BANK & BRANCH	
6)	BRANCH CODE	
7)	IFSC CODE	
8)	UTR NO.	(ENCLOSE COPY)
9)	DATE	

Bidders submitting the EMD in INR should send the scanned copy of the duly filled in and signed Annexure – XVIII along with the scanned copy of Transaction Slip/ receipt of the Bank on the same day of payment by e-mail to [aloktripathy@nalcoindia.co.in](mailto:aloktripathy@nalcoindia.co.in) with copy marked to [gyanendra.jha@nalcoindia.co.in](mailto:gyanendra.jha@nalcoindia.co.in) .

The bidders should upload the scanned copy of the duly filled in and signed Annexure – XVIII along with the scanned copy of Transaction Slip/ receipt of the Bank with their On - line Part- I Bid.

The original copy of the duly filled in and signed Annexure – XVIII along with the Transaction Slip/ receipt should be submitted in cover - 1 of the hard copy offer.



**MANDATE FORM FOR ELECTRONIC PAYMENT THROUGH RBI/ EFT/ INTERNET/ RTGS**

To  
National Aluminium Company Limited,

Dear Sir,

Sub: Authorization for release of payment due from NALCO, through RBI-EFT/Internet / RTGS.  
Refer Order No \_\_\_\_\_ dt \_\_\_\_\_ and/or Tender/Enquiry/Letter No \_\_\_\_\_ dt \_\_\_\_\_

(Please fill in the information in CAPITAL LETTERS. Please TICK wherever it is applicable)

1. Name of the Vendor : \_\_\_\_\_  
2. Address of the vendor : \_\_\_\_\_  
\_\_\_\_\_

City : \_\_\_\_\_ Pin Code: \_\_\_\_\_

E-mail Id: \_\_\_\_\_

Permanent Account Number: \_\_\_\_\_

3. Particulars of Bank:

Bank Name											Branch Name										
Branch Place											Branch City										
Pin Code											Branch Code										
MICR No																					
(9 Digits code number appearing on the MICR Band of the cheque supplied by the Bank. Please attach Xerox copy of a cheque of your bank for ensuring accuracy of the bank name, branch name and code number)																					
Account Type	Savings ?					Current ?					Cash Credit ?										
Account Number (as appearing in the Cheque Book)																					
RTGS / IFSC Code																					

4. Date from which the mandate should be effective:

I hereby declare that the particulars given above are correct and complete. If any transaction is delayed or not effected for reasons of incomplete or incorrect information, I shall not hold National Aluminium Company Limited responsible. I also undertake to advise any change in the particulars of my account to facilitate updating of records for purpose of credit of amount through RBI EFT/ Internet/ RTGS.

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

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

Signature of the vendor/Authorized Signatory

Certified that particulars furnished above are correct as per our records

Bank's Stamp:

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

(Signature of the Authorized Official from the Banks)







Signature Not Verified

Digitally signed by GYANENDRA KUMAR  
JHA  
Date: 2024.06.05 17:58:12 IST  
Location: eProcure-ERROC

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE. SMELTER PLANT(NALCO)	1 of 103



**NATIONAL ALUMINIUM COMPANY LIMITED**  
**SMELTER PLANT, NALCONAGAR**  
**ANGUL, ODISHA**

 (R.N. Sahoo)    
  (B. Arya)    
  (P. Raja)    
  (P. Sahoo)    
  (R.S Thakur)    
  (S Biswal)

(Site Technical Committee)

 (PL-Opn)  
 (T.K. Tripathy)    
  (CRG)  
 (S.B. Sahoo)    
  (PL-Mech)  
 (B.C. Moharana)    
  (PL-Elect)  
 (A.K. Nayak)    
  (PL-E&I)  
 (A. Misra)    
  (Civil)  
 (Civil)

( HODs/GMs )

नालको NALCO SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	1 of 103


441973/2024/S

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	2 of 103

## SPECIFICATIONS FOR DESIGN, SUPPLY, INSTALLATION AND COMMISSIONING OF PIPE CLEANING MACHINE IN OLD LPC SHOP


**DOC REF. NAL-SMLT-CRG-PROJ-23-24-028**

REISION NO	ISSUE NO	DATE
01	00	11.03.2024

 <b>NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	2 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	3 of 103

<b>SPECIFICATIONS FOR DESIGN, SUPPLY, INSTALLATION AND COMMISSIONING OF PIPE CLEANING MACHINE IN OLD LPC SHOP.....</b>	<b>2</b>
<b>1. INTRODUCTION &amp; GENERAL INFORMATION:.....</b>	<b>4</b>
<b>2. VENDOR'S SCOPE: .....</b>	<b>5</b>
<b>3. PURCHASER'S SCOPE:.....</b>	<b>6</b>
<b>4. FREE ISSUE OF MATERIALS: .....</b>	<b>6</b>
<b>5. SAFETY:.....</b>	<b>7</b>
<b>6. COMPLETION SCHEDULE:.....</b>	<b>7</b>
<b>7. MODALITY OF PROJECT EXECUTION: .....</b>	<b>8</b>
<b>8. INSTRUCTIONS TO BIDDERS (TECHNICAL).....</b>	<b>14</b>
<b>9. DRAWING AND DATA REQUIREMENT: .....</b>	<b>15</b>
<b>10. PAINTING AND SHIPMENT:.....</b>	<b>20</b>
<b>11. DESIGN BASIS: .....</b>	<b>21</b>
<b>12. BATTERY LIMIT.....</b>	<b>27</b>
<b>13. JOB SPECIFICATION – MECHANICAL.....</b>	<b>28</b>
<b>14. JOB SPECIFICATION – ELECTRICAL .....</b>	<b>32</b>
<b>15. JOB SPECIFICATION – INSTRUMENTATION.....</b>	<b>66</b>
<b>16. JOB SPECIFICATION – CIVIL.....</b>	<b>71</b>
<b>17. SPARE PARTS.....</b>	<b>78</b>
<b>18. GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING.....</b>	<b>80</b>
<b>19. PREFERRED VENDOR LIST .....</b>	<b>82</b>
<b>20. SPECIAL CONDITIONS OF CONTRACT .....</b>	<b>91</b>
<b>21. TENDER DRAWINGS:.....</b>	<b>103</b>

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	3 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	4 of 103

## 1. INTRODUCTION & GENERAL INFORMATION:

National Aluminium Company Limited is one of the largest Aluminium producers in Asia having its Corporate Office at Bhubaneswar, capital city of Odisha, Mines & Refinery at Damanjodi in the Koraput district of Odisha and Smelter & Captive Power Plant at Angul district of Odisha. Nalco has also Port facilities at Visakhapatnam in the state of Andhra Pradesh in addition to regional marketing office at Delhi, Kolkata, Mumbai, Chennai, and Bangalore.

In the Smelter Plant, Aluminium is produced by electrolysis of Alumina ( $Al_2O_3$ ) in a specially made pot cell (Voltaic Cell). Pre baked Carbon Blocks are used as Anodes in the process of electrolysis. During the electrolytic process, Carbon Anodes get oxidized and therefore, carbon blocks are periodically replaced. These Carbon Blocks are manufactured at Green Anode Plant (GAP) by mixing liquid coal tar pitch and calcined petroleum coke. Green anodes are baked in a ring type open hearth furnace to impart desired/ improved physical properties like electrical conductivity mechanical strength & resistivity.

**1.1 Location:** The plant and equipment to be supplied under this package will be installed in the Smelter plant of National Aluminum Company Limited, located at a site approximately 07 Kms. from the nearest town Angul in the Odisha State of India. This site is connected by a link road to the existing highway NH- 55, linking NH- 16 (Kolkata-Chennai) and NH- 53 (Kolkata-Mumbai). The nearest Railway Station is about 07 kms from the plant and the plant is approximately 150 Kms. from state capital Bhubaneswar


### 1.2 Site Condition & Climate:

#### Climate:

Temp. °C	Dry Bulb	Wet Bulb	Relative Humidity
Maximum	50	25.7	83 % at 26 °C
Minimum	06	14.80	33 %
Design	50 Max./ 06 Min		

#### Rain Fall:

Annual:	
Maximum:	2148.7 mm
Minimum:	756 mm
Average:	1243.7 mm
Heaviest Rainfall	257 mm
Peak Intensity	100 mm/ Hour
Design Intensity	100 mm / Hour
Rainy Season	Mid June- Mid. Sept.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	4 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	5 of 103

**Wind Data:**

Wind Direction	West & North-West
Wind Velocity	180 KMPH Max.
Max. Wind pressure	At 10 m: 193 da N/M2 At 20 m: 219 da N/M2 At 30 m : 231 da N/M2
Design Intensity	100 mm / Hour
Rainy Season	Mid June- Mid. Sept.

**Barometric Pressure:**


Maximum	1001.4 mbs (Average Monthly)
Minimum	981.6 mbs (Average monthly)
Average yearly	Morning (08:30 hours) 993.5 mbs Evening (17:30 hours) 989.3 mbs
Design	981 mbs

**1.3 Seismic Data:**

Design of structure for seismic load (due to earthquake) shall be as per design requirement of IS: 1893, considering zone-III and importance factor shall be 1.5.

**2. VENDOR'S SCOPE:**

- 2.1 The intent of this requisition is to outline the requirements of the Purchaser for the design, manufacture, supply/ dispatch, installation, erection, testing & commissioning of Pipe (Siphon tube) Cleaning machine in Old LPC Shop which shall include site assessment to study the requirements, conceptualization of the project within battery limits, collection of required data/inputs/drawings, design, engineering, approval from Nalco, manufacturing, procurement, supply/ dispatch, transport/shipment both air & sea, inland transportation, receipt at site, storage & warehouse management, fabrication, assembly, erection, installation, painting, hook-up with the existing system mechanically, electrically and for automation, testing, commissioning, PG test, handing over, drawings & documents of the Pipe (Siphon tube) Cleaning machine in Old LPC Shop of Smelter Plant, Angul, in accordance with the specifications and drawings enclosed with this document. In the process of engineering, vendor may have to assess the site number of times for gauging physical requirements and collection of data relevant to the process design.
- 2.2 The supplied system shall be a complete operating unit including all required auxiliary equipment for efficient and satisfactory operation as a System and integral part of the existing Old LPC Shop. Vendor shall be responsible for furnishing all mechanical, electrical, instrumentation and other inter-connecting and safety items as required to make the system complete. The job needs to be carried out in the operating Old LPC Shop. After successful erection and commissioning only the existing machine will be dismantled. The existing machine will continue to run till the handover of the new PCM. Any deviation from mutually agreed time and duration should be unanimously agreed upon before placement of PO. The job includes dismantling of old structure/ equipment /

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	5 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	6 of 103

system, if any and cutting to small sizes and shifting to designated location as per the instruction of Manager-in-Charge or his/her authorized representative to accommodate the installation of the new system. Vendor has to categorically note that proposed work is purely brown field project.


- 2.3 All the equipment and materials supplied & installed under these specifications shall be installed in accordance with standard designing & engineering principles and good fabrication and construction practices. No omission from these specifications shall relieve the vendor of his responsibility for an adequate system as above. All materials supplied under this requisition shall be adequate for proposed service. Proper consideration shall be given to their function with regard to corrosion, chemical and process hazards and erosion due to the material being handled.
- 2.4 The proposed system shall be complete integrated unit that includes but not limited to Pipe (Siphon tube) Cleaning machine with all accessories & switchgears, sensors & control instruments and other accessories required for the complete system.
- 2.5 All the electrical & instrumentations within battery limit required for supply, installation, testing & commissioning and handing over of the proposed Pipe (Siphon tube) Cleaning machine to Nalco, shall be in vendor's scope.

### 3. PURCHASER'S SCOPE:

- 3.1. Nalco shall appoint a project coordinator who will associate and facilitate the project activities with the vendor.
- 3.2. Nalco shall provide available data, drawings & software etc. to the vendor, if required.
- 3.3. Free Land and water at site for temporary office cum store cum warehouse cum work shop for smooth execution of the project. However, vendor has to arrange necessary tapping connections from the source identified by Nalco.
- 3.4. Free electricity and construction water shall be made available for the erection and commissioning of the plant.

### 4. FREE ISSUE OF MATERIALS:

There will be **no free issue of materials** for the proposed "Pipe (Siphon tube) Cleaning Machine in Old LPC Shop". The vendor shall arrange all the materials required for the proposed system within the battery limit. However, free land, electricity & water for office cum store cum workshop during the tenure of the WO/PO to execute the work as per the clause no. 3.3 & 3.4 will be made available for the vendor.

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	6 of 103




PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	7 of 103

## 5. SAFETY:

- 5.1 The manpower safety and construction safety shall be given prime importance during site execution of the jobs. Since, the site activities are to be conducted in the vicinity of a running plant, the contract, their sub-contractor, workmen, labourers shall strictly follow the safety guidelines of Nalco. There will be no compromise with safety at any point of time which may attract disciplinary action on the contractor.
- 5.2 Adequate number of safety officers are to be deployed at site to ensure safety of the man power and safety of the equipments. The tool box meeting shall be carried out on regular basis.
- 5.3 The work shall be carried out inside the plant as per safety practices enforced by NALCO safety section and instructions of Manager-In-Charge or his/her authorized representative issued from time to time. Many times it may happen that the working hours shall be drastically reduced or increased to meet certain safety requirements and the Contractor shall meet these requirements without any argument for time and financial implications.
- 5.4 To obtain work permit and to satisfy all conditions laid down therein, shall be the responsibility of the Contractor. No claim for idling of machinery, plant, manpower etc., for safety reasons or non-issuance of work permit by In-charge, Safety Section shall be considered.
- 5.5 The Contractor shall abide by all safety regulations of the plant and ensure that safety equipment or specific job kit as stipulated in the Factory Act / Safety Hand Book is issued to the employee during the execution of work, failing which all the works at site will be suspended.
- 5.6 All the lifting tackles including wire ropes, slings, shackles and electrically operated equipment shall be got approved by NALCO Engineer before they are actually put on use. Test certificates should be submitted before their usage.
- 5.7 For the movement of cranes etc. it may become necessary to lay sleeper bed for obtaining leveled safe approach for usage of equipment. It shall be the contractor's responsibility to lay necessary sleepers. Required sleepers shall be arranged by the contractor at their cost. It shall be contractor's responsibility to arrange necessary cranes/tractors, trailer or trucks/slugs/tools and tackles/ labourers including operators and on to transport equipment, move it to erection site/pre-assembly yard and unload the same at pre-assembly yard/ erection site and the quoted rate shall include the same.
- 5.8 All equipment so used by contractor shall be of proven quality and safe in operation as approved by the statutory authorities as per the law in force.
- 5.9 **Site cleanliness and safety requirements:** Contractor shall strictly follow all safety regulations/conditions and its sub clauses of General Conditions of Contract. Non-conformity of safety rules and safety appliances will be viewed seriously. The contractor should exclusively deploy one Safety Engineer along with a safety supervisor for effective implementation and co-ordination of safe working conditions.

## 6. COMPLETION SCHEDULE:

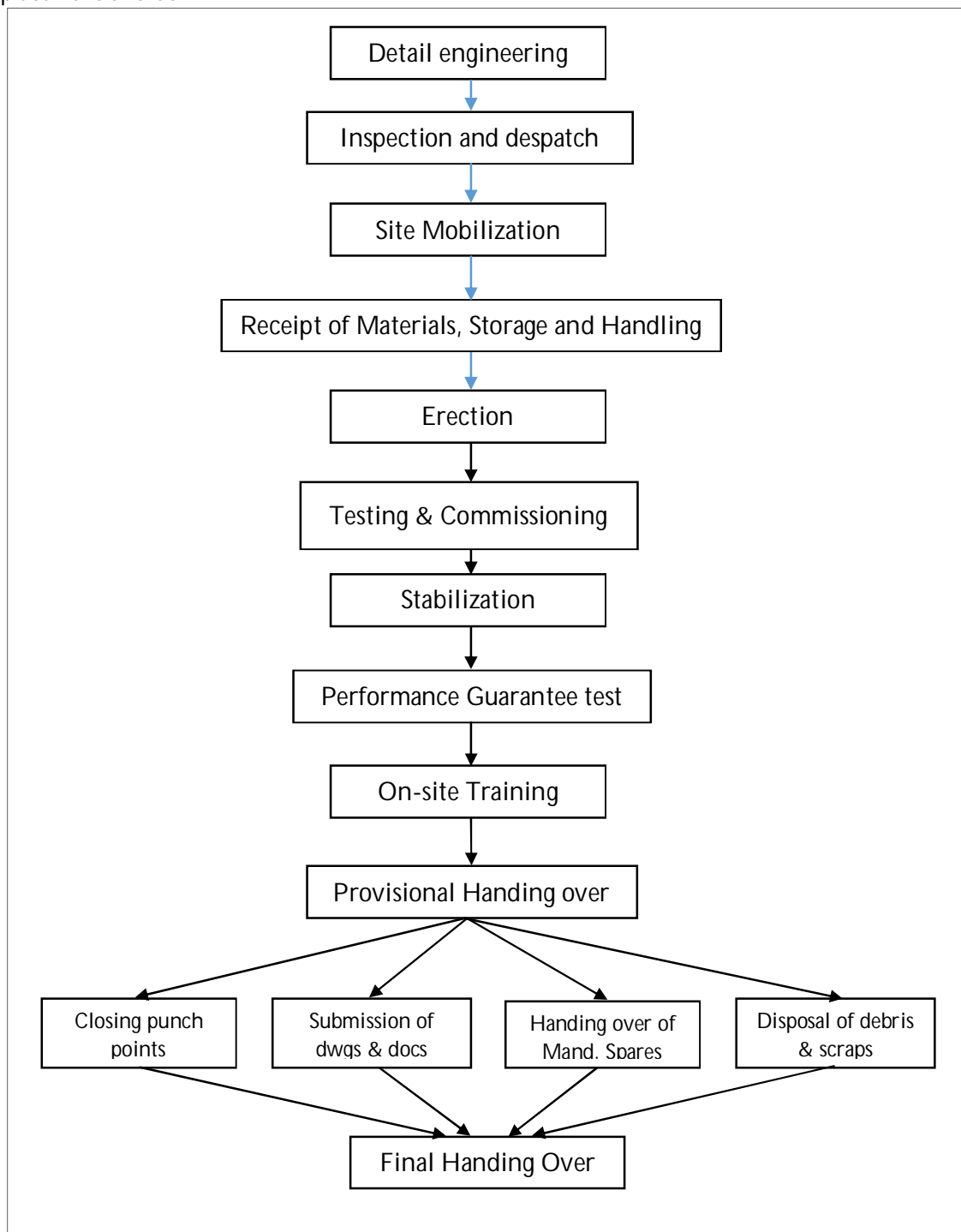
The total Completion period of the project in all respect as per Technical Specification and scope of supply/work of our NIT shall be **12 months** from the effective date of contract.


 SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	7 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	8 of 103

## 7. MODALITY OF PROJECT EXECUTION:

A typical flow diagram is given below which is to be followed for execution of the project after placement of order.



 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	8 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	9 of 103

## 7.1 DETAIL ENGINEERING:

The detail engineering shall be carried out by the vendor from the effective date of Purchase order. As a part of detail engineering, kick-off meeting shall be conducted at site within 15 days of effective date of order. The vendor has to visit site with their project team to deliberate on the modality of project execution, physical assessment of execution area. Subsequently, the vendor shall submit detail project schedule, design & engg. Documents, drawings, datasheet, P&ID, QAP etc. for approval of Nalco.


First, a list of all documents/drawings which are required for the project shall be submitted to Nalco for review. It shall contain the title of the document/drawing, document/drawing no. and schedule date of submission. Based on this document/drawing submission schedule, the documents/drawings are to be submitted to Nalco for approval/review/retention.

## 7.2 INSPECTION & DESPATCH CLEARANCE:

The contractor/seller shall despatch the equipment only after issuance of despatch clearance. Prior to despatch of the equipment/machines/components, the basis of despatch clearance shall be approved by Nalco.

The pre despatch inspection (PDI) shall be carried out by Nalco personnel at the works of the vendor for full system or few major equipment as per "Inspection Categorization plan" (ICP). This document shall contain description of the equipment, agency for inspection and basis of inspection i.e. QAP document. The ICP document shall contain description of the equipment, agency for inspection and basis of inspection i.e. QAP document. A typical ICP is divided into 3 categories as follows:

- Cat. I: For these items, QAP shall be approved by Nalco. Pre-despatch inspection to be carried out by Nalco at the manufacturers works. Based on physical inspection despatch clearance shall be given by Nalco.
- Cat II: For these items, QAP shall be approved by Nalco. Pre-despatch inspection shall be carried out by the contractor/seller at the manufacturer's works and inspection report will be sent to Nalco. Based on this inspection report, despatch clearance shall be given by Nalco.
- Cat III: For these items, QAP shall be approved by vendor/sub-vendor. Test and/ calibration certificates of these procured items shall be submitted by the vendor/sub-vendor to the contractor/seller. After due verification by the

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	9 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	10 of 103

contractor/seller, the report to be submitted to Nalco. Based on this inspection report, despatch clearance shall be given by Nalco.

Despatch Inspection calls shall be given by the vendor/contractor for association of Manager-in-charge or his/her authorised representative as per mutually agreed programme and Proforma with 15 days margin, giving details of equipment and attaching relevant test certificates and internal inspection report of the Contractor.

Note:

- No material shall be despatched without getting dispatch clearance from Nalco either from Nalco office in case of Cat-II & III items or from vendor's works in case of Cat-I item.
- The despatch clearance does not absolve the vendors responsibility to ensure overall performance of the system which is to be demonstrated at site during testing and commissioning.
- The To & Fro travel expenses, lodging, boarding, conveyance etc. of the Nalco inspectors for PDI will be borne by Nalco.


### 7.3 SITE MOBILIZATION:

Before arrival of the supplied equipment at site, the contractor shall mobilize the site, set up site office, storage yard, and appoint sub-contractor, if required. For sub-contracting the jobs, prior approval of manager-in-charge is required in writing as per the procedure described in the GCC. Adequate man power shall be deployed including safety officer before commencement of site activities.

### 7.4 RECEIPT OF MATERIALS, STORAGE AND HANDLING:

While transporting the supply materials to site, these are to be entered at Smelter CISF gate and then taken to the site storage yard already set up by the contractor and unloaded these by the transporter in presence of the contractor representative. The received materials shall be inspected by Nalco personnel physically and if found OK, will be issued to the contractor for erection. If any material is found to be damaged at the time of site inspection, it will be informed to the contractor and subsequent actions to be followed as per relevant clauses in GCC.

The equipment shall be under the custody of the contractor till handing over of the complete system. The materials may have to be stored for longer period before installation and so, proper storage is to be ensured by the contractor against heavy rains/high ambient temperature, unless otherwise agreed. Watch and ward of the supplied equipment round the clock till handing over of the system is the responsibility

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	10 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	11 of 103

of the contractor. For any damage, theft or shortfall in the supplied materials observed during execution of work, the contractor has to arrange the required materials without additional financial implication to Nalco.

## 7.5 ERECTION:


The vendor shall carry out physical erection of all supplied equipment including Mechanical, Electrical, instrumentation items and Civil construction works as per approved QAP, drawing and project schedule. This also may include dismantling, re-routing of road/drains/cable tray for successful erection of the supplied equipment within the battery limit as per site requirement. The erection protocols for individual items shall be prepared by the contractor and get prior approval of Manager-in-charge or his/her authorized representative. All results of inspection will be recorded in the erection protocol and signed by both vendor & NALCO. The mechanical completion certificate shall be issued by the Manager-in-charge or his/her authorized representative on the basis of the signed protocols.

## 7.6 TESTING AND COMMISSIONING:

After completion of erection, individual equipment shall be powered ON and checked for its operation as per OEM specification/QAP. Prior to commencement of commissioning work, the commissioning protocol/Site Acceptance Test (SAT) of individual equipment as well as overall system shall be prepared by the vendor/contractor in line with the approved operation & control philosophy and get it approved from Nalco. After trial testing of individual equipment, the vendor/contractor will operate the system with load and demonstrate agreed operation philosophy to Nalco personnel. All test results will be recorded in the commissioning protocol by the vendor.

## 7.7 STABILIZATION:

After commissioning of the proposed system, the same shall be under observation for minimum two week time (i.e. stabilization period). During this period, the total system shall be operated by the vendor on continuous basis. If the system requires some fine tuning, the vendor will do the same and any change made by the vendor in the system during this period shall be recorded in the commissioning protocol. After completion of stabilization period, the commissioning protocol is to be signed by both Nalco personnel and vendor representative.

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	11 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	12 of 103

## 7.8 PERFORMANCE GUARANTEE TEST:

- i. In order to demonstrate the PG parameters, the vendor has to submit a PG test procedure prior to PG test. This is to be mutually agreed by Nalco. The performance guarantee tests shall be jointly carried out by the representative of the vendor and Nalco or his nominee with all the test equipment arranged by the bidder. The parameters to be tested during PG Test are given below:

The Performance Guarantee Tests shall be conducted for 8 Hrs per day in "G" shift only during 8 AM to 1 PM and 2 PM to 5 PM for consecutive five days excluding Sundays & Holidays. The necessary instrument, duly calibrated, for measuring the parameters is to be organized by the bidder.

a) **Average Internal Diameter of Pipe after Cleaning** : 95 to 100 mm

b) **No. of Pipes to be cleaned satisfying Average ID of Pipe :**

Tapping Spout Assembly : 15 Nos per shift (8 Hrs)

c) **Noise Level :**

Noise level shall not exceed 85 dBA at a distance of 1 m from the machine (when other machines are not running in the shop).


d) **Dust Level :**

Dust level at the work zone shall not exceed to 10 mg/Nm<sup>3</sup> (As per IS:5182-Part-IV) over and above the background dust level. The measurement of dust has to be taken at multiple points in the shop floor which will be decided before commencement of PG test.

e) **Dust emission at the chimney/stack:**

Maximum dust emission at the outlet of the chimney/stack shall be below 30 mg /Nm<sup>3</sup>

- ii. All equipment and components shall be guaranteed as per the clause mentioned elsewhere under commercial terms and conditions.
- iii. The bidder shall have the total responsibility for the design and performance of the complete system supplied under the requisition. The bidder shall warrant the systems furnished by him and the performance of the said system in accordance with this specification

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	12 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	13 of 103

## 7.9 ON-SITE FAMILIARIZATION TRAINING:

At the successful completion of P.G. test and acceptance thereof, the vendor shall conduct on-site training for at least 20 O&M personnel including Mechanical, Operation, Electrical and Instrumentation discipline of Nalco. The content of technical training shall cover overall structure of equipment, working principle of electric control, pneumatic and lubrication systems, parameter setting and selection, operation, maintenance, troubleshooting knowledge. After training, Nalco personnel will operate the machine as per accepted operation philosophy under the supervision & guidance of the vendor. The training materials (different from the instruction manuals) for operation and another for maintenance shall be distributed to all participants with three master copies each for technical archives. The cost of training including training materials shall be borne by the vendor.


## 7.10 PROVISIONAL HANDING OVER:

After successful completion of on-site training, the Pipe/Siphon Tube Cleaning Machine system shall be provisionally handed over to Nalco for day-to-day operation by Nalco personnel. However, the vendor/contractor shall carry out the maintenance of the system and provide support for running the system till handing over of Mandatory Spares(if any) and As built Electrical & Instrumentation drawings.

## 7.11 FINAL HANDING OVER:

The system shall be finally handed over to NALCO by the contractor after successful completion of the following activities:

- erection, commissioning & PG test
- Stabilization period
- On-site training to Nalco personnel
- Compliance of mutually agreed punch points
- Submission of As-Built drawings & documents as per requirement mentioned elsewhere in the document
- Handing over of mandatory spares and surplus materials to Nalco
- Disposal of debris, project scraps and dismantled materials, if any


 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	13 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	14 of 103

## 8. INSTRUCTIONS TO BIDDERS (TECHNICAL)

- 8.1 Technology: System, process, equipment, and components selected for this turnkey project shall be based on latest & proven and technology acclaimed Nationally and Internationally.
- 8.2 Vendor has to provide bio-data of key personnel presently in the rolls of the company and proposed site organization for carrying out the work including deployment of Engineers and Supervisors.
- 8.3 The bidder shall read the technical specification and understand the requirement fully before bidding. The bidder may visit the site for assessing exact site conditions before bidding.
- 8.4 Vendor shall ensure continued technical agreement and aftersales spares & service support for minimum period of five years from the date of commissioning of the system.
- 8.5 The bidder shall submit deviation to Technical Specification and Commercial terms of NIT, if any, separately in the specified format given the commercial document.
- 8.6 The bidder shall submit the desired documents to meet PQC and duly filled PTR(Proven Track Record) format indicating their previous installations to be considered against PQC


 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	14 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	15 of 103

## 9. DRAWING AND DATA REQUIREMENT:

The following data and information shall be furnished by vendor:

Sl. No	Description	With Bid	After Job Award		
			For Review	For Information	Final in Book Form
1	2	3	4	5	6
1.	Basic Calculations for system design and equipment selection		x		x
2.	Makes of all equipment & materials		x		x
3.	Technical Literature like erection manual, start-up and operating manual, maintenance hand book, equipment data sheets, lubrication drawing and manual,				x
4.	Process Flow Diagram (PFD)		x		x
5.	System Flow diagram with material balance		x		x
6.	Process and Instrumentation diagram		x		x
7.	Bill of material and schedule quantity			x	x
8.	Overall general arrangement drawing	x	x		x
9.	Completed data sheet (Bidder shall submit his own standard data sheets for items whose data sheets are not enclosed)		x		x
10.	Utility Requirement	x	x		x
11.	Foundation Layout & Data			x	x
12.	Drawings and documents as asked for under electrical and instrumentation control specifications	x	x	x	x
13.	GA drawing with cross section for Pipe/Siphon Tube Cleaning Machine and all		x	x	x


 <b>नालको</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	15 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	16 of 103

	components at the battery limit.				
14	Component cross sectional drawings with parts list			X	X
15	Test Procedures		X		X
16	Start-up and operating instruction			X	X
17	Repair and maintenance instruction			X	X
18	Maintenance manual, including assembly showing all critical clearances.			X	X
19	Manufacturer's test certificate for sub vendor items.		X	X	X
20	Stage inspection test reports		X	X	X
21	Final acceptance testing and performance test records		X	X	X
22	Detail list for recommended spare parts (preliminary/ final)				X
23	Spare Parts Identification Drawings				X

### 9.1 Document distribution schedule:

- a) Document listed under column 4 and 5 are to be submitted in 02 copies.
- b) Document listed under column 6 are to be submitted as hard bound indexed book and soft copies as well containing the details in 08 copies to be submitted within 04 weeks of release note/ dispatch of materials/ equipment from vendor's works.
- c) The O&M Manual should be submitted as per the following details:
  - i) **Process and Mechanical**-08 Hard copies and 08 Soft copies in USB STICK/PORTABLE HARD DISK
    - Operation philosophy
    - Standard Operating Practice (SOP) for the system and individual equipment
    - Basic process with Process flow diagram
    - Design calculations
    - Manufacturing data book containing all test certificates of components, raw materials, stage manufacturing tests and inspection, final tests and inspection


 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	16 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	17 of 103

- documents and welding procedure qualification, repairs and reworking carried out in shops
- Spares details including assembly drawings, part numbers, delivery, prices, and ordering information
- Final drawing index and all as built drawings reduced to A3/A4 size & soft copies and wherever reduction is not possible, full size copies appropriately folded and placed in plastic folders
- Data Sheets of the supplied equipment/components
- Catalogue/leaflets of sub vendors/ suppliers of various bought out components highlighting the components actually supplied correlated to P.O. item numbers
- Operating and maintenance instructions including lubrication schedule with requirement of first fills, flushing fluids, inhibitors, chemicals required for pre-commissioning
- Trouble shooting

ii) **Electrical** -08 Hard copies and 08 Soft copies in USB STICK/PORTABLE HARD DISK

- Design calculations
- Standard Operating Practice (SOP) for individual equipment
- Manufacturing data book containing all test certificates of components, raw materials, stage manufacturing tests and inspection, final tests and inspection documents, repairs and reworking carried out in shops
- Spares details including assembly drawings, part numbers, delivery, prices, and ordering information
- Final drawing index and all as built cable wiring drawings reduced to A3/A4 size & soft copies and wherever reduction is not possible, full size copies appropriately folded and placed in plastic folders
- Data Sheets of the supplied equipment/components
- Operation & Maintenance manuals of components/ equipment(i.e. MCC, VFD, UPS, ACB, Micom & Protective Relays, Maintenance Hoists, etc)
- Final Operational Settings (i.e. VFD parameters, ACB, MOTPRO, Protection Relays, Instruments etc.)
- Catalogue/leaflets of sub vendors/ suppliers of various bought out components highlighting the components actually supplied correlated to P.O. item numbers

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	17 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	18 of 103

- Operating and maintenance instructions including lubrication schedule with requirement of first fills, flushing fluids, inhibitors, chemicals required for pre-commissioning
- Trouble shooting

iii) **Instrumentation** - 08 Hard copies and 08 Soft copies in USB STICK/PORTABLE HARD DISK

- Control philosophy
- Process instrumentation diagram
- Standard Operating Practice (SOP) for individual equipment
- Manufacturing data book containing all test certificates of components, raw materials, stage manufacturing tests and inspection, final tests and inspection documents
- Spares details including assembly drawings, Bill of Materials with make ,quantity, part/model numbers, and ordering information
- Final drawing index and all as built cable wiring drawings reduced to A3/A4 size & soft copies and wherever reduction is not possible, full size copies appropriately folded and placed in plastic folders
- Data Sheets of the supplied equipment/components/instruments
- Catalogue/leaflets of sub vendors/ suppliers of various bought out components highlighting the components actually supplied correlated to P.O. item numbers
- Operating and maintenance instructions for specialised instruments and automation systems
- Trouble shooting

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	19 of 103


## 9.2 Special Instruction for submission of Drawings:

- a) Fold all prints to 216 mm x 279 mm size.
- b) Vendor to forward drawings and documentation to National Aluminium Company Limited clearly specifying the Order or tender number.
- c) The drawing / Document no with revision number are essential. The number may be up to a maximum of 28 characters in length.
- d) Each drawing submitted to Nalco must be checked and signed / stamped by the vendor's authorized representative.
- e) Revision number must change during subsequent submission of vendor document.
- f) Multi sheet documents other than drawings must be submitted in their entirety in the event of a resubmission even of only few sheets are revised.
- g) All vendor drawings to be provided with a blank space measuring 75 mm W x 38 mm H for marking review codes.
- h) Drawings shall also include preparation of interconnection diagrams and integration diagram with existing Old LPC Shop.
- i) Review of the drawing by Nalco would be only to check compatibility with basic design and concepts and would no way absolve the contractor/ vendor of his responsibility to meet applicable codes, specifications and statutory regulations/ rules.
- j) Final submission in bound volumes shall necessarily have a cover page giving project title, item name, P.O. No, particulars of the purchaser and vendor and an index-giving list of drawings & documents included.
- k) Hard copies of the Electrical and instrumentation drawings should be separately hard bound preferably in A3 size and to be submitted 8 copies each at the time of final submission.
- l) Complete documentation of the PLC schematic, Instrument loop drawings, ladder and I/O cross reference (08 sets) for proposed system and modification in existing system in A3/A4 size at the time of final submission. Instrument loop drawings shall show each component from field device to final receiver including physical location, initiating device, its terminal number, junction box with its terminal number, cable number, receiver instrument terminal number, and system functional blocks etc of loop in simplified manner.
- m) The electronic files of all As-Built drawings shall be submitted USB STICK/PORTABLE HARD DISK(Eight copies each). All As-Built shall be in pdf format and editable dwg format. Drawings shall be sketched in AutoCAD in proper scale. Not to scale drawings shall not be acceptable.

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	20 of 103

## 10. PAINTING AND SHIPMENT:

- 10.1 Equipment and materials supplied shall be painted after test at shop and after installation and testing at site. The painting shall be done as per the specification given.
- 10.2 All the surfaces prior to painting shall be well prepared.
- 10.3 The units shall be disassembled into major components suitable for shipment and shall be properly packed to provide adequate protection during transport/ shipment. All assemblies shall be properly match marked for site erection.
- 10.4 Each equipment shall have an identification plate giving salient equipment data, make, year of manufacture, equipment number etc.
- 10.5 All exposed carbon steel parts be painted shall be thoroughly cleaned to remove scale, rust, dirt and other foreign materials by wire brushing and sand blasting as applicable. Minimum acceptable standard in case of power tool cleaning shall be St.3 and in case of blast cleaning shall be Sa 2-1/2 as per Swedish standard SIS 055900.
- 10.6 Non-ferrous materials, austenitic stainless steel, plastic or plastic coated materials, insulated surface of equipment and pre painted items shall not be painted.
- 10.7 Stainless steel surface, both inside and outside shall be pickled and passivated. Machined and bearing surface shall be protected with varnish or thick coat of grease.
- 10.8 Seaworthy / Roadworthy packing of the equipment to be ensured for safe delivery at NALCO- Angul. Shock and vibration proof packing with Impact recorders to be provided to indicate the date and time of impacts, if any.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	20 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	21 of 103

## 11. DESIGN BASIS:

**11.1** The bidder shall have the total responsibility for the design and performance of the complete system supplied under the requisition. The bidder shall warrant the systems furnished by him and the performance of the said system in accordance with this specification.

The proposed scheme has been based on the following design considerations:

- a) Availability of Plant Compressed Air at Battery Limit 4.5 kg/ cm<sup>2</sup>.
- b) LT Power 415 V  $\pm$  10 %, 50 Cycles  $\pm$  3 %
- c) Equipment Design basis: 20 % more than the ratings
- d) Handling Medium/ Product: Pipe (Siphon Tube, attachment for Ladle/Crucible)
- e) Pipe (Siphon Tube) : Ref Drg no: PL/PRJ/SPR/A1/11622
- f) Ambient Temperature : 50°C Maximum
- g) Maximum Temp of Pipe (Siphon Tube) : 300 °C (Approx)
- h) No. of Pipe (Siphon Tube Assembly) to be cleaned Per 8 Hours : 20
- i) Life of the cutters : Minimum 100 Nos cleaning of Pipe (Siphon Tube Assembly)

## 11.2 PLANT OPERATING CONDITION:


Operating conditions involve 3 x 8 hour shifts per day, twenty one shifts per week except two shifts for Preventive maintenance (PM) per week throughout the year.

## 11.3 SYSTEM DESCRIPTION:

### a) Existing System:

The Pipe (Tapping Spout End Tube/ Tapping Spout Intermediate Tube/ the Tapping Spout End Tube & Intermediate Tube Assembly), desired for cleaning, is placed in the container unit of the Pipe Cleaning Machine (Siphon Tube Cleaning Machine) through existing Slewing Jib Crane. The Pipe is clamped and the cover is closed manually. One carriage unit having rotating milling head with cutter is moved towards the item (clamped in the container) for cleaning the aluminum/dross present inside diameter of the Pipe. After cleaning upto the end of the Pipe and achievement of desired ID ( Inner diameter) , the rotating milling head carriage unit is retracted back. The movement of the rotating milling head carriage unit and torque/force required for cleaning of the aluminum/dross present inside the Pipe is automatically controlled by hydraulic driven motors and dedicated Hydraulic Power pack. The Pipe, after cleaning, is taken outside by manually unclamping and slewing Jib Crane.

The entire machine unit is installed with an angle of 10 Deg in order to facilitate the flow of generated Aluminim Chips/Dust to a discharge chute present towards

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	21 of 103


PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	22 of 103

downward slanting position of the machine. The generated Aluminum Chips/Dust is collected in a container placed under the hole through a rotary air lock.

The dust extraction system is connected to the existing system for Crucible Cleaning Machine.

**b) Proposed System:**

- i. The proposed Pipe Cleaning Machine (Siphon Tube Cleaning Machine) shall be designed as indicated in the clause 11.1 above.
- ii. The proposed machine shall be able to clean intended Pipe (Tapping Spout End Tube/ Tapping Spout Intermediate Tube/ the Tapping Spout End Tube & Intermediate Tube Assembly) to achieve the requirement.
- iii. Multiple lengths i.e. Tapping Spout End Tube/ Tapping Spout Intermediate Tube/ the Tapping Spout End Tube & Intermediate Tube Assembly can be cleaned by the proposed machine.
- iv. Pipes of different internal diameters can be cleaned by mounting a different sized milling heads. The milling head is of fixed size depending on the inside diameter of the Tapping Spout assembly as per drawing.
- v. The vendor may use the design of movement of rotary milling cutter unit with stationary Container (clamped with the Pipe for cleaning) OR Stationary rotary milling cutter unit with Movable Container (clamped with the Pipe for cleaning).
- vi. The vendor may use the design of movement of Rotary Milling Cutter unit/ Movable Container (clamped with the Pipe for cleaning), torque/force required by rotating milling cutter for cleaning of the aluminum/dross present inside the item and RPM of the milling cutter by Hydraulic Motors or Electrical Motors. Accordingly, the vendor has to provide system with Hydraulic Power Pack Unit or VFDs required for their design.
- vii. Guiding rails for smooth movement of carriage unit.
- viii. The design mentioned in Technical Specification or any alternative design, adopted by the vendors, shall meet the PG Test parameters motioned elsewhere in the document.
- ix. The Pipe shall be placed in the container with the help of a Slewing Jib Crane (supplied by the vendor).
- x. The container shall have required nos. of Clamping facilities (Minim Five) in order to ensure proper clamping of the Pipe. The Length of the pipe shall be auto detected by the machine so that rotating milling cutter can reach to the end of the Pipe. The Container cover shall close automatically after clamping of the Pipe.
- xi. Sound proof enclosure shall contain covers for both Milling Cutter Unit and Pipe Clamping unit.
- xii. Proper alignment of the centreline of Rotational cutter unit with centreline of the Pipe.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	22 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	23 of 103

- xiii. The proposed machine shall be installed with an angle of 10 Deg in order to facilitate the flow of generated Aluminim Chips/Dust/debris to a discharge chute present towards downward slanting position of the machine. However, the degree of inclination may be vary depending upon the design of different vendors.
- xiv. Rotary air lock at discharge chute
- xv. Separate dedicated Dedusting System with ID fans and Chimney of 30 Mtr Height. The vendor shall provide suitable sampling point as per IS 11255 (Part III)-2008 and the approach to the sampling point must be provided with a spiral ladder and platform so that a person along with measuring equipment can walk down to sampling point through steps for collecting samples.
- xvi. All the function like clamping of the Pipe, closing of cover, RPM of the milling cutter, Feeding speed of the carriage unit, Auto reverse & Forward movement of carriage unit depending on the torque/force required by rotating milling cutter for cleaning of the hard aluminum/dross , Rotation of Milling cutter in reverse direction in case of blockage inside the Pipe, Removal of debris and dedusting system including ID fans shall be controlled by PLC.
- xvii. Provisions for running the Machine in both Auto and manual Mode.
- xviii. A dedicated Operating Panel/Desk near the proposed machine. The Operating panel shall have minimum following Features:
  - Air Conditioned Electric panel
  - In Built PLC
  - Suitable Joy Sticks/Push Buttons for operation/Control
  - Selector Switch for selecting Auto, Manual and Maintenance Mode
  - Emergency Stop Push Button
  - Indication lights (On/Off) for Machine Running
  - Blinking Indication light with sound when cutter is Jam
- xix. Dedicated Slewing Jib Crane (Minimum 2 MT capacity) for placement and removal of the Pipe (Siphon Tube) in the proposed Pipe Cleaning machine. The Jib crane should be able to lift the parts of the Pipe cleaning machine during maintenance activities.
- xx. Special consideration shall be given to machine maintainability. The Vendor shall incorporate any change required for addressing safety and maintenance issues during detail engineering.

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	24 of 103


c) **Plant & Equipment:**

- i. All equipment and structures shall be designed for an indoor installation with environment and seismic conditions stated under clause 1.2 & 1.3. Design of all electrical systems shall be in accordance with the respective electrical standards.
- ii. Each system shall be laid out and constructed for convenience and safety of operation and maintenance. All equipment shall be oriented to permit servicing in such a way as to require a minimum dismantling. The specifications indicate minimum standard of quality for the materials, fabrication and construction of the proposed plants.
- iii. All equipment shall be of proven design. Prototypes or extensive modifications of basic designs are unacceptable. However, small modifications suitable for site condition or improve performance are acceptable.
- iv. All equipment and materials (mechanical piping, electrical, instrumentation, control etc.) shall be sourced from vendors/make acceptable to Nalco. The list of acceptable makes/ brand preference for major items is specified in the tender documents.
- v. Noise level of any equipment shall not exceed 85 dBA measured at a distance of one meter from the equipment.
- vi. All out door located motor / valves/ instruments and electrical equipment shall be protected by rain protection hood.

d) **Input Pipe Details:**

Ref Drawing No: PL/PRJ/SPR/A1/11622

- i. Tapping Spout End Tube and Intermediate Tube Assembly
  - Length : 2255 mm
  - Internal Diameter with built-up material :20 to 80 mm
- ii. Tapping Spout End Tube
  - Length : 1157 mm
  - Internal Diameter with built-up material: 20 to 80 mm
- iii. Tapping Spout Intermediate Tube
  - Length : 1088 mm
  - Internal Diameter with built-up material: 20 to 80 mm

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	24 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	25 of 103


- e) **Desired Parameters after cleaning of Pipe** : ID= 95-100 mm up to Total length of Pipe
- f) **Implementation Philosophy**

The new Pipe (Siphon tube) Cleaning machine shall be installed in the existing operating Old LPC Shop. The vendor shall commission the new machine in shortest possible time so that loss of production due to down time can be averted.

Commissioning of the new machine shall be done in a phased manner during the planned maintenance schedule of Old LPC Shop.

Adaptation of the new machine with existing system shall be in the scope of the vendor.

The proposed layout showing the proposed equipment is attached ( Ref Drg no: PL/MECH/LAY/A2/11490 Rev:02. This is indicative only. This lay out Design may vary during detailed engineering mutually agreed with NALCO. The Vendor may adapt their design of their proposed machine to yield the desired results mentioned under PG test and acceptance criteria.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	25 of 103


PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	26 of 103

#### 11.4 CODES AND STANDARDS:

The design, fabrication, supply and testing shall conform to codes and standards listed below and specified elsewhere in this document. Bidder may also base his design on other international standards subject to approval of the purchaser. Only latest editions including addenda shall always be referred to. Please note that codes and standards mentioned below are minimum requirement and bidder may upgrade to achieve the optimum efficiency subject to prior approval from Nalco.

**Design, fabrication & operation of the systems shall be based on but not limited to the following,**

1. Indian Factory Act
2. Regulations laid down by Explosive Directorate and Electrical Inspectorate
3. NFPA code of practice
4. Regulation for electrical equipment of Buildings Insurance Association of India
5. Indian Electricity Rules
6. IS-3103 (code and practice of Industrial Ventilation)
7. IS: 2062( Steel for general structural purposes)
8. IS: 1239 and 3601 or ASTM A 106 GR B (Steel Tubes & Fittings)
9. ASME B 31.3(Process Piping)
10. IS: 6392 or ANSI B 16.5 (Pipe flanges)
11. IS: 1239 or ASTM A234 Grade B WPB(Bends)
12. IS: 816 & 9595 or AWS D1.1/ D1.1M (Structural Welding)
13. IS: 814 or AWS A5.1, A5.1M, A5.5 (Welding Electrodes)
14. National Electrical Manufacturers Association (NEMA)
15. IEC 61511-Functional safety - Safety instrumented systems for the process industry sector
16. IS: 14254 or IEC 61131-standard for programmable controllers
17. VFD: as per standard mentioned in the attached 'Standard Specification of VFD'
18. Motors: As per the standards mentioned in the attached 'Standard specifications of Motors'
19. MCC: As per the standards mentioned in the attached 'Standard Specification of M.V. Board'
20. LBS: IS/IEC 60947
21. Cables: IS 1554
22. IS:14817 – Vibration limits for all rotating equipment

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	26 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	27 of 103

## 12. BATTERY LIMIT

### 12.1 Mechanical:

The battery limit and the scope of work of vendor starts from site assessment, design, detail engineering, manufacturing, procurement, transport, receipt, storage, warehousing, assembly, shop erection, construction, painting, inspection, testing, trial run, commissioning, performance guarantee, documentation, site training to Nalco personnel as per the intent of the owner (Nalco). The physical battery limit has been shown in Drg. PL/MECH/LAY/A2/11490 Rev:02.


### 12.2 Electrical:

Battery limit of the vendor for electrical portion starts from MCC switchboard of Substation-21 of Potline to the proposed Pipe Cleaning Machine area. The location MCC switch board at substation - 21 is around 150 meter from the proposed Pipe Cleaning Machine.

**12.3** Battery limit for the Instrumentation starts from providing complete automation system that includes installation of new field instruments as per the standard industrial control philosophy, laying of power cables, control cables, communication cables & signal cables from field instruments and operator control panel to the proposed new PLC panel to be located at existing Old LPC shop .

### 12.4 Civil

All the civil works required for completion of the project are to be in the scope of the bidder except mentioned in the Purchaser's Scope.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	27 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	28 of 103


### 13. JOB SPECIFICATION – MECHANICAL

#### SCOPE OF SUPPLY & SERVICES (MECHANICAL):

##### 13.1 Scope of Supply:

The scope of supply shall include but not limited to all equipment, materials mentioned in the tender documents. Supply for the proposed “ Pipe(Siphon Tube) Cleaning machine in Old LPC Shop” with auxiliary equipment shall be minimum as per the specifications and drawings enclosed and forming a part of this document. Vendor's supply shall be complete in all respect as specified in the Design Basis ( Ref Clause:11) within the battery limit for safe, efficient operation and easy maintenance of the system which includes but not limited to the following :

- a) Supporting structures for all equipment etc.
- b) Operating and maintenance platforms, staircase, access ladder etc. for the complete system.
- c) HPP along with the connections and required hydraulic valves ( If the machine is designed for hydraulic control)
- d) Dedicated Slewing Jib Crane (Capacity Minimum 2 MT) for placement/removal of Pipe (Siphon Tube) and lifting of the parts/the Pipe Cleaning machine during maintenance activities.
- e) A dedicated de-dusting system having ID fans, bag house and chimney to trap the Aluminium dust/particles generated during pipe (Siphon Tube) cleaning Process.
- f) All pneumatic valves, pipes and attachments, required for the proposed system.
- g) The ID fan shall be made of MS with suitable stiffening and robust supports. The impeller will be of high efficiency, radial blade type etc. The ID fan shall be dynamically balanced of grade G 6.3 as per IS/ISO 1940-1: 2003.
- h) Sheds for Bag House and ID fan along with it's motor.
- i) All the ducting pipe line including from exhaust duct from outlet of ID fan to Chimney. The chimney shall be made of MS with minimum 30 meters height. The chimney shall be provided with platforms, ladders, hand railings, guy rope, aviation lamp and lightening arrestor.
- j) All exposed power drives of the equipment are equipped with totally enclosed guards. These guards shall be designed so that they may be easily and quickly dismantled when removal is required for maintenance purpose.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	28 of 103




PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	29 of 103

- k) Arrangement of required tools and tackles for erection and commissioning of the system.
- l) All bolts, nuts and rivets used shall be of high finish, good quality, High Tensile (H.T.) Steel.
- m) The supply shall include erection & commissioning consumables including first fill of lubricants and hydraulic oil etc. The bidder shall arrange the commissioning accessories like flanges, fasteners, gaskets etc.
- n) Mandatory spares mentioned in the chapter "Spare Parts" of this document.
- o) Energy efficient components/ equipment mentioned in the chapter "GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING" of this document.
- p) Any additional items or features required during detailed engineering for the completeness and trouble free performance of the system shall be included in the bidder's scope without any price and time implications as long as system performance parameters and requirements within the battery limits of the vendor defined under this specification are kept unchanged.
- q) Other scope of supply mentioned in description of system & auxiliaries and battery limit.


### 13.2 Scope of Services:

- a) Kick off meeting preferably within 7 to 15 days of receipt of LOI/Purchase order on the successful LSTK bidder
- b) Site assessment including study of existing proposed Pipe (Siphon Tube) Cleaning Machine in old LPC Shop, collection of required data for the design of proposed Machine by the vendor.
- c) Submission of base line project schedule indicating major Task, activities and shutdown plan within one month of Kick-off meeting
- d) Basic engineering, detail engineering, designing, approval from Nalco, manufacturing, dispatch, transport both sea & air, inland transport, follow-ups, receipt, storage & warehouse management, site work shop, erection, testing, trial run, commissioning, performance guarantee and handing over the system to client on turnkey basis.
- e) Designing of Pipe (Siphon Tube) Cleaning Machine, presentation to Nalco and seeking approval from Nalco for further manufacturing.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	29 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	30 of 103

- f) Installation & commissioning of Pipe (Siphon Tube) Cleaning Machine including its auxiliaries like dust extraction system, dust conveying so as to make a complete unit suitable for Old LPC Shop.
- g) Design and engineering for structural modification, if required, to accommodate the new Pipe (Siphon Tube) Cleaning Machine.
- h) Dismantling of any structure, if required, to facilitate the installation of vendor supplied system.
- i) Dismantling of Two nos. of Ladle stands to create space for installation of proposed Pipe(Siphon Tube) Cleaning machine.
- j) Dismantling of existing Pipe (Siphon Tube) Cleaning machine after successful commissioning of the proposed machine.
- k) Shifting of the dismantled items, if any, to the designated place as decided by NALCO within the plant premises.
- l) Fabrication, assembly at works and site fabrication if required.
- m) Dispatch of the complete consignment.
- n) Transportation to site, receipt at site, storage and warehouse management,
- o) Strengthening of structures, if required, for Old LPC Shop area as per requirement.
- p) Hook up with existing compressed plant air network system. The compressed air required for the Pipe (Siphon Tube) Cleaning Machine and purging of the bags for the vendor supplied de-dusting system shall be made available from plant air network. The vendor has to arrange necessary tapping for the system supplied by them from the available Compressed air line in Old LPC Shop. The available compressed air line will be approximately at a distance of 10 meters from proposed bag house.
- q) Equipment shop testing, performance guarantee test of the system at site and checking compatibility with operation requirement etc.
- r) Surface preparation, sand blasting, protective coatings and painting including supply of paints.
- s) Modification of existing reinforcement, platforms, stairs, allied structure, all field sensors, related cables, other fabrication etc. required exclusively to make space for the installation of proposed "Pipe (Siphon Tube) Cleaning Machine" or its auxiliaries within battery limit.

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	30 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	31 of 103

- t) Additional approach & access platforms required for the proposed system
- u) Installation of vendor supplied Jib Cranes of appropriate capacity.
- v) Provision for ready access to the Pipe/Siphon Tube Cleaning Machine components shall be provided.
- w) Other scope of service mentioned in description of system & auxiliaries and battery limit.

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	32 of 103


## 14. JOB SPECIFICATION – ELECTRICAL

### SCOPE OF SUPPLY & SERVICES (Electrical):

#### 14.1 Scope of Supply:

The scope of supply shall include but not limited to all equipment, materials mentioned in the tender documents. Supply for the proposed “Pipe (Siphon Tube) Cleaning Machine in Old LPC Shop” with auxiliary equipment shall be minimum as per the specifications and drawings enclosed and forming a part of this document. Vendor’s supply shall be complete in all respect within the battery limit for safe, efficient operation and easy maintenance of the system which includes but not limited to the following:

- a) Preparation of electrical load data and its analysis,
- b) Preparation of Single line diagram.
- c) Preparation of power, control and protection schematics.
- d) Preparation of MCC & VFD Schematic (if required) and power distribution scheme.
- e) All the electrical including energy efficient motors, variable frequency drives and VFD panels, control panels modification of existing MCC for power supply to the proposed Pipe( Siphon Tube) Cleaning Machine, field devices, JB, Limit switches, Proximity switches, switch gears, control switches, power & control cables, cable trays, cable management accessories, contactors, O/L relays, isolators, push buttons, indication lamp, LBS, illumination fixtures etc required to complete the project with in battery limit.
- f) All electrical switch gears must be suitable for 50KA fault level.
- g) All MV and LV motors including protection devices.
- h) All MV power and control cables required for interconnecting equipment supplied by the vendor.
- i) Cable trays, supporting racks, risers, duct, GI pipe, sleeves and accessories like cable glands, lugs, markers, tags etc. required for the package area for installation of cables supplied by vendor and owner’s, if any, for the revamping and addition.
- j) Earthing materials for equipment safe earthing, earthing grid for the complete proposed revamping and addition and its connection to purchaser’s earthing grid, located inside/outside the shop
- k) Lightning protection system material including earth electrodes required for stack and high structures pertains to proposed revamping and addition etc supplied by vendors. So required number earth pit shall be made as per IS by the vendor.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	32 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	33 of 103


- l) Any additional items or features required during detailed engineering for the completeness and trouble free performance of the system shall be included in the bidder's scope without any price and time implications as long as system performance parameters and requirements within the battery limits of the vendor defined under this specification are kept unchanged

In this project, if any software required for any relay, energy meter, soft starter, VFD, Circuit Breaker etc, Vendor has to provide original software in CD with license. The vendor has to provide required connecting hardware i.e. connecting communication cable, connector etc for downloading / programming /accessing data/file. One Laptop preloaded with required software should be provided for the above purpose.

- m) Other scope of supply mentioned in description of system & auxiliaries, battery limit, specification of electrical.
- N) Mandatory spares and special tools mentioned in the chapter "Spare parts" of this document.
- o) Energy efficient components/equipment mentioned in the chapter "GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING" of this document

• **EXCLUSIONS FROM VENDOR'S SCOPE:**


- 415V AC feeders for feeding vendor's lighting panels.
- General illumination inside plant/building of Old LPC Shop.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	33 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	34 of 103


#### 14.2 Scope of Services:

- a) Designing and preparation of schematic drawings for MCC, Cable Schedule/route, BOM, BOQ, VFD of required capacity for the proposed revamping & addition compatible with the existing system.
- b) Presentation of the designed scheme to NALCO for approval before manufacturing and supply.
- c) Manufacturing, purchasing & fabrication of electrical system for the modification and addition including MCC, VFD panels.
- d) Installation of all motors including variable frequency drives.
- e) Installation of emergency push button cabinets.
- f) Transportation to site, Receipt at site, storage and warehouse management of electrical items required for the proposed Machine.
- g) Apply & receive work permit & shut down as per the Nalco's laid down procedure to commence the work.
- h) Completion of all electrical works including modification in MCC panels, VFD panels, cables & accessories etc. within the battery limit. All the civil work for installation of electrical equipment i.e. MCC panels, VFD panels, motor foundations shall be in vendor's scope.
- i) Modification of MCC & Installation of VFD panels shall be carried out without interrupting the normal operation of old LPC Shop.
- j) Laying of cables on cable trays for the proposed project ,if required.
- k) Installation of all electrical switchgears, cable trays required for the proposed project.
- l) Site fabrication if required.
- m) Each emergency push button identification provided along with security relay shall be taken as an input signal to the PLC for better identification of the machine stoppage.
- n) The positioning of all field device including limit switches and proxy switches should be such that these are accessible from outside for easy maintenance.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	34 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	35 of 103

- o) Vendor has to design the MCC panel's internal components subject to availability of working space in existing MCC feeders. Vendor has to design VFD panels (if required) and any other equipment to be located inside the VFD room.
- p) Other scope of service mentioned in description of system & auxiliaries, battery limit, specification of electrical.
- q) Dismantling of floor and wall (if required) for cable laying and/or other electrical works for MCC, VFD, field panels etc.
- r) Certification of electrical installation from statutory & regulatory bodies required during construction and prior operation, if any, shall be organized by the vendor.
- s) Please note that scope of work mentioned above is indicative only and it is vendor's responsibility to assess and supply the Pipe(Siphon Tube) Cleaning Machine as a complete package within battery limit.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	35 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	36 of 103

### 14.3 TECHNICAL SPECIFICATION FOR ELECTRICAL SYSTEM

#### i) Introduction

This specification defines the scope of work and minimum basic requirement for electrical system design, engineering, equipment selection, sizing procurement, supply erection, trial run, testing and commissioning for proposed Pipe (Siphon Tube) Cleaning machine complete in all respect for old LPC Shop, Smelter Division, M/s Nalco's, at Angul, Odisha.

#### ii) Brief description of electrical system

All solenoid valves, control panel, cables, LBS, JB, MCC, ACB, VFD, UPS, sensors control panel, control switchgears, indications, safety devices, control devices, 415V motors, specific illumination etc for the proposed project shall be supplied, installed and fed from a 415V AC MCC which shall be located nearer to Pipe (Siphon Tube) Cleaning machine.


The vendor will make arrangement to take the required power from the MCC for any load of rating 415 VAC, 50 Hz. Any voltage other than 415 VAC, 50 Hz shall be obtained by stepping down through transformer or through rectifier if DC voltage is required, for the proposed machine.

The vendor has to install appropriate rating VFDs (if necessary) for the motors used in applications of Pipe (Siphon Tube) Cleaning machine requiring speed variations & controls. The vendor has to supply & install complete VFD systems including VFDs, Squirrel Cage Induction Motors (suitable for VFD application) & Control Panels for these applications.

#### iii) SYSTEM VOLTAGE & FREQUENCY:

Principal voltage levels for power distribution and utilization

- a) 415V AC (nominal), 3-Phase 3/4-Wires, 50Hz, Solidly Earthed Neutral: This voltage shall be used for all motors and all other three phase loads e.g. power sockets etc.
- b) 240V AC (nominal) 1-Phase 2/3-Wire, 50Hz, Solidly Earthed Neutral for low power single phase loads such as lighting, small power receptacles & control supply etc: This voltage to be derived by using a transformer and same is to be supplied and installed by the vendor. If required can be used.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	36 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	37 of 103

**iv) Voltage & frequency variation:**

The following maximum variation shall be considered for equipment design:


- a) Voltage: Differing from its nominal value by not more than  $\pm 10\%$
- b) Frequency: Differing from its nominal value by not more than  $\pm 3\%$

**v) Design ambient temperature:**

The design ambient temperature for electrical equipment shall be 50° C.

**vi) SPECIFICATION OF ELECTRICAL EQUIPMENT:**

- a. **ELECTRIC MOTOR:** Electrical induction Motor shall be as per the "Standard specifications of squirrel cage Induction Motor" enclosed elsewhere in the tender documents.
- b. **VARIABLE FREQUENCY DRIVE:** Variable frequency drive shall be as per "Standard specifications of AC variable frequency drive" enclosed in the tender document.
- c. **M.V SWITCHBOARD:** M.V. Switchboard shall be as per the "Standard Specification for MV Switchboard" enclosed in the tender document.
- d. **CONTROL DEVICE:** Control Devices shall be as per the brand mentioned in the "Brand Preference".

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	37 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	38 of 103

**vi) Power cable sizes for 415v motors:**


S. No.	Motor Rating (KW)	CABLE SIZE mm <sup>2</sup>	CABLE SIZE mm <sup>2</sup>
		<b>CU</b>	<b>AL</b>
1	2.2 AND	3Cx2.5	
2	3.7	3Cx4	
3.	5.5	3Cx6	
4.	7.5	3Cx6	
5.	9.3	3Cx10	
6.	11.0	3Cx10	
7.	15.0	3Cx10	
8.	18.5	3Cx16	
9.	22.0	3Cx25	
10.	30.0	3Cx35	
11.	37.0	3Cx50	
12.	45.0	3Cx50	
13.	55.0	3Cx70	
14.	75.0	3Cx95	
15.	90.0	3Cx120	
16.	110.0		2(3Cx120)
17.	125.0		2(3Cx150)
18.	132.0		2(3Cx150)
19.	160.0		2(3Cx185)
20	180.0		3(3Cx185)
21.	200.0		3(3Cx185)
22	220.0		3(3Cx185)

**NOTES:**

- Cables will be 1100 V, copper or aluminium multi strand conductor, PVC insulated, PVC extruded inner sheath armoured with overall PVC sheath.
- (\*) Cable diameter shall be furnished after finalization of purchase order for cables.
- This table is applicable for cables between 415 V switchboard and power isolation cabinet for 415 V motors. However, cable between power isolation cabinet and 415 V motor shall be of copper conductor only.

**vii) DETAIL TECHNICAL SPECIFICATION OF ELECTRICAL SYSTEM:**


- All 415 V AC Motors shall be provided with local power isolation cabinets or load break switch Isolator with visible power isolation.
- The cable sizes for 415V AC Motors shall be selected from enclosed data sheet. However, all MV power and control cables to be used for interconnecting equipment supplied shall be of unarmored type. Flexible PVC insulated copper cables conforming to IEC-228 Class –5 shall be used for connection between local

 <b>नालको</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	38 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	39 of 103

power isolation cabinets or (LBS) and 415V motors. The cable sizes for motors indicated in cable data sheet are the minimum requirements. Vendor shall check adequacy of these sizes based on actual cable lengths, during detailed engineering and provide cables of higher sizes, if required.


- c) GI strip shall be used for earthing system and lightning protection system. Separate earthing must be provided for welding job.
- d) The size of earthing conductor to be used for main earth grid shall be 50x6 mm or above based on the earthing load calculation to be done by the vendor.
- e) The size of horizontal air termination and down conductor shall be 20x5 mm or higher based on actual earthing load calculation to be done by the vendor.
- f) All hardware necessary for interfacing control system with motor starters shall be in Vendor's scope.
- g) Local control station with push buttons shall be provided near each motor for local operation.
- h) Separate control cables shall be used for AC circuits and DC circuits for interfacing signals between 415V AC (MCC) Switchboards and Microprocessor based control system, wherever applicable.
- i) Separate earthing shall be used for VFD & PLC applications.
- j) Emergency Stop push buttons shall be suitably distributed throughout the installation and positioned so as to be clearly visible and readily accessible. Emergency stop command shall permit the stoppage without delay, by acting to trip the main contactor /circuit breaker. Suitable supervision device to monitor emergency switch circuits must be provided so as to meet the latest safety standard. In the event of emergency stop where the security relay operates the main contactor supplying power to the VFD shall not be put off. Instead of that, the control power for enabling MCC control power shall be switched off. This ensures that the PLC control power will not be switched off by the above process.
- k) Motors in general shall be asynchronous squirrel cage type having synchronous speed of 1500 rpm, IP 55 Enclosure, 'F' Class insulation, energy efficient motor of standard IEC frame size. However, temperature rise must be limited to class B insulation value and forced cooling fans must be provided where ever necessary as per actual operating condition.
- l) Suitable canopy shall be provided for all outdoor motors & LBS.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	39 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	40 of 103

- m) In view of dusty environment of the shops, electrical panels/cabinets (e.g. control stations, welding receptacle cabinets, local control panels, etc.) shall have minimum IP-65 degree of protection and shall be provided with special constructional features to have projecting roof/canopy to avoid falling of dust inside the electrical cabinet while opening the panel door during operation/ maintenance.
- n) Cable trays on which dust accumulates shall not be used. Cable trays supports shall be able to bear the weight of a man without giving way or being permanently deformed. Minimum vertical clearance between two cable trays shall be 250 mm.
- o) Vendor has to consider bottom entry of cables as available suitably in the existing design of the MCC panels
- p) UPS shall be provided for power supply to the PLC
- q) Non-UPS power supply for PLC shall be fed from MCC. The vendor shall provide suitable Control Transformers, i.e. one operating & one Standby, in the MCC for feeding of Non-UPS power to PLC.
- r) Local Control Stations for local operation of motors with start/stop push buttons, selector switches, and ammeters (for all motors). It shall also contain other devices like selector switches, as per operational requirements.
- s) Complete Variable Frequency Drive (VFD) Panels with power isolator, power fuses, and power contactor & other switchgears, input and output choke, control transformer, required terminal blocks, panel illuminations and exhaust fan for cooling in IP55 enclosure only. The specification of VFD shall be as per Nalco's standard specifications of VFD.
- t) Earthing system pits (Chemical earthing) shall be provided by vendor as per latest IS/IEC Standard. Separate earthing system shall be provided for MCC, VFD, PLC & Lightning protection. These Earth pits shall be connected to their respective earth grids of Plant if available within 50 meter distance.

**viii) STANDARD SPECIFICATION FOR M.V SWITCH BOARD (DRAW-OUT TYPE):**

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	40 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	41 of 103

### Contents:-

1. Scope
2. Codes and standards
3. Site conditions
4. Design requirement of MCC panels
5. Switchboard components
6. Test and acceptance
7. Packing and transport

#### 1. SCOPE:

- a) This specification covers the requirements of modification, design and testing of Medium Voltage Draw-Out Type Switchboard i.e. Motor Control Centre (MCC) required for receipt, control and distribution of power to various medium voltage equipment of the project.
- b) MCCs would receive power from PCCs/PMCCs and distribute the same to medium voltage motors up to and including 37 KW unless otherwise specified in data sheets. MCCs would generally have motor starter feeders and a few Switch Fuse Unit (SFU) Feeders.

#### 2. CODE AND STANDARDS:

**The switchboard assembly shall conform to following Indian Standards.**

IS: 5578 Guide for marking of insulated conductor.

**The individual equipment mounted in the switchgear shall conform to the following Indian Standards.**

IS: 15707 AC Electricity Meters: general requirement and tests

IS: 1248 Direct acting electrical indicating instruments

IS: 2705 Current transformers

IS: 3156 Voltage transformers


IS: 11353 Guide for uniform system marking and identification of Conductors and apparatus terminals

IS: 13703 Low voltage fuses.

IS: 60497 LV Switchgear and control gear. (Part-I to Part-5)

#### 3. SITE CONDITIONS:

- a) The switchboards shall be suitable for installation and satisfactory operation in a pressurized or without-pressurized substation with restricted natural air

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	41 of 103


PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	42 of 103

ventilation in a tropical, humid and corrosive atmosphere. The switchboards shall be designed to operate under site conditions as specified in the data sheets. If not specifically mentioned therein a design ambient temperature of 50° C and altitude not exceeding 1000 meters above mean sea level shall be considered.

- b) All the equipment described in this specification is intended for continuous duty at the specified rating under the specified ambient conditions unless indicated otherwise.

#### 4. DESIGN REQUIREMENT OF MCC PANELS:

- All openings, covers and doors shall be provided with neoprene Gaskets. Blanking plates shall be provided for all sizes of modules to cover the openings in the event of withdrawing the feeder modules.
- For all power and control cables, Vendor to provide double compression cable gland for armoured cables and to use nonmetallic cable gland for non armoured cables. Panels is suitable for bottom entry of cables.
- Non-Magnetic/Metallic cable gland plates shall be provided for termination of single core cables.
- All auxiliary devices for control, indication, measurement and protection such as Push Buttons, Control and Selector Switches, Indicating Lamps, Ammeters, Voltmeters, KWH meters , Motor Protection and other Protective Relays shall be mounted on the front side of the respective compartment only. MCC compartment's door close open movement must be perfectly aligned, and necessary door closing mechanism, gasket must be fixed as necessary in the panels.
- Vendor has to retrofit appropriate rating(reputed brand) power contactor, isolator, overload relay, MPCB, fuses with base , aux relay, push buttons, ammeter, indication light, along with wirings in the MCC panels as per the load requirement.
- All switch drives other than rotary switches, shall be lockable in both 'ON' and 'OFF' positions. The switches/molded case circuit breakers shall be interlocked with the compartment door to prevent opening of the door when the switch/molded case circuit breaker is in 'ON' position and to prevent

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	42 of 103


PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	43 of 103

switching on when the door is open. A defeat mechanism for this interlock shall also be provided.

- Unused modules in the panel shall be fully equipped with hinged door, power and control terminals for starter modules and cradle for future use.
- Energy meters shall be provided in the Incomer feeder of MCC.
- Digital Motor Protection relays shall be provided for the motor feeders.
- The MCC shall have two control transformers i.e. one operating & another standby for supply of power to control circuit of MCC.
- The MCC shall have two Auxiliary transformers i.e. One Operating & another standby on each side of MCC Busbar, for supply of power to Space heaters(MCC & Motor), lighting & utility sockets.
- Heavy duty starters shall be provided with saturable type current transformer operated overload relay only, which shall be suitable for motor starting time of 15 -60 seconds.

#### • **WIRING AND TERMINALS**

- a) Inside the switchboards the wiring for power, signaling, protection and instrument circuits shall be done with BIS approved PVC insulated copper conductors. The insulation grade for these wires shall be 660 volts grade. All control wiring shall preferable be enclosed in plastic channels or neatly bunched together.
- b) PVC insulated copper conductor of cross section 1.5<sup>2</sup>mm may normally be used provided the control fuse rating is 10 amps or less. For 16 amps control fuse circuit 2.5 mm<sup>2</sup> copper conductors shall be used. Each wire shall be terminated at a separate terminal. C.T. circuit wiring shall be done with 2.5 sq mm. Copper conductor. Shorting links/suitable shorting arrangement for shorting CT secondary shall be provided.
- c) Each wire shall be identified at both ends by PVC ferrules.
- d) Conductors shall be terminated with adequately sized compression type lugs. Clamp type terminal for direct conductor termination shall be acceptable for wires upto 10 mm<sup>2</sup> size and bolted type terminals with crimping type copper lugs shall be provided for all outgoing cable connections large than 10 mm<sup>2</sup>.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	43 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	44 of 103

- **NAME PLATE**

A nameplate with the switchboard designation shall be fixed at the top of the central panel. A separate nameplate giving details for each compartment of bus section shall be provided.

Nameplate or polyester adhesive stickers shall be provided for every equipment (lamps, push buttons, switches, relays, auxiliary Vendors etc.) mounted on the switchboard. Special warning plate shall be provided on removable covers or doors giving access to cable terminals and busbars. Special warning labels shall be provided inside the switchboards also, wherever considered necessary. Identifications tags shall be provided inside the panels matching with those shown on the circuit diagram.

Engraved nameplates shall preferably be 3 ply (Black-White-Black) lamicoid sheets or anodized aluminum. However back engraved perspex sheet nameplates may also be acceptable. Engraving shall be done with square / vee groove cutters. Hard paper nameplates shall not be acceptable. Nameplates shall be fastened by screws and not by adhesives.

The name plates for feeder compartments shall be in two parts. One part shall have necessary details pertaining to the switchboards. The other parts shall be removable and shall contain all details regarding the drives/equipment controlled by the particular module.


- **SWITCHBOARD COMPONENTS**

- **SWITCHES**

- All switches or fuse switches shall be load break, heavy duty/motor duty air break type provided with quick make/brake manual operating mechanism. The operating handle shall be mounted on the door of the compartment having the switch.
- Rating of heavy duty switches for a particular starter module shall be as indicated in the switchboard data sheet. Motor duty switches of smaller ratings meeting the requirement of AC 23 duty as per IS: 13947, may be acceptable in place of specified heavy duty switch rating for particular starter module only if, motor duty switches have been tested and certified for use with the large size of fuse link specified in the switchboard data sheet for the same starter module.

- **FUSES**

- Fuses shall be non-deteriorating HRC cartridge link type. Diazed fuses are not acceptable.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	44 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	45 of 103

- ii. All power fuses shall be NH knife blade type with IS Standard
- iii. Power Fuses shall be pressure fitted type and shall preferable have ribs on the contact blades to ensure good line contact.
- iv. It shall be possible to handle fuses during off load conditions with full voltage available on the terminals. Wherever required fuse pullers shall be provided. The fuse base both power and control circuit shall be so located in the modules to permit insertion of fuse pullers and removal of fuse links without any problem.

#### • CONTACTORS


- i. The contactors shall be air break type, equipped with three main contacts and minimum 2 NO + 2 NC auxiliary contacts. The main contacts of a particular contactor shall have AC 3 ratings as shown in the relevant switchboard data sheet for that contract.
- ii. Unless otherwise specified, the coil of the contactor shall be suitable for operation on 240 V, 1 PH, 50 HZ AC supply.

#### • MOULDED CASE CIRCUIT BREAKER(MCCBs)/MPCB

- i. If required as per design, MCCB's shall be provided in the switchboards for circuit protection. MCCBs rating shall be as indicated in the switchboard data sheet.
- ii. MCCB/MPCB shall be provided adjustable type tripping device with inverse time characteristic for over load protection and instantaneous characteristics for short circuit protection.
- iii. 'ON' and 'OFF' position of the operating handle of MCCB's shall be displayed and the operating handle shall be mounted on the door of the compartment housing MCCB.
- iv. MCCB shall be provided with minimum 1 NO + 1 NC auxiliary contacts.
- v. MCCB's as part of motor starter mould shall be current limiting type.

#### • INSTRUMENT TRANSFORMER

- i. Current transformer shall generally conform to IS: 2705. The CT ratio and ratings shall be as indicated in the switchboard data sheet. For general guidance the vendor shall note that the protective current transformer shall have an accuracy class "5p" and an accuracy limit factor greater than "10".

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	45 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	46 of 103

However Cts for restricted earth fault and differential protection shall be of class "PS".

- ii. Current transformers for instruments shall have an accuracy class 1.0 and accuracy limit factor less than 5.0. However accuracy class of 3.0 is acceptable for CTs meant for remote ammeters. The current transformers shall be capable of withstanding the applicable peak momentary short circuit and the symmetrical short circuit current for 1.0 second and shall have a minimum rating of 10 VA.
- iii. The voltage transformers shall be cast resin type and shall be provided with primary fuses. Miniature circuit breakers with auxiliary contact shall be provided on the secondary side.

#### • MEASURING INSTRUMENTS

- i. All measuring instruments shall be of 96 x 96 mm square pattern, flush mounting type. All auxiliary equipment such as shunts transducers, CT's PT's etc. as required shall be included in the supply of the switchboard.
- ii. All AC ammeters/voltmeters shall be of moving iron type or digital display type with accuracy class of 1.5 as per IS: 1248. Ammeters for motor feeder shall have a nonlinear compressed scale at the end to indicate motor starting current. Volt meter shall be suitable for direct line connection.
- iii. The KW/KWH meter shall be suitable to measure unbalanced loads on 3-Phase, 4 wire system. Test terminal block shall be provided for KWH meters. The accuracy class of KW/KWH meters shall be minimum 2.5.

#### • CONTROL SWITCHES

- i. The selector switch shall generally have 4 positions for reading 3 phase currents and fourth position for OFF. The voltmeter selector switch shall also have 4 positions. There shall be used to measure phase to phase voltage and fourth shall be OFF position.
- ii. Remote/Trip/Off selector switch for the motor feeders shall be lockable in OFF position.

#### • PUSH BUTTONS

Push button colours shall be as follows:

Stop/Open/Emergency -Red

Start/Close -Green

Reset/Test -Yellow/Black/White

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	47 of 103

- **INDICATING LAMPS**

Indicating lamps shall preferably be suitable for 240 Volts AC.

- **AUXILIARY RELAYS/CONTACTORS**

Auxiliary relays /contactors shall generally be used for inter locking and multiplying contacts. Auxiliary contact shall be capable of carrying the maximum anticipated current.

- **TIMERS**

For reacceleration duty, timers unless otherwise stated, shall be pneumatic type and shall have adjustable time setting of 0-60 seconds. The time settings, where specified shall be accurately set before dispatch of the switchboard.

#### ELECTRICAL LOAD DATA

Datasheet for Medium voltage Squirrel Cage induction motor

#### ELECTRICAL DESIGN DATA

1	Motor tag no.			
2	Voltage (V) 50Hz ± 3%	415V ± 10%	Phase 3	Frequency(Hz.)
3	System Fault level (KA)	50kA for 1 sec.		
4	Method of starting	DOL		
5	Phase terminals 6	Three	Connection Delta	No. of
6	Design Ambient temp <sup>o</sup>	50 ° C	Temp. rise	70 ° C
7	Cable size (mm <sup>2</sup> )	As per data sheet	Type	As per data sheet
8	Enclosure type	IP55	Cooling	TEFC
9	Insulation class	F		
10	Hazardous Area classification/Gas Group: Not applicable (Safe area)			
11	Type of explosion protection (Ex(n)/Ex(e)/Ex(d): Not applicable			
12	Suggested Motor Rating in KW/Manufacturer Stand. Specs. for MV Motor		Applicable Standards: Nalco's	
13	Shaft kw/ kw at end of curve			
14	Speed/Rotation of equipment from Coupling End			
15	Starting/max. Torque required (mkg)			
16	WK <sup>2</sup> of equipment Including/excluding flywheel (kgm <sup>2</sup> )			
17	Thrust up/down (kg)			
18	Equipment/ coupling type			
19	Starting Condition- On no load/Under loaded Condition			
<b>Technical particulars from motor manufacturer</b>				
20	Manufacturer			
21	KW Rating		No .of poles	
22	Frame designation		Mounting	
23	Full load speed (rpm)		Full load Torque (mkg)	
24	Starting torque as % of full load torque			
25	Full load current (A)			

441973/2024/S

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	48 of 103

26	Starting current at 100% Voltage (A)	
27	Break down or pull out torque %	
28	Rotation viewed from coupling end	
29	Starting time at 80 % V (sec.)	Starting time at 100 % V (sec.)
30	Time (Te) for increased safety motors at 100 % Voltage (sec.)	
31	Locked rotor withstand time cold/hot at 80% V (sec.)	At 100 % V (sec.)
32	WK <sup>2</sup> of motor (kg m <sup>2</sup> )	
33	Power factor at 100 % load	Power Factor at 75% load
34	Efficiency at 100 % load	Efficiency AT 75% load
35	Space heater watts/ volts	
36	Bearing type/ no. DE NDE	Bearing type/ no.
37	Type of Lubrication	
38	Weight of motor (kg)	
39	Canopy	Required/ Not required

**CABLE DATA SHEET****Part-2****(Data by Vendor)****GENERAL**

- A. Name of Manufacturer :
- B. Cable type/ Code :

Technical Particulars (To be furnished separately for each size)

- A. Thickness of insulation :
- B. Thickness of inner sheath :
- C. Calculated diameter of cable under armour (as per IS: 10462) :
- D. Type and size of armour :
- E. Nominal diameter of cable under outer sheath :
- F. Calculated diameter of the cable under outer sheath :
- G. Thickness of outer sheath :
- H. Nominal outer diameter of cable :
- I. Tolerance on outer diameter :
- J. Type of Compound for Conductor insulation, Inner sheath and outer sheath. :
- K. Maximum drum length of cable :

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	49 of 103

## ix) SPECIFICATION OF MEDIUM VOLTAGE SQUIRREL CAGE INDUCTION MOTORS

### a) SCOPE:

This specification covers the design, manufacture and testing of three phase squirrel cage induction motors.

### b) CODES AND STANDARDS:

The Squirrel cage induction motors and their components shall comply with the latest editions of following standards issued by BIS (Bureau of Indian Standards) unless otherwise specified:

IS - 5	Colours for ready mixed paints and enamels Performance
IS - 1231	Dimensions of three-phase foot-mounted induction motors
IS - 1271	Specification for thermal evaluation and classification of electrical insulation
IS - 2148	Flame proof enclosures of electrical apparatus
IS - 2223	Dimensions of flange mounted AC Induction motors
IS - 2253	Designation for types of construction and mounting arrangement of rotating electrical machines
IS - 2254	Dimensions of vertical shaft motors for pumps
IS - 2968	Dimensions of slide rails for electric motors
IS - 4029	Guide for testing three-phase induction motors
IS - 4691	Degree of protection provided by enclosures for rotating electric machinery
IS - 4722	Rotating electrical machines – specifications
IS - 4728	Terminal markings and direction of rotation for rotating electrical machinery
IS - 4889	Methods of determination of efficiency of rotating electrical machines
IS - 6362	Designation of methods of cooling of rotating electrical machines
IS - 6381	Construction and testing of electrical apparatus with type of protection 'e'
IS - 7389	Pressurised enclosure of electrical equipment for use in hazardous area
IS - 7816	Guide for testing insulation resistance of rotating machines
IS - 8223	Dimensions and output series for rotating electrical machines
IS - 8789	Values of performance characteristics for three-phase induction motors
IS - 9283	Motors for submersible pump sets
IS – IEC 60079	Construction, Test and Marking of Type of Protection "n" Electrical Apparatus
IS - 12065	Permissible limits of noise levels for rotating electrical machines
IS - 12075	Mechanical vibration of rotating electrical machines with shaft height 56mm and higher – measurement, evaluation and limits of vibration severity
IS - 12802	Temperature-rise measurements of rotating electrical machines
IS - 12824	Types of duty and classes of rating assigned to rotating electrical machines
IS - 13529	Guide on effects of unbalanced voltages on the performance of three-phase induction motors
IS - 13555	Guide for selection and application of three-phase AC induction motors for different types of driven equipment
IS - 14568 (Part-2):	Dimensions and output series for rotating electrical machines

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	50 of 103

Note:

- In case of imported motors, standards of the country of origin shall be applicable, if these standards are equivalent or stringent than the applicable Indian standards.
- The motor shall also confirm to the provisions of Indian Electricity rules and other statutory regulations currently in force in the country.
- In case Indian standards are not available, standards issued by IEC/ BS/ VDE/ IEEE/ NEMA or equivalent agency shall be applicable.
- In case of any contradictions between various standards/ specifications/ data sheets and statutory regulations, the following order of priority shall be given:
  - Statutory regulations
  - Data sheets
  - Job specifications
  - This specification
  - Codes and standards

#### c) GENERAL REQUIREMENTS

- The offered equipment shall be brand new with state of art technology and proven field track record. No prototype equipment shall be offered.
- Vendor shall ensure availability of spare parts and maintenance support services for the offered equipment at least for 15 years from the date of supply.
- Motor shall be rated for continuous duty (S1), unless otherwise specified.
- Unless otherwise specified, the starting current (as % rated current) shall not exceed 600% subject to tolerance.
- Starting torque and minimum torque of the motor shall be compatible with the speed torque curve of the driven equipment under specified starting and operating conditions.


For heavy duty drives such as blowers, crushers etc. high starting torque motors shall be provided.

In case where characteristics of driven equipment are not available while selecting the motor, minimum starting torque shall be 110% of rated value for motors up to 75 KW and shall be 90% of rated value for motors above 75 KW.

- The pull out torque at the rated voltage shall be not less than 175% of the rated load torque with no negative tolerance. Unless otherwise agreed, the pull out torque shall not exceed 300 percent of the rated load torque.

In case of motors driving equipment with pulsating loads (e.g. reciprocating compressors) the minimum value of pull out torque at 75 percent of the rated voltage shall be more than the peak value of pulsating torque and the current pulsation shall be limited to 40%.

- The minimum value for product of efficiency and power factors for motors rated up to and including 37 KW shall be as per IS:8789.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	50 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	51 of 103

The minimum value for product of efficiency and power factor of 2-pole, 4-pole and 6-pole motors rated above 37 KW shall be as given in Table –II below.

TABLE-II			
Rated output	Product of efficiency and power factor at rated load (minimum)		
	2-Pole	4-Pole	6-Pole
45 KW	0.82	0.80	0.79
55 KW	0.82	0.80	0.79
75 KW	0.82	0.80	0.80
90 KW	0.82	0.80	0.80
110 KW	0.86	0.80	0.80
125 KW	0.86	0.80	0.80
160 KW	0.86	0.81	0.80
180 KW	0.86	0.83	0.80
200 KW	0.86	0.83	0.80

Efficiency and power factor figures for motors having synchronous speeds of 750 R.P.M. and below, shall be agreed between the purchaser and the manufacturer.

#### d) Constructional Details:

##### Windings:

##### - Insulation and bracing:

Unless otherwise specified in the motor data sheet, motors shall be provided with class 'F' insulation as a minimum. In case of motors with class 'H' insulation the permissible temperature rise above the specified ambient temperature shall be limited to those specified in the applicable Indian standards for class 'F' insulation.


The windings shall be tropicalized. The windings shall preferably be vacuum impregnated. Alternately the windings shall be suitably varnished, baked and treated with epoxy gel for operating satisfactorily in humid and corrosive atmospheres.

Windings shall be adequately braced to prevent movement during operation. In this respect, particular care shall be taken for the stator windings for direct-on-line starting squirrel cage motors. Insulation shall be provided between coils of different phases which lie together. Core lamination must be capable of withstanding burnout for rewind at 400°C without damage or loosening.

In case of motors driving equipment with pulsating loads, special care shall be taken for the joints of rotor bars and end rings to avoid premature failures due to induced fatigue stresses.

##### - Phase Connections:

The windings shall be connected in delta. However for motors rated 2.2 KW and below, star connection may be accepted.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	51 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	52 of 103

In case of motors with star-delta starting, the motor windings shall be fully insulated for delta connection.

- **Winding Terminations:**

The ends of the windings shall be brought out into a terminal box. These shall be terminated by means of terminals mounted on an insulating base made of non-hygroscopic and non-flammable material.

All motors shall be with six terminals and suitable links to connect them in star or in delta except for motors rated up to including 2.2 KW which may be accepted with three terminals.

All terminals shall be thoroughly insulated from the frame with material resistant to tracking.

Anti-loosening, anti-vibration type of terminals shall be provided in case of increased safety(Type Ex-e) and non-sparking(Type Ex-n) motors.

- **Terminal Box and Cable Entries:**

Unless otherwise agreed, the terminal box shall be located on the right hand side as viewed from the driving (coupling) end. However, for motors up to 3.7 KW, terminal box located on top may be accepted. The terminal box shall be rotatable in steps of 90° to allow cable entry from any direction.


The terminal box shall be of robust construction and large enough to facilitate easy connection of the cables. The box shall be with necessary clearances, creepage distances between live parts and between live parts to earth considering air insulation and without any compound filling. Terminal box cover shall be provided with handles to facilitate easy removal. However, for terminal box covers weighing less than 5 kg, terminal box covers without handles can be accepted.

An adequately sized earth terminal shall be provided in the motor terminal box for termination of fourth core of specified cables.

The terminal box shall be provided with cables lugs and entries for suitable cable glands corresponding to the size of the specified cable. Nickel plated brass (or aluminium if specifically required), double compression type cable glands shall be supplied along with the motors for the specified cable sizes.

Equipment and accessories provided shall confirm to the hazardous area classification and the environmental conditions a specified in the motor data sheet.

Unless otherwise specified, the terminals, cable lugs, terminal box, cable entries and cable glands shall be suitable for the cables sizes specified in the Table-III for 2-pole, 4-pole or 6-pole motors:

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	52 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	53 of 103

TABLE-III	
Motor rating up to and including	Size of phase conductor(mm <sup>2</sup> )
2.2 KW and below	4 Al/ 2.5 Cu
3.7 KW	6 Al/ 4 Cu
5.5 KW	10 Al/ 6 Cu
7.5 KW	16 Al/ 6 Cu
11.0 KW	25 Al/ 16 Cu
15.0 KW	35 Al
18.5 KW	50 Al
22.0 KW	70 Al
30.0 KW	95 Al
37.0 KW	95 Al
45.0 KW	95 Al
55.0 KW	120 Al
75.0 KW	185 Al
90.0 KW	2x95 Al
110.0 KW	2x120 Al
125.0 KW/ 132.0 KW	2x185 Al
160.0 KW	2x185 Al
180.0 KW	2x240 Al
200.0 KW	2x300 Al

Cable sizes for motors having synchronous speeds 750 RPM and below shall be as agreed between the purchaser and manufacturer.

Cables are of 650/1100 V grade Aluminium conductor, PVC insulated, PVC extruded inner sheath, armoured with overall PVC sheath. However for cables up to & including 16 mm<sup>2</sup> cross-section cables used may be with copper or aluminium conductor as indicated in the motor data sheet.

The terminal box shall be capable of withstanding internal short circuit conditions without danger to personnel or plant from the emission of hot gases or flame or due to excessive distortion or damage to the terminal enclosure.

- **Phase Marking:**

Appropriate phase marking as per IS shall be provided inside the terminal box. The marking shall be non-removable and indelible.

- **Motor Casing and Type of Enclosure:**

Motors for use in safe areas shall be industrial type meeting the specified ambient conditions, starting and operating requirements.

Motors for use in hazardous areas (Zone-1 or Zone-2) shall have type of protection Ex-d or Ex-e or Ex-n as specified in the motor data sheet and shall meet the requirements of applicable Indian standards.

The minimum degree of motor enclosures including terminal boxes and bearing housing shall be IP-55 as per IS: 4691.

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	54 of 103

Motors for outdoor use shall be suitable for installation and satisfactory operation without any protective shelter or canopy. Motor casing shall be provided with a suitable drain for removal of condensed moisture except in case of flameproof motors (Type Ex-d)

Vertical motors with downward shaft shall be provided with suitable canopies covering the motor fully. Vertical motors with upward shaft e.g. on fin-fan-coolers, shall be adequately protected, such as cowls/canopies) against ingress of water into the enclosure or the bearing housing even when standing still for long periods of time. Motors designed to handle external thrust from the driven equipment shall be supplied with a thrust bearing at the non-driving end.

All internal and external metallic parts, which may come in contact with cooling air, shall be of corrosion resistant material or appropriately treated to resist the corrosive agents which may be present in the atmosphere. Screws and bolts shall be of rust proof material or protected against corrosion.

Unless otherwise agreed, motors shall have standard frame sizes for various output ratings as stipulated in IS: 1231.

**- Bearing and Lubrication:**

Motors shall have grease lubricated ball or roller bearings. In all cases, the bearings shall be chosen to provide a minimum L-10 rating life of 5 years, (40,000 hours) at rated operating conditions (the L-10 rating life in the number of hours at constant speed that 90% of a group of identical bearings will complete or exceed before the first evidence of failure.)

Unless otherwise specified, the bearings shall be adequate to absorb axial thrust produced by the motor itself or due to shaft expansion.

Vertical motors shall be provided with thrust bearings suitable for the load imposed by the driven equipment.


In cases such as pumps for hot liquids where the driven equipment operates at high temperatures, bearings shall be cooled by shaft mounted fan. This shall ensure efficient ventilation of the bearing and dispense the heat transmitted from the driven equipment by conduction or convection.

Bearings shall be capable of grease injection from outside without removal of covers with motors in the running conditions. The bearing boxes shall be provided with necessary features to prevent loss of grease or entry of dust/ moisture e.g. labyrinth seal. Where grease nipples are provided, these shall be associated, where necessary, with appropriately located relief devices which ensure passage of grease through the bearings.

Pre-lubricated sealed bearings may be considered provide a full guarantee is given for 4 to 5 years of trouble-free service without the necessity of re-lubrication.

**- Cooling System:**

All motors shall be self-ventilated, fan cooled. Fans shall be corrosion resistant or appropriately protected. They shall be suitable for motor rotation in either direction without affecting the performance of the motor. If this is not possible for large outputs, it shall be possible to reverse the fan without affecting the balancing of the rotor.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	54 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	55 of 103

For motors operating in hazardous area, the fans shall be of an anti-static non-sparkling material.

**- Rotor:**

The rotor shall be of squirrel cage type, dynamically balanced to provide a low vibration level and long service life for the bearings. The accepted values of peak to peak vibration amplitudes for a motor at rated voltage and speed on a machined surface bedplate with the motor leveled and with a half-key or coupling fitted shall not exceed those given in IS:12075. Die cast aluminium rotors for motors in hazardous areas may be accepted provided the same are type tested and approved by competent authorities.

**- Shaft Extension:**

Motor shall be provided with a single shaft extension with key-way and full key. Motor shaft shall be sized to withstand 10 times the rated design torque.

**- Lifting Hook:**

All motors except for fractional horse power motors shall be provided with lifting hooks of adequate capacity.

**- Earth Terminals:**

Two earth terminals located preferably on diametrically opposite side shall be provided for each motor. The size of each earth stud shall be as given below in Table –IV:

TABLE-IV	
Motor Rating	Stud Size
Up to and including 7.5 KW	6 mm
11 KW to 30 KW	10 mm
Above 37 KW	12 mm

Necessary nuts and spring washers shall be provided for earth connection.

**i) Miscellaneous Accessories:**

**- Name Plates:**


A stainless steel name plate manufactured from series 300 stainless steel and having information as per IS-325 shall be provided on each motor.

In addition to the motor rating plate, a separate motor plant equipment number plate (i.e. motor tag number) shall be fixed in a readily visible position. This number shall be as per motor data sheets.

Additional information as stipulated in applicable Indian Standards shall be included in the name plate for motors meant for use in hazardous atmospheres as per IS:13408.

**j) Noise Level:**

The permissible noise level shall not exceed the stipulations laid down in IS: 12065, unless otherwise specified in the motor data sheet.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	55 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	56 of 103

**k) Motor Vibrations:**

Motor vibrations shall be within the limits of IS:12075 unless otherwise specified for the driven equipment.

**l) Critical Speeds:**

The first actual speed of stiff rotors shall not be lower than 125% of the synchronous speed. For flexible rotors this shall be between 60% and 80% of the synchronous speed; the second actual critical speed shall be above 125% of the synchronous speed.

**m) Painting:**

Internal and external parts of the casing and all metal parts likely to come in contact with the surrounding air shall be protected with anti-acid paint that will resist the specified environmental conditions.

All external surfaces shall be given a coat of epoxy based paint.

**n) Inspection and Testing:**

During manufacturing of motors, the motors shall be subject to inspection by Owner's Inspector or by an agency authorized by the Owner. The manufacturer shall provide all necessary information concerning the supply to Owner's Inspector.

- Type tests, if specified, all the routine tests and other acceptance tests shall be witnessed by the Inspector. The manufacturer shall give prior notice of minimum 4 weeks to the Inspector for witnessing the tests.
- All tests shall be carried out at manufacturer's shop under his care and expense.
- Test certificates duly signed by the Owner's Inspector shall be a part of final documentation.
- The manufacturer shall submit all internal test records of the tests carried out by him on the brought-out items, motor sub-assembly and complete motor assembly to the Inspector before offering the motors for final inspection and testing.

**• Type test:**

The manufacturer shall periodically carry out the following type tests as per applicable Indian Standards for all the frame sizes and ratings of motors:

- Full load test and measurement of voltage, current, power & slip
- Measurement of starting torque, starting current, full load torque and pull out torque
- Measurement of efficiency and p.f. at 100%, 75% and 50% load
- Temperature rise test
- Momentary overload test
- Measurement of vibration
- Measurement of noise level

The above tests must be witnessed and approved by reputed inspection agencies. The manufacturer shall maintain test records and submit to the Owner's Inspector at the time of final inspection & testing. In no case, the test records shall be more than 5 year old.

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	57 of 103

In special cases where the type tests are asked to be carried out, these shall be witnessed by the Owner's Inspector.

• **Routine test:**

The manufacturer shall carry out routine tests as per applicable Indian Standards on all the motors. Routine tests not limited to the following shall form part of the acceptance testing:

- General visual checks, name plate details, mounting, terminal box location and cable gland sizes
- Measurement of shaft centre height dimensions
- Measurement of clearances in the terminal box
- Verification of type of terminals (for Ex-e & Ex-n motors)
- Verification of direction of rotation
- Measurement of winding resistance
- Insulation resistance test (before & after high voltage test)
- High voltage test
- No load test and measurement of voltage, speed, current & power input
- Locked rotor test at reduced voltage and measurement of voltage, current & power input
- Reduced voltage starting & running
- Tests on the Ex-d enclosures as per IS

• **Test Certificates:**

The manufacturer shall submit the following certificates for verification by the Owner's Inspector:

- Test certificate for degree of protection of enclosure
- Test certificates issued by the recognized independent test house for hazardous area motors
- Approval certificates issued by Statutory Authorities for hazardous area motors
- BIS license and marking as required by Statutory Authorities for Ex-d motors.
- Though the motors shall be accepted on the basis of the satisfactory result of the testing at the shop, it shall not absolve the Vendor from liability regarding the proper functioning of the motors coupled to the driven equipment at site.

**o) Certification**

The hazardous area motors and associated equipment shall have test certificates issued by recognized independent test house (CMRI/BASEEFA/LCIE/UL/FM or equivalent). All indigenous motors shall conform to Indian Standards and shall be certified by Indian testing agencies. All motors (indigenous & imported) shall also have valid statutory approvals as applicable for the specified location. All indigenous flameproof motors shall have valid BIS license & marking as required by statutory authorities.

**p) Packing And Despatch:**


All the equipment shall be divided into several sections for protection and ease of handling during transportation. The equipment shall be properly packed for transportation by ship/rail or trailer. The equipment shall be wrapped in polythene sheets before being placed in crates/cases to prevent damage to the finish. Crates/cases shall have skid bottom for handling.

441973/2024/S

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	58 of 103

Special notations such as 'Fragile', 'This side up', 'Centre of gravity', 'Weight', 'Owner's particulars', 'PO Nos.' etc. shall be clearly marked on the package together with other details as per purchaser order.

The equipment may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage in areas with heavy rains/high ambient temperature, unless otherwise agreed.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	58 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	59 of 103

## x) STANDARD SPECIFICATION FOR AC VARIABLE FREQUENCY DRIVE

### a) SCOPE:

The scope of this specification is to define the minimum technical requirements for the design, manufacture, testing and supply of Medium Voltage, AC Variable Frequency Drive (VFD) System. The VFD shall be complete with Squirrel Cage Induction Motor, Converter, Converter transformer (if required), AC/DC link reactor with associated auxiliaries and local panel.

The vendor shall be responsible for engineering and functioning of the complete system meeting the intent and requirement of this specification and data sheets.

In this specification, the word 'drive' shall refer to the power and control module (rectifier-inverter-controller system) along with the associated electrical such as AC/DC link reactor, filters, contactors and other auxiliary panel components/ circuitry. The word 'system' shall refer to all the above and the associated motor and local panel put together.


This specification applies to drives connected to line voltage up to 1000 V AC.

### b) CODES AND STANDARDS:

The equipment shall comply with the requirements of latest revision of following standards issued by BIS (Bureau of Indian Standards), unless otherwise specified:

IS – 5	Colours for ready mixed paints and enamels
IS – 325	Three phase induction motors
IS – 3700 & 14901	Essential ratings and characteristic of semi-conductor devices
IS – 3715 & 14901	Letter symbols for semi-conductor devices
IS – 4411	Code of designation of semi-conductor devices
IS – 5001	Guide for preparation of drawings for semi-conductor devices
IS – 5469	Code for preparation of drawings for semi-conductor devices
IS – 8789	Performance parameters for motors
IS – 60947 Part-1	Low voltage switchgear and control gear: General rules

- In case of imported equipment, standards of the country of origin shall be applicable, if these standards are equivalent or stringent than the applicable Indian standards.
- The equipment shall also conform to the provisions of Indian Electricity rules and other statutory regulations currently in force in the country.
- In case Indian standards are not available for any equipment, standards issued by IEC/BS/VDE/IEEE/NEMA or equivalent agency shall be applicable.
- In case of any contradiction between various referred standards/specifications/data sheet and statutory regulations the following order of priority shall govern.
- For imported equipment, standards of the country of origin shall be applicable, if these standards are equivalent or stringent than the applicable Indian standards.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	59 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	60 of 103

### c) STANDARD SPECIFICATION FOR AC VARIABLE FREQUENCY DRIVE

AC VARIABLE FREQUENCY DRIVE AS PER THE FOLLOWING SPECIFICATIONS.

#### Technical specifications:


General specification is given in the annexure to this chapter. Vendor has to prepare specification sheet for each unit and submit for approval. Make of the VFD shall be as per the brand preference of NALCO only.

#### Ratings:

Power Rating (kW/HP)	: 25 % higher than the rated kW of the motor for which it is required.
Input Voltage	: 380-500 VAC +/-10%
Input Frequency	: 50 Hz + / - 5 %
Rated continuous current of VFD	: more than the rated current of the motor for which it is required.
Over load capacity	: 150 % for 60 seconds 200 % for 03 seconds
Language	: English.

#### Important notes for the bidders:

1. All the above specifications based on 50 degree centigrade ambient temperature without de-rating.
2. VFD Enclosure: IP 20 for VFD module if it is installed in air conditioned control room.
3. Each VFD shall be supplied in a standalone panel having single door, both front & rear opening, IP 43 enclosure if installed in ac control room and minimum IP 66 enclosure if installed in other than ac control room with panel as required depends on application, floor mounting, with fans, filters, door lock and handle.. Prior approval shall be taken from Nalco for type of enclosure and VFD.
4. The power wiring shall be with appropriate size of fine core stranded copper conductor with appropriate size lugs.
5. All the control wiring shall be with copper 1.5 sq. mm. Flexible wire.
6. All the internal wiring shall be as per the design scheme of vendor duly approved by Nalco at appropriate stage.
7. The drive shall be suitable for variable and constant torque depends on application.
8. The transformer, input choke, output choke shall be mounted at the back of the panel. All the electrical like contactor, MCB and fuse shall be mounted in the front of the panel.
9. VFD shall be mounted in the front of the panel.
10. The VFD, control transformer, input choke, output choke and all electrical like MCCB, MCB, contactor and fuse shall be mounted on a mounting plate /din rail and then in the panel for ease of maintenance.
11. Erection supervision & commissioning will be done by the party.
12. All the terminal block shall be of phoenix make, type: UK6N & numbered.
13. The entire relay, MCB shall be of approved brand and make only.
14. Final scheme of the drawing & hooking with existing plc for automation will be finalized after discussion and consultation with Nalco.
15. GC / TC shall be submitted by the party
16. The panel shall have a separate transformer for illumination and ventilation fan supply.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	60 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	61 of 103

17. The panel will have LED based illumination with door interlock.
18. The panel shall have one MCCB for VFD of appropriate rating as incomers.
19. A breaking resister, if required, of suitable rating to provide 150% breaking torque will be supplied separately.
20. The VFD shall have external brake chopper to provide 150% braking torque.
21. The panel shall have ammeter and voltmeter to monitor input current and voltage.
22. Indication lamps for drive status and power status to be provided.
23. Party shall submit final as built GA drawing and schematic drawings ( soft copies in pdf format, soft copies in editable dwg format and hard copies)after commissioning of the panel.
24. Party must submit their complete technical literature along with the offer for our technical scrutiny.
25. It is mandatory for the bidder to confirm each and every technical data mentioned in the NIT for technical scrutiny purpose.
26. Vendor shall provide printed user manual, maintenance & trouble shooting manual, VFD programming kit, etc required for installation and maintenance of the system.

## ANNEXURE

### General Specification of Variable Frequency Drive

**Reference:** IEC 146 International Electrical Code

**Regulatory Requirement:** IEC 801

#### Product Rating:

##### Input Power:

The Drive shall be self-adjustable to accept an input voltage range between 380-500 VAC, 3-Phase  $\pm 10\%$ .

Frequency Range shall be 50 Hz  $\pm 6\%$ .

Displacement Power Factor shall range between 1.0 and 0.95, lagging, over the entire speed range of drives.

The efficiency of the drive shall be minimum of 97.5 % at full load and speed.

##### Environment:

Storage ambient temperature range: (-) 40 to (+)70 Degree Centigrade (-40 to 158 F). Operating ambient temperature range should be 0 to 50 Degree Centigrade (0 to 109 F). The relative humidity range should be 5 % to 95 % non-condensing.

Operating elevation: Upto 1000 meters (3,300 ft) without de-rating.


##### Out Power:

The output voltage should be adjustable from 0 to rated input voltage. The output frequency range should be adjustable from 0 to 400 Hz. The inverter section shall produce a pulse width modulated (PWM) waveform using latest generation IGBTs.

##### Hardware:

The drive hardware should employ the following power components:

- Diode or fully gated bridge on the input.
- Phase to Phase and Phase to Ground voltage surge protection.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	61 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	62 of 103

- Gold plated plug-in connections on printed circuit boards.
- Microprocessor based inverter logic isolated from power circuits.
- Protection against input voltage dips and swells.
- Latest generation IGBT inverter section.
- Inverter section shall not require commutation capacitors.
- Peripheral Interface to enable attaching common options.
- Drive must be designed to operate at full load without cooling fan operation at designed ambient temperature of 50 deg. C without any component damage.
- All PCB should have conformal coating for protection against harsh and corrosive environments, class C3C as per IEC standard.

#### Control Logic:

The drive should be programmable or self-adjusting for operation under the following conditions:

- Operate drive with motor disconnected.
- Controlled shut down, when properly fused, with no component failure in the event of an output phase to phase or phase to ground short circuit and annunciation of the fault condition.
- Adjustable PWM carrier frequency within a range of 2-8 KHz.
- Selectable Sensor less Vector or V/Hz mode.
- 250 % Starting Torque and 260 % Peak Torque.
- Selectable for Variable or Constant Torque Loads. Selection of variable torque provides 115 % of rated VT current for up to one minute. Selection of constant torque provides 150 % of rated CT current for up to one minute.
- Multiple programmable stop modes including- Ramp, Coast, DC- Brake, Ramp-to-Hold and S-Curve.
- Multiple acceleration and deceleration rates.
- All adjustment to be made with the door closed.
- Adjustable output frequency up to 400 Hz.

#### Power Conditioning:

The Drive shall be designed to operate on an AC line which may contain line notching and up to 10 % harmonic distortion. An input isolation transformer shall not be required for protection from normal line transients. If the conditions dictate the use of a transformer, the K factor shall be 4 or less.

#### Operator Interface:

Interface to the drive is to be provided via a removable Human Interface Module with integral display. The display should be 2 lines, 16 characters alphanumeric, backlit LCD used to show drive operating conditions, fault indications and programming information. The display should also be configurable for simultaneously displaying two values using customized multi-lingual text and user scaled units.

#### Reference Signals:

The drive shall be capable of the following input reference signals:

- Digital Pulse Train Input
- HIM(Program/Control Panel)
- Analog Input Signals as

नालको SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	62 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	63 of 103

- Remote Potentiometer
  - 0 to 10 VDC
  - 0 to 20 mA
- Digital MOP
  - Serial

The analog inputs shall have programmable gain adjustments for both upper and lower settings to allow for system calibration. The analog inputs shall be programmable for normal, inverted or square root operation.

#### Loss of Reference:

The drive should be capable of sensing the following reference loss conditions:

- Remote potentiometer wiper loss.
- 2-10 V DC signals below 2 Volts.
- 4 to 20 mA signals below 4 mA.

In the event of loss of an analog input reference signal, the drive should be user programmable for one of the following conditions.

- Fault and Stop.
- Alarm and maintain last reference within 10 %.
- Alarm and go to the preset speed.
- Alarm and go to the minimum speed.
- Alarm and go to the maximum speed.

Signal loss detection should also be available when the signal being monitored is

- The active Process PI reference or feedback.
- The active Frequency reference.

#### Digital I/O:

Digital I/O shall consist of seven inputs, accessible through input cards and two Form A and two Form C relay outputs as standards.

#### Digital Inputs:


Out of seven Digital Inputs, 6 should be freely programmable for any fixed function that includes external fault, Speed select, Jog, Process PI functions, Second Acceleration /Deceleration, Stop Type and others.

#### Digital Outputs:

Standards "On Board" Digital outputs shall include two Form A (1 N.O.) and two Form C (1 N.O. - 1 N.C.) out put relays. Contact output ratings should be 240 VAC. All four relays provided should be programmable to different conditions including Fault, Alarm, At Speed, Drive Ready, PI Excess Error and others.

#### Communication:

Drive should have profibus, device net & Ethernet interface modules.

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	63 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	64 of 103

**Features:****Start Up Mode:**

An Assisted Start-Up Feature should be available for the user to commission the drive by supplying basic information and answering simple Yes/No questions. Basic setup parameters shall include Minimum and Maximum Frequency, acceleration and deceleration times and other can conveniently entered. Motor nameplate data, Encoder information and I/O setup shall also be included in the assisted start up.

A motor rotation test and automated sensor less vector tuning also should be possible in simple assisted startup. A full manual start up should also be possible.

**Control Mode:**

The ability to select sensor less vector or V/Hz mode should be available through programming. The sensor less vector mode should use motor nameplate data plus motor operating data such as IR drop, nominal flux current and flux up time to adapt to various operating conditions. The volts per hertz mode shall be fully programmable for fixed boost or full custom patterns.

**Current Limit:**

Programmable current limit from 20 % to 160 % of constant torque rating shall be provided. Current limit should be active for all the drive states, accelerating, constant speed and decelerating. The current limit parameter shall also be externally controlled through Analog Input.

**Acceleration/Deceleration:**

Acceleration/Deceleration setting should provide separate adjustments to allow either setting to be adjusted from 0.0 seconds to 3600.0 seconds. A second set of remotely selectable Acceleration/ Deceleration setting should be accessible with Control Interface option. An adaptive current limit circuit should be available to allow enabling for high Inertia and Disable the programming for fast acceleration of low inertia loads.

**Speed Regulation:**

The programmable speed regulation modes shall include the following.

- i. Open Loop.
- ii. Slip Compensation with 0.5 % speed regulation.
- iii. Droop-Negative Slip Compensation with 0.5 % speed regulation.
- iv. Traverse Function.
- v. Closed Loop encoder feedback with 0.1 % speed regulation.
- vi. Process PI Control.
- vii. Speed range should be 120:1 or better to get good Torque at low speed.

**Speed Profiles:**


Programming capability to produce speed profiles with linear acceleration/ deceleration or S-Curve profiles that provide changing acceleration/deceleration rates shall be available. S-Curve profile shall be selectable for fixed or adjustable values.

**Bus Regulation:**

DC Bus regulation shall be available to reduce the possibility of drive Over Voltage trips due to regenerative. Bus regulation shall be enabled or disabled via programming.

**Skip Frequency:**

Three adjustable set points that lockout continues operation at frequencies which may produce mechanical resonance shall be provided. This should have a bandwidth adjustable from 0 Hz to 15 Hz.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	64 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	65 of 103

**Run on Power Up:**

A user programmable restart function should be provided to automatically restart the equipment after restoration of power after an outage.

**Fault Memory:**

Last four faults as well as operating frequency, drive status and power mode should be stored at the time of fault. Information should be maintained in the event of power loss.

**Auto Economizer:**

This feature should automatically reduce the output voltage when the drive is operating in an idle mode (Drive output current less than programmed motor FLA). The Voltage should be reduced to minimize flux current in a lightly loaded motor thus reducing KW usage. If the load increases, the drive should automatically return to normal operation.

**Flying Start:**

The drive should be capable of determining the speed and direction of a spinning motor and adjusts its output to "Pick-Up" the motor at the rotating speed. The flying start feature should be operable with or without encoder feedback.

**Adjustments:**


The digital interface should be used for all set-up, operation and adjustment settings. All adjustments should be stored in nonvolatile memory (EPROM). No potentiometer adjustments are permitted.

**Protection:**

Following protection should be inbuilt into the drives:

Ground Fault, Short Circuit each Phase, Drive over Current, at temperature, Over Temperature, Under Voltage, Over Voltage, DC bus over voltage, External Signal Loss, Analog Signal Loss etc.

if not required by design calculations. The diameter of main bars in column / beam shall be so selected to limit the maximum spacing of bars to 150 mm.

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	65 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	66 of 103


## 15. JOB SPECIFICATION – INSTRUMENTATION

### SCOPE OF SUPPLY & SERVICES (Instrumentation):

#### 15.1 Scope of Supply:

Complete instrumentation package required for automation of the proposed Pipe (Siphon Tube) Cleaning Machine shall comprise of:


- a) Supply, installation & commissioning of field sensors/ instruments, PLC, HMI and PLC I/Os as per operational/ control philosophy as well as standard of process industry automation. All PLC hardware and I/Os are to be installed inside the new proposed PLC panel with easy access for maintenance which is to be located in a dedicated air conditioned PLC room
- b) Latest series PLC, Power supply, I/Os and communication network shall be provided. Point I/O modules and I/Os at the field are not acceptable.
- c) The PLC Panel shall be supplied with IP66 or better degree of protection. The paint shade shall be powder coated textured RAL 7035.
- d) HMI panel (Operator Control Panel) should be installed along with mounting arrangements near the Supplied machine so that proper visualization of cutting process can be available to the operator.
- e) The supplied operator control panel/ HMI shall be of latest model, minimum 10" color with IP66 or better degree of protection. The licensed software required to configure & modify the Operator Control Panel/ HMI pages shall be provided in the original OME data media.
- f) The HMI may essentially include the Mimics, General Overview of the machine, Individual pages for all the main Equipment or sub systems with conditions for healthiness, Fault & Alarm page, digital input/output(I/O) status pages, Trend Page(Current Trend & Historical Trend with proper Date & Time stamp).
- g) Supply of all system software cum license as well all tools used during installation and commissioning of any instruments/PC/PLC/HMI etc.
- h) The communication between Local Control Panel/HMI and PLC shall be preferably over Ethernet. The communication between IO rack and PLC communication shall be preferably over Ethernet. The communication cable

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	66 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	67 of 103

must be routed separately via metal conduit specially outside the PLC panel & around cutting machine frame.


- i) Interposing relays are to be provided for all PLC inputs & outputs
- j) PLC programming language must be in Ladder format.
- k) A portable programming device (Industrial grade service laptop 15" of configuration latest generation Intel i5 (or later) processor, minimum 8GB RAM, 1 TB SSD storage , DVD-RW/USB or latest configuration) along with licensed PLC programming software and SCADA/HMI software (Run plus Development) shall be exclusively supplied along with the PLC system shall be supplied for trouble shooting purpose.
- l) Supply of all required signal & communication cables, connectors & other accessories like separate cable trays for power & control cables and separate perforated cable trays for signal & communication cables.
- m) Arrangement of complete tools and tackles required for the system.
- n) The dedusting unit air purging system, if any, shall be controlled by main PLC only. Dedicated sequential controller/timer card for the same is not acceptable.
- o) This is only qualitative specifications of commonly used instruments & industry automation system. Those which are not covered here shall be submitted by vendor for approval.
- p) Historical trending of important parameters with date and time stamp shall be provided
- q) The SCADA/HMI shall visually display the interlock status in each individual case rather than giving some confusing common alarm/ trip conditions. The requirement should address the needs for machine operation and easy trouble shooting.
- r) At least 20% spare I/Os shall be considered while designing the PLC system. Max. 16 channels DI/DO modules & 8 channel AI/AO modules shall be considered while designing the PLC system.
- s) Requirement of any system & application software and tools like Hart calibrator, Laptop etc. during installation & commissioning of the system will be in the scope of vendor .The same has to be purchased in the name of

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	67 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	68 of 103

‘NATIONAL ALUMINIUM COMPANY LIMITED’ and handed over to NALCO after execution of job.

- t) The Alarm messages shall be properly classified/ configured in order to avoid confusions to the users.
- u) In case of the field devices, proper access to be ensured for ease of maintenance and to reduce break down time in identification and rectification. Also no sensor shall be mounted above 2-meters height above ground/ platform.
- v) Mandatory spares and special tools mentioned in the chapter “Spare Parts” of this document.
- w) Energy efficient components/ equipment mentioned in the chapter “GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING” of this document.
- x) Suitable interlocks to be provided for safe running of the machines such as:
  - i. The Pipe( Siphon Tube) Cleaning Machine unit cannot be switched ON unless The pipe is clamped and all enclosure covers are closed
  - ii. The exhaust fan of the dust collector is ON before cleaning operation begins
  - iii. Any other Safety Feature not elaborated above but considered essential for safe working of the system
- y) Any additional items or features required during detailed engineering for the completeness and trouble free performance of the system shall be included in the bidder’s scope without any price and time implications as long as system performance parameters and requirements within the battery limits of the vendor defined under this specification are kept unchanged.
- z) All the software Licenses supplied to NALCO shall be of Original Licenses and shall be issued in the Name of “DGM (E&I), Potline, Smelter Plant, NALCO


 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	68 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	69 of 103


### 15.2 Scope of Services:

- a) Transportation to site. Receipt at site, storage and Warehouse management,
- b) Erection of new Operator Control PLC Panel of the proposed machine near the proposed machine.
- c) Development/modifications suggested by Nalco of PLC program for automation and incorporation of various faults for trouble free operation of the machine.
- d) Design & development of PLC program & SCADA/ HMI program as per process & End user requirement
- e) Calibration, testing of installed instruments and simulation/testing of PLC programs.
- f) Equipment shop testing, performance guarantee test of the system at site and check compatibility with operation requirement etc.
- g) PLC communication with its associated I/Os, VFDs and HMI shall be through Ethernet network (open protocol).
- h) Laying of optical fiber cables, splicing, termination and other communication cables if any shall be in the scope of the vendor.
- i) Laying and termination of all the control cables, signal cables from the field instruments to junction boxes, junction boxes to PLC panel , MCC to PLC panel etc. shall be in the scope of the vendor.
- j) Tagging of the control/ signal cables and ferruling of each core for easy identification shall be in the scope of the vendor.
- k) Each PLC input/ output channel shall be provided with fuses (LED indicating type) of suitable ratings to prevent damage to the modules in case of short circuit in the field.
- l) Each & every Emergency push button identification should be provided along with security relay & relay's contact shall be taken in the Electrical MCC panel as hardwire safety in case of emergency. An input signal to the PLC shall be provided for better identification (HMI screen) of the machine stoppage.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	69 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	70 of 103


- m) The positioning of all field devices should be such that these are accessible from outside for easy maintenance. Wherever required, platforms may be made for easy access of field instruments.
- n) Other scope of service mentioned in description of system & auxiliaries, battery limit, specification of instrumentation.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	70 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	71 of 103

## 16. JOB SPECIFICATION – CIVIL


1. All civil test reports including concrete test report for 7 days, 28 days compressive strength and tensile strength test report for reinforcement steel required to be submitted for foundation RCC work, if required, for installation of the system supplied by the vendor.
2. All civil works for installation of Electrical equipment i.e. MCC panels, VFD panels, cables & accessories, motor foundations etc.
3. Construction of VFD room (12' x 8') with transparent glass windows and vinyl covered particle board laying supported by steel frames for installation of VFD panel. Suitable capacity of Split Air Conditioner ( not less than 2 T Capacity) shall be supplied and installed by the vendor. This will be applicable for the vendors who offer Electrically controlled Pipe(Siphon tube) cleaning machine.
4. Construction of Hydraulic Power Pack (HPP) Room (12' x 8') for installation of hydraulic Power packs. This will be applicable for the vendors who offer hydraulically controlled Pipe (Siphon tube) cleaning machine.
5. Aluminium frame door and windows for the VFD/HPP room
6. All Civil works for installation of PLC panels near the machine.
7. All Civil works for installation of Pipe(Siphon Tube) Cleaning Machine, HPP, De-dusting system, Chimney , ID fans etc for successful erection and commissioning of the system.
8. Demolition of wall, if required, for successful erection and commissioning of the system.
9. The rerouting/modification of existing roads and drains, if required, in the proposed project plan based on general lay out of the vendor.
10. Dismantling of sheet and structural work, if required, of the building for connecting outside equipment located beyond anode handling building related to dedusting/pneumatic conveying system.
11. Aggregates, if any, to be used for the civil jobs are to be properly graded and sieve analysis report is to be submitted by the vendor for both coarse and fine aggregates.
12. During excavation of earth, if any water table is encountered, the vendor has to bail out the water for laying of foundations.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	71 of 103

441973/2024/S

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	72 of 103

13. Foundation for installation of Pipe (Siphon Tube) Cleaning Machine and any other machines in scope of vendor shall be as per "DESIGN SPECIFICATION FOR FOUNDATIONS" as indicated in this document.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	72 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	73 of 103

## DESIGN SPECIFICATION FOR FOUNDATIONS


### 1. GENERAL

#### Scope

This specification covers the requirements for design of foundation, equipment foundation, local foundation, etc.

#### Codes and Standards

Latest editions of codes and standard as referred below shall be followed IS 456 – 2000	Code of practice for plain and reinforced concrete. (Fourth Revision)
IS 1786 - 2008	High strength deformed steel bars and wires for concrete reinforcement.
IS 1893 - 2002	Criteria for earthquake resistant design of structures.
IS 1904-1986	Code of practice for design and construction of foundations – General requirement.
IS 8009 (Part II)	Code of practice for calculation of settlement of foundation – Deep foundation.
IS 11089-1984	Code Of Practice For Design And Construction Of Ring Foundation; (Amendment 1), Reaffirmed 1995
IS 2950 – 1981 (Part – I)	Code of practice for design and construction of raft foundation.
IS 6403 -1981	Code of practice for determination of bearing capacities of shallow foundations.
IS 8009 -1976 (Part –I)	Code of practice for calculation of settlement of foundations - Shallow foundation.
IS 2974 (Part 2) - 1980	Code of practice for design and construction of machine foundations; Part 2 Foundation for impact type machine.
IS 2974 (Part 3) - 1992	Code of practice for design and construction of machine foundations; Part 3 Foundation for rotary type machine (medium and high frequency).
IS 2974 (Part 4)	Code of practice for design and construction of machine foundations; Part 4 Foundation for rotary type machine of low frequency.
IS 2974 (Part 5) - 1987	Code of practice for design and construction of machine foundations; Part 5 Foundation for impact type machine other

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	73 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	74 of 103

	than hammers (forging and stamping press, pig breakers, drop crusher and jolter).
IS 13920 - 1993	Ductile detailing of reinforced concrete structures subjected to seismic forces - Code of Practice.
IS 5249 - 1992	Determination of dynamic properties of soil – method of test.
IS 4091 - 1979	Code of practice for design and construction of foundation for transmission line towers and poles.
IS: 875 (Part-1,2,3,5)-1987	Code of practice for design loads (other than earthquake) for buildings and structures.
IS: 875 Part 1	Dead Loads – Unit Weights of building material and stored materials (Second revision) (Incorporating IS: 1911-1967), Reaffirmed 1992.
IS: 875 Part 2	Imposed Loads (Second revision), Reaffirmed 1992.
IS: 875 Part 3	Wind Loads (Second revision), Reaffirmed 1992.
IS: 875 Part 5	Special Loads and Load Combinations (Second revision) - Reaffirmed 1992.
	Any other codes required for designing & execution of civil works

## 2. MATERIALS

### General

Unless otherwise specified in the Drawings, material specifications shall conform to the following.

#### (1) Cement

Cement used for all concrete works both above and below ground shall be Portland Slag cement-PSC conforming to IS: 455 and OPC-43 Gr conforming to IS:8112.


#### (2) Aggregates

Aggregates used in the concrete works shall be graded from locally available gravel or crushed stone conforming to IS: 383.

Unless otherwise specified, the maximum size of aggregates shall be as follows: For large foundations and mass concrete -40mm graded down (provided the pitch of reinforcement is more than 100mm).

For others: 20mm graded down.

(3) Reinforcement: High strength deformed steel bars of grade Fe 415 conforming to IS 1786 shall be used for all building/Structures outside the process units.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	74 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	75 of 103

#### (4) Anchor Bolts

Anchor bolts shall be turned from M.S. round conforming to IS : 2062, Grade-B Hexagonal Bolts & Nuts and washer of Grade-C and Washers shall conform to IS : 1363 and IS : 2016 respectively.

#### (5) Insert Plates

Insert plates shall be of structural steel quality conforming to IS: 2062 and shall be provided with mild steel lugs as per drawings/ standards. Mild steel lugs shall conform to IS: 432.

### 3. Design Basis

#### 3.1 Foundation Design

For foundation design, Safe Bearing Capacities values, OF Soil investigation report shall be used. Minimum depth of foundation should be considered from NGL or FGL whichever is lower.

##### i. General

Foundation sizing shall be based on working loads not on loads, which may have been increased by factors for the purpose of concrete design.

For load combinations including seismic forces, the Safe Bearing Pressure of Soil and the Safe Bearing Load of piles shall be increased as permitted in IS: 1893.

Grade of concrete to be used in foundation shall be minimum M30.

For tie beams, below ground consideration shall be given for designing, additionally, for superimposed load and / or traffic loading, where applicable.

##### ii. Uplift on foundations


In the design of foundations, the upward pressure of water, where applicable, shall be taken as the full hydrostatic pressure applied over the whole area. Ground water table shall be assumed to be at existing ground level for calculating the existing hydrostatic pressure. Any other upward load shall also be included in the design.

Allowable loss of contact area between underside of foundation and soil (due to resultant overturning moment) under different loading conditions shall be considered.

##### iii. Mechanical Equipment Foundations

Mechanical equipment foundations shall satisfy the requirements of IS: 2974 and any other parameters as per machine vendors.

Foundation block extensions supporting auxiliary equipment requiring rigid positioning with respect to the main equipment shall be detailed to act integrally with the block.

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	75 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	76 of 103

Generally, foundations and structures supporting rotating machinery shall be so proportioned that their natural frequency shall not fall within the range of 0.8 to 1.2 of normal operating speed of the equipment.

Further, design shall be carried out such that amplitude of vibration during normal operation or other critical conditions shall not exceed the allowable amplitude specified by the equipment manufacturer or IS: 2974, whichever is more stringent. The above design criterion may be omitted for centrifugal pumps and fans and other minor rotating equipment weighing less than 1 ton or if the mass of the rotating parts are less than 1/100 th of the mass of foundation installed directly on concrete foundation provided that the weight of foundation is not less than 3 times of the equipment weight. In such cases, dynamic analysis is not necessary.

When dynamic analysis is called for:

The combined centre of gravity of the machine and foundation system shall, as far as possible, pass through the centre of area of the foundation raft or centroid of the pile group. Wherever unavoidable eccentricity shall be less than 5% for block foundations and 3% for frame foundations. However, in highly compressible soils, no eccentricity shall be permitted.

Foundations shall be so designed that natural frequency of the foundation system shall not resonate with the following:

- a) Operating speed of the motor / machine.
- b) Operating speed of the machine
- c) 2 x operating speed of the machine
- d) Critical speed of the machine (for centrifugal machines)


Where deviations (resulting from inaccuracies in soil parameter measurements, approximations in design method, etc.) from calculated natural frequencies, leading to amplitudes in excess of specified limits, are foreseen, provisions for increasing foundation mass without removal of the machine and without affecting surrounding space availability or connected piping shall be made, if possible.

Machine foundations shall satisfy the following requirements:

Minimum reinforcement as per requirements of IS: 2974 shall be provided unless required otherwise by design.

All units of the foundation system, except foundation raft shall be provided with symmetric reinforcement on opposite faces, even if not required by design considerations. No common raft shall be designed for set of machines.

The soil stress below foundations under dead loads shall not exceed 80% of the allowable soil bearing capacity, or safe load on pile, for static loading.

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	76 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	77 of 103

The CONTRACTOR shall ensure that there is no transfer of vibrations from machine foundations to any part of the adjoining structures. Such foundations shall be isolated from other foundations and floor /paving slab by providing adequate gap between the foundation faces and surrounding soil mass; the gap shall be filled with fine Shalitek Board.

The foundations and its superstructure shall be separated from adjacent floors and platforms. Clear air gap shall be provided in superstructure to avoid transmission of vibration to adjacent structures. Special note shall be given on the drawing in this respect, and suitable details shall be shown as required.

Block foundations for machine shall be cast in a single concreting operation. Foundations consisting of various blocks of the same machine seated on a common foundation raft may be provided with a single, properly designed construction joint at the top of base raft. However, a special note shall always be given on the drawing regarding the recommended procedure of construction.

All faces of the foundation block shall be provided with surface reinforcement. Minimum reinforcement diameter in horizontal and vertical directions shall be 12 mm, and maximum spacing of bars shall not exceed 200 mm.

For frame foundations, base raft shall be cast in a single concreting operation. A properly designed construction joint shall be provided between the base slab and columns. The entire superstructure of columns and upper deck shall be cast in a continuous concreting operation.

If height of the frame columns above raft level exceeds 8.0 m, an additional construction joint at the junction of columns / top-deck may be provided.

The location of beams and columns, and their reinforcement shall be arranged, as far as possible, symmetrically with respect to the vertical plane passing through the longitudinal axis of the machine.


The transverse frames (perpendicular to the axis of the machine) shall be located directly under the bearings, wherever possible.

Adequate haunches shall be provided at all intersections of beams and column to avoid concentration of stresses and increase general rigidity of the frame.

The minimum beam depth shall be one-fifth of the span and the beam width is normally equal to the width of the column, consistent with anchor bolt requirements, embedded depth, and edge distances etc.

Weight of base raft of the frame foundation shall not be less than the combined weight of the machine and foundation superstructure above the base raft, i.e. columns, top-deck slab/beams etc.

For frame type of foundations, all the elements of foundations shall be provided with top and bottom, two way reinforcements. Reinforcement shall be provided on all the faces of beams and columns even if not required by design calculations. The diameter of main bars in column / beam shall be so selected to limit the maximum spacing of bars to 150 mm.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	77 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	78 of 103

## 17. SPARE PARTS

### 17.1 MANDATORY SPARES


Vendor shall supply the following recommended Mandatory spares of the complete system:

#### i. Mechanical:

- |  |                        |
|--|------------------------|
| a) Hydraulic/Pneumatic Hose                | : 01 no each type      |
| b) Milling Cutter Heads, if any            | : 02 no each type      |
| c) Cutting Tools/Inserts, if any           | : 03 Sets of each type |
| d) Cutting Shaft                           | : 01 no                |
| e) Hydraulic/Pneumatic Cylinder, if any    | : 01 no each type      |
| f) Hydraulic/Pneumatic Valves, if any      | : 01 no each type      |
| g) Brake Liners, if any                    | : 01 Set each type     |
| h) Hydraulic Pump, if any                  | : 01 no each type      |
| i) Hydraulic/Pneumatic pipe fitting if any | : 01 no each type      |
| j) Filter Bags/ Cartridges                 | : 01 Set               |

#### ii. Electrical

- a) MCC Draw-out/ Lyra Power terminals (Fixed + Moving part) - 01 set minimum of each type
- b) MCC Draw-out Control terminals(Fixed + Moving part) – 01 set minimum of each type
- c) MCC Power Contactors - 01 no. minimum of each type
- d) MCC Control Relays - 01 no. minimum of each type
- e) MCC SFU with Operating handle – 01 set minimum of each type.
- f) MCC Power & Control Fuses – 10 nos. minimum of each type
- g) Relays (Protective relays, MOTPRO, Overload relays etc) – 01 no. minimum of each type
- h) Drag Chain with associated electrical cables – 01 set minimum of each type
- i) VFD / Softstarters – 01 no. minimum of each type
- j) VFD Choke – 01 no. minimum of each type
- k) Motors and Geared Motors – 01 no. minimum of each type
- l) Electrical Brakes – 01 no. minimum of each type
- m) Encoder with connector and cable – 01 set minimum of each type
- n) Pneumatic Solenoid Valves with Coil – 1 set minimum of each type
- o) Programming/Acessing software & kit for VFD, ACB, MOTPRO – 01 set each
- p) Position/Proximity Sensors, Limit Switches – 01 no. minimum of each type

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	78 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	79 of 103

### iii. Instrumentation

- a. Pressure Switches ,if any : Minimum 1 no each type
- b. Level Switch, if any : Minimum 1 no each type
- c. Level Transmitter, if any : Minimum 1 no each type
- d. DP gauge/Transmitter, if any : Minimum 1 no each type
- e. Pressure Transmitter, if any : Minimum 1 no each type
- f. Photo Cell , if any : Minimum 1 no each type
- g. PLC Processor : 1 no
- h. PLC I/O Card : Minimum 01 no for each type of I/O
- i. Load Cell, if any : Minimum 01 No

## 17.2 COMMISSIONING SPARES


The contractor shall supply the required spares for smooth commissioning of their supplied system without any additional price implication to NALCO.

## 17.3 TWO YEAR O&M SPARES (Only List)

The contractor shall submit only a list of two year O&M spares with unit price either with the bid or during detail engineering. If the bidder intends to submit the list with unit price during detailed engineering stage, they have to mention the same in the bid. The list shall be a reference for future procurement by NALCO.

### Note:

- a) The contractor has to supply the mandatory spares mentioned above. If any of the mandatory spares do not exist in the bidders design, they have to categorically specify that the same spares do not exist in their supplied system. If it is found that the spares appear during detailed engineering stage or later, those have to be supplied by the contractor to NALCO without any additional financial implication.
- b) The cost of Mandatory spares and Commissioning spares, if quoted separately by the bidder, shall be included to main price for evaluation of L-1 bidder.
- c) The price of two year O&M spares shall not be considered for evaluation of L-1 bidder.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	79 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	80 of 103

## 18. GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING

### 18.1 General


Energy meter (Instant indicator) along with totalizer for all energy sources I.e.: Each MCC, Compressed air system, Fuel oil system, Process water line.

### 18.2 Process and Mechanical Engineering

- Heat recovery/waste heat system.
- Stirrer or equivalent system in holding furnaces to reduce melts loss/increase productivity, ultimately reducing energy consumption.
- Use of stack/ flue gas waste heat in combustion or pre-heating
- Optimization of Impellers for pumps, fans etc as per load
- Optimum utilization of combustion systems.
- Proper pipe sizes to minimize friction losses and pipe bends to save pumping energy.
- Energy efficient HVAC systems for buildings.
- Minimum bends in duct work, piping etc
- Inlet/discharge guide vanes along with dampers for fan load controls
- Preferably Hollow FRP impellers in place of metallic/GRP impellers for fans/blowers
- Minimize obstructions in inlet and outlet of Fans/Pumps
- Energy efficient flat/cog belts instead of V-belts for large Motor drives
- Improved technology/materials in insulation of tanks/ piping to reduce heat loss
- Improved technology/materials for thermal/refractory insulation of furnaces/ovens
- Heat exchangers with low approach temperature and reduced pressure drops.
- Selection of air-compressors with high compression efficiency and mechanical efficiency and less energy consumption, preferably multi stage compression.
- Boilers with high efficiency, improved process control, reduced heat loss and high heat recovery
- Optimum size of cooling equipment that best matches the system requirement.
- Efficient gear box preferably bevel gear instead of worm gear box

### 18.3 Control Engineering

- Use of energy efficient control devices.
- Process automation for minimization of energy use.
- Implementation of control strategy that is tied to key energy systems.
- Interlocks for turning off equipment ( fans/ conveyors/ pumps/ heaters etc) when not in use

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	80 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	81 of 103


- PID control/ feedback control-loop in energy intensive equipment, e.g. furnaces/heating systems etc.
- Auto switching on/off of lighting systems
- Auto mode switching off of equipment during idle condition.
- Motion sensors for turning off lights/ air-conditioning
- Automatic burner control system for optimizing fuel efficiency

#### 18.4 Electrical Engineering

- Optimization of Motors for pumps, fans and other drives as per load
- Illumination at minimum required level
- VFD/ variable speed drives for Fans, Pumps and similar equipment in case of
- Variable loading conditions
- Thermostats and set-back timers for heating or cooling
- Use of energy efficient cables
- Energy efficient (IE rated) electrical Motors
- Energy efficient switchgears
- All the LV/MV motors must be energy efficient type as per IS:12615 with latest amendment (IE-3)
- Energy efficient (star rated) Air Conditioning units
- Energy efficient (star rated) distribution transformers
- Energy efficient air-compressors
- Energy efficient lighting systems for shop floor & buildings

#### 18.5 Civil Engineering

- Maximum use of day lighting and natural air ventilation systems for buildings.
- Insulation of office/building roofs
- Efficient air distribution for adequate cooling and heating in well designed structural works
- Solarize Inflector Window Systems in buildings


 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	81 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	82 of 103

## 19. PREFERRED VENDOR LIST

### 19.1 CIVIL & STRUCTURAL

Item Name	List Of Make/Brand/Suppliers
Aluminium doors/Partition doors/Windows/ Louvers	Alum-lite, Beco, Hindalco, INDAL
Aluminium Sheet	Balco, Hindalco
Bath tub attachments/fittings (Wall mixer. Telephone shower)	Jaquar, Hindware, Parryware
Bituminous felt	Nerolac, Shalimar
Bituminous paint	Asian Paints, Berger Paints, ICI, Jenson and Nicholson
Cement	ACC Limited, Jaypee, Dalmia, L&T, Ultratech, Sagar,
Chloro rubber paint	Asian Paints ,Berger, Jenson and Nicholson
CP Brass and fixtures	Essco, Jaquar, Tiger
Decorative Textured Stone finish	Heritage, Spectrum, Vineratex of Gillanders
Door hardware	Everite, Godrej
Epoxy paint	Asian Paints, Berger Paints, Fosroc, ICI, Jenson and Nicholson, Nerolac, Sika
Expansion joint treatment	Fosroc, Sika
External cement paint / Weather coat	Asian Paints, Berger Paints, Durocem(Berger), ICI, Nerolac, Robacem(J&N), Super Snowcem of Killick Nixon
GI pipes	ITC, Jindal, TATA
Glass	Atul, Hindustan Safety, AIS, Modi, Saint Gobin
Glazed Ceramic tiles	Johnson, Kajaria, Rak, Somany, Orient Bell,
Gunmetal valves	Annapurna, Leader
High neck spout for kitchen sink	Jaquar
Internal surfaces/Acrylic emulsion paints	Asian Paints, Berger Paints, ICI, Jenson and Nicholson, Nerolac
Material for flush door	Bhutan Board, Century Ply, Greenply, Kitply, National, Novopan
Material for panel door	Bhutan Board, Century Ply, Greenply, Kitply, National, Novopan
Mineral hardener	Sika-Chapdur of Sika Qualcrete or equivalent from Fosroc , BASF, Pidilite
MS Angle/Channel/Beams	IISCO, Jindal, RINL, SAIL, TISCO

नालको  NALCO SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	82 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	83 of 103

Item Name	List Of Make/Brand/Suppliers
Non-shrink & free flow cementitious grout	Anckor-NSG of Sika Qualcrete or equivalent from Fosroc , BASF, Pidilite
Plywood	Bhutan Board, Century Ply, Greenply, Kitply, National, Novopan
CPVC pipes & fittings	EMCO General Plastics, Hariplast, Oriplast, Poly olefins Industries Ltd, Ajay, Ashirbad, Astral, Supreme
Steel Rod	Jindal, RINL, SAIL, TATA Steel
Stoneware pipes	Hind
Synthetic enamel paint	Asian Paints, Berger Paints, ICI, Jenson and Nicholson, Nerolac
TW particle board	Bhutan Board, Century Ply, Greenply, Kitply, National, Novopan
Vinyl asbestos tiles	Marblex of Bhor, Rikvin, Wonder floor
Water proofing admixer	Plastocrete-N of Sika Qualcrete
White glazed stone ware fittings	GMB, Hindustan Sanitaryware, Neycer, Parryware
Wood primer	Asian Paints, Berger Paints, ICI, Jenson and Nicholson, Nerolac

## 19.2 ELECTRICAL:

Item Name	List Of Make/Brand/Suppliers
Aux Relays	ABB, GE, L&T, Schneider Electric, Siemens, Rockwell Automation
Battery Bank	Amar Raja, Exide, Rocket
Battery chargers	Amar Raja, Chhabi, Hitachi-HiRel Electronics
Bimetallic relay	L&T, Schneider, Siemens
Breaker Control Switches	L&T, Schneider, Siemens
Cable Termination & Jointing Kit	Raychem RPG, REPL, Yamuna, 3M, Multi Shrink
Contactors	L&T, Schneider, Siemens
Control panels	BCH, EL Steel, Rittal , Hoffman
Control relays	L&T, Schneider, Siemens , Rockwell
Control/Selector Switches	ABB, GE, L&T, Schneider, Siemens , Rockwell

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	84 of 103

CTs/PTs	ABB, Automatic Electric Ltd, Jyoti, L&T, Newtek Electricals, Prayag, Voltas
DC Distribution Board	ABB, GE, L&T, Schneider, Siemens
DCEM brake	BCH, Elektromag, Pethe, Sime Stromag, Lenze, Sytco
Distribution Transformer	ABB, Alstom, Bharat Bijlee, BHEL, Crompton Greaves, EMCO, Voltamp Transformers
ELCB	GE, L&T, Schneider, Siemens
Emergency stop	GE, L&T, Schneider, Siemens
Fuse Switch	ABB, GE, L&T, Schneider, Siemens
Fuses	Bussmann, Ferraz, GE, Indo Asian Fuse Gear, L&T, Siemens
Geared motors	Flender, LPS Motors, NewAllenberry Works, REMI, Sew Eurodrive, Siemens
Glands above M32x1.5 (Ni plated brass)	Lapp
Glands up to M32x1.5 (Polyamide)	Lapp, Hensel, Connectwell
Heating Elements for Annealing Furnace	Kanthal, Thuba, Exheat
HV Cables	Cable Corporation of India, Fort Gloster, Nicco Corporation, Polycab, RPG, Torrent, Universal
HV Isolator	Dreischer Panicker, Siemens
HV Motors	ABB, BHEL, Crompton Greaves, Kirloskar Electric, Siemens
HV Switchboard	ABB, GE, L&T, Schneider, Siemens
Integral brake motor	DEMAG, Leroy Somer, Sew Eurodrive
LBS	Cefem (France), Socomec(France)
Light fittings	Bajaj, Crompton Greaves, Philips, Osram, Wipro
Lighting & Power Panel	Havells India, Indo Asian Fuse Gear, Legrand(India), Standard Electricals
Limit Switch	ABB, Schneider, Siemens, Rockwell automation, OMRON
Linear actuators	AUMA, Bernard, Prepec
Local Power Isolation Cabinet	Cefem (France), Socomec(France)
MCB	ABB, GE, L&T, Schneider, Siemens
MCCB/SFU	ABB, GE, L&T, Schneider, Siemens



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	85 of 103

Meters	AE, IMP, RISHAB
Motor protection relay	ABB, GE, Schneider, Siemens
Motors	ABB, GE, DEMAG, KEC, Mogensen, Sew Eurodrive, Siemens, Leroy Somer, Reliance, Control Techniques
MV Motors	ABB, GE, DEMAG, KEC, Mogensen, SEW Eurodrive, Siemens, Leroy Somer, Reliance
MV Switchboard (draw out type)	BCH, ABB, GE, L&T, Schneider Electric, Siemens
MV Switchboard (fixed type)	BCH, ABB, GE, L&T, Schneider Electric, Siemens
MV Variable speed drive	ABB, Danfoss, Rockwell, Schneider Electric, Siemens, Control Techniques
Air Conditioner	Batliboi, Blue Star, Carrier, Hitachi, Voltas
PLC Panel	Rittal , Hoffman
Power cables	Finolex Cables Ltd., Fort Gloster, KEI, Lapp, Nicco Corporation, Polycab, Radiant Cables Ltd, RPG, Torrent, Universal, Helukabel
Power contactor	ABB, GE, L&T, Schneider Electric, Siemens
Protection Relays	ABB, L&T, Schneider Electric, Siemens
Proximity detector	P&F, Schneider , Rockwell, OMRON
Pushbutton & Indication lamps	ABB, GE, L&T, Schneider, Siemens, Rockwell
Pushbutton/Selector switches	ABB, GE, L&T, Schneider, Siemens, Rockwell
Rotary actuators	AUMA, Bernard, Prepec
Terminal block	Connectwell, Elmex, Phoenix
Timers	ABB, GE, L&T, Schneider, Siemens, Rockwell
Track type limit switch	BCH, Begal Technocrats, Electromag, Jayshree, Speed-O-Control
UPS	Amar Raja, Emerson, Fuji, GE, Hitachi-HiRel , Schneider APC
MCC/Switch Gear	ABB, GE, L&T, Schneider, Siemens, Rockwell
VFDs	ABB, Danfoss, Rockwell, Schneider Electric, Siemens, Control Technique

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	86 of 103

### 19.3 MECHANICAL:

Item Name	List Of Make/Brand/Suppliers
Air filters	Festo, Parker
Air lubricators	Festo, Parker
Air regulators	Festo, Parker
Anode grabs	Brochot, ECL, NKMNoell
Axial fans & propeller fans	ACCEL, Dustven, Flaktwoods, ISEL, Reitz
Bag house	Andrew Yule, Claudius Peter, Coperion, DUCON, Flaktwoods, Intensiv ,Rieco, Thermax
Ball valves	Audco, BDK, HAWA, KSB, Legris, VAAS
Bearings	FAG,KOYO,NTN,SKF,TIMKEN
Bearings for cranes	FAG,SKF
Belt scraper	BMH Concure, Hosch, Kaveri, Tega, Thejo
Butterfly valves	Audco, BDK, HAWA, KSB, VAAS
Cam Follower	McGill, C.R. Canada, Osborn , INA
Centrifugal blowers	Flakt woods, James Hoyden (UK), Reitz
Centrifugal pumps	Beacon, Kirloskar Brothers, KSB, Mather & Platt, Voltas, Weir
Compressors	Aerzen,Atlas Copco, Chicago pneumatic,ELGI, Ingersoll Rand, Kirloskar Pneumatics, Mattei Spa
Conveyor belts	Andrew Yule, Dunlop, Hilton, Nirlon, Phoenix, MRF
Couplings	Concord, Elecon, Fenner, Greaves, Wellman
De-dusting system	Flakt,Andrew Yule, INTESIV, Thermax , RIECO, DISHA, Coperion ,Ducon, REITZ
Electric crane	Anupam, Armsel, DEMAG, Mukand, WMIKone Cranes, GRIP, MEGA, FAFECO, Braithwate
Elevator/lift	ECE, Kone, Omega, OTIS, Thyssen Krupp
Explosion vents	Rembe
Fans	Andrew Yule, Flaktwoods, Reitz
Fans for dedusting	Andrew Yule, Batliboi, BHEL, Dustven, Flakt woods, Reitz, Rieco, Thermax
Fans for ventilation	Andrew Yule, Batliboi, Dustven, Flakt woods, Reitz, Rieco,Thermax
Fasteners	GKW, Precision, TVS, Unbrako
Filter bag House	Alstom, Batliboi, Dustven, Rieco, Thermax, VAI

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	87 of 103

Filter cloth for bags	Albany, Andrew Textile, BWF, Gortex, Nordic, Testori, TTL
Fluid coupling	Fludomat, Pembril, Voith
Gate valves	Audco, BDK, HAWA, KSB, VAAS
Gearboxes	DEMAG, Flender, LENZE, New Allen berry Works, Sew Eurodrive, NORD
Globe valves	Audco, BDK, HAWA, KSB, VAAS
Hard Facing Electrodes	D&H, Diffusion, ESAB, Eutectic, Modi , L&T
High pressure vane/piston pumps	Denison, Huggland, Rexroth, Vickers Perry, Yuken
Hydraulic check valves	Parker, Rexroth, Vickers Perry
Hydraulic counter balance valves	Parker, Rexroth
Hydraulic cylinders	CPOAC, Parker, Rexroth, Usha Telehoist, Veljan, Vickers Perry,Wipro,Yuken
Hydraulic filters	HYDAC, Parker, Rexroth, MP Filtri
Hydraulic flow control valves	Parker, Rexroth, Vickers Perry
Hydraulic hoses	Aeroquip, Parker, Rexroth
Hydraulic solenoid valves	Parker, Rexroth, Vickers Perry
Knife gate valves	Audco, BDK, HAWA, KSB, VAAS
Liner Plates	SAIL HARD , TISCRAI
Lubricating Systems	AFMC Lubrication Pvt Ltd, Lincoln Helios, Lubcon
Lubrication fittings	AFMC Lubrication Pvt Ltd, Lincoln Helios, Lubcon
Manual hoist/chain pulley	Batliboi, Elemech, Indef, Tracteltirfor
MIG weldings pool	D&H, Diffusion, ESAB, Eutectic
Monorail hoists	Anupam, Armsel, DEMAG, Mukand, WMIKone Cranes, GRIP, MEGA, FAFECO, Braithwate
Needle valves	Parker, Rexroth
Paints	Asian, Berger, Dulux
Pipe(MS)	Jindal, Prakash, SAIL, Surya, TATA
Pipe(SS)	Jindal, REMI, SAIL
Pipe Conveyor	FLSmidth, Macmet, ThyssenKrupp
Pipe fittings	Arbind Pipes & Fittings, EBYIndustries, MS Fittings, Stewart & Llyods, Teekay Tubes Pvt Ltd., True Fab Pvt Ltd

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	88 of 103

Pneumatic check valves	Festo, Parker , ASCO
Pneumatic Conveying	Claudius Peter, Coperion, DUCON, Gericke Gmbh, Macawber Beekay, Moiler, Schenck
Pneumatic cylinders	Festo, Parker, Schrader, ASCO, Legris
Pneumatic flow control valves	Festo, Parker, ASCO, Legris
Pneumatic hoses	Festo, Gates India, Parker, ASCO, Legris
Pneumatic solenoid valves	Asco, Festo, Parker, Schrader, ASCO, Legris
Polymer liner	Kaveri, Tega, Quadrant EPP Surlon
Polyurethane hoses	Festo, , ASCO, Legris
Polyurethane liner	Kaveri, Tega, Quadrant EPP Surlon
Pulsejet valves	ASCO
Quick couplers	Aeroquip, Legris
Rope & Winch system	Hell & Patterson, Metso, Windhoff
Rotary Air Lock Feeder	Air Lanco, Delta-Ducon, DMN Westing house, Fluid Air, Rieco, Scorpio, FLAKT
Rubber liner	Kaveri, Tega
Sector gate/diverter gate/Rack & pinion gate	Holtzman, IDC, Macmet, Precision Processing, TRF, Vinar
Steel plates	IISCO, Jindal, RINL, SAIL, TISCO
Transmission chain	Diamond, Rolcon, Rolon , Reynold
Tri-lobe blowers	Air Industries limited, Kay International, Swam pneumatics, Godrej
V-Pulley	Fenner, Contitech
V-Belts	Fenner , Gates, Contitech, PIX
Vibrating Screen	Electromag, Joest, Pennwalt, Schenck
Vibration Isolator	ARF, Dunlop, Emerald
Welding electrodes	D&H, Diffusion, ESAB, Eutectic, Modi , L&T
Window / Split Air Conditioner	Arctic, Blue Star, Carrier, Hitachi, LG, Samsung, Voltas
Wire ropes	Bharat Wire ropes, Orion Ropes Pvt Ltd., Usha Martin

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	89 of 103

## 19.4 INSTRUMENTATION


Item Name	List Of Make/Brand/Suppliers
Air Flow transmitters	E&H, Emerson, ABB, Siemens
Cable glands (for Hazardous area)	Braco, Comet, Lapp
Computer & Printer table	Godrej, Zuari
Control Valves	Audco, Klein, KSB, Tyco
Differential pressure gauge	Ashcroft, Baumer, Kobold, Waaree, Wika
Digital multi meter	Philips, Yokogawa, Fluke, Megger
Flow switch	E&H, Honeywell, P&F
HART Configurator	E&H, Emerson, Yokogawa, Fluke
Instrument tubing, fittings & needle valves	Parker, Swagelok
Interposing Relays	Omron, Wago, Allen-Bradley
Jamming detector	E&H, Kobold, Siemens, VEGA
Junction box	Kindle, Rittal , Hensel , Cape Electric
Level switch	E&H, Kobold, Siemens, VEGA, P&F
Level transmitter	E&H, Emerson, VEGA
Load cell	Avery, Sartorius, Tulaman, Precia Molen,ABB
Manometer	Asian Industrial Valves, Bliss Anand Pvt Ltd, Phoenix, Sigma Industries
Mass flow meter	E&H, Emerson, Honeywell, Siemens, Yokogawa
Orifice plates & Flanges	Baliga Lighting,Eureka Industrial Equipments, Guru Nanak Engineering works, Micro Precision Products Pvt Ltd, StartMech Controls
PC & Laptop	Dell, HP, Lenovo
Photo Cell	P&F , Schneider ,Sick
Pile detector (Diffuse reflection type)	IFM, LEUTZE Electronics, Omron, P&F, Schneider, Sick
PLC I/O cards	Rockwell, Siemens,
PLCs	Rockwell, Siemens ,
Pressure gauge	Ashcroft, Baumer, Kobold, Wika, Waree, Precision Mass Products

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	90 of 103

Item Name	List Of Make/Brand/Suppliers
Pressure Relief Valves	Alstom, Anderson Greenwood Crosby, BHEL, Safety Systems UK Ltd,Weir
Pressure switch	Danfoss, Indfoss, Schneider
Pressure/Flow/Differential pressure transmitter	E&H, Emerson, Vega, ABB, Baumer , Yokogawa
Printer(Laser /Inkjet)	Cannon, Epson, HP
Proximity switch	Turck, Schneider, IFM, P&F, Telemecanique
Reflector	Swareflex , P&F
RTD	Jumo, Kobold, Sandvik, Tempcon, Tempsens,
Signal cables	KEI, Lapp, Polycab, RPG, Helukabel
Temperature gauges	Waaree, Wika, Baumer, H Guru, Precission Mass Products
Temperature transmitter	E&H, Emerson, Honeywell, P&F, ABB, WIKA, Baumer
Thermocouples	Jumo, Kobold, Sandvik, Tempcon, Tempsens, Toshniwal, Unitech Instruments
Thermo wells	Altop Industries, Bourden Haennt,Elind, RK Engg, Thermo Electra BV, Thermo Electric Co, Thermo couple products
Universal digital indicator and controller	Honeywell, Masibus, Yokogawa
Universal Temperature indicator/ controller	Eurotherm, Honeywell, Omron, Yokogawa
Sequencer Timer Card	EAPL, SEFRAM ,DELTA NEU
Weighing system	Avery, Philips, Schenck , Precia Molen, ABB
Zero speed switch	Jayshree, Schneider

**Note:**


- This preferred vendor list is to be followed in conjunction with the vendor/make lists of equipment addressed in the detailed/standard specifications.
- Any material/make/brand required to complete the project but not included in the preferred vendor list to be procured after taking prior approval from the Nalco on submission of proven track record documents.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	90 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	91 of 103


## 20. SPECIAL CONDITIONS OF CONTRACT

- a) The Intent of this specification is to Design supply, construction, fabrication, erection and commissioning services for execution of projects according to most modern and proven techniques and codes. The omission of specific reference to any method and equipment or material necessary for the proper and efficient services towards installation of the Plant shall not relieve the contractor of the responsibility of providing such services, facilities to complete the project awarded to him. The quoted rate shall deem to be inclusive of all such contingencies. Major technical drawings and datasheets are to be approved by the Nalco prior commencement of manufacturing or construction.
- b) It is essential that, contractors desirous of participating in the tender should visit and assess the site to have hands on requirement of the scope of work. The contract which is intended to be executed on LSTK basis is inclusive of all materials for execution of the work. Site assessment is important considering the fact that this is a revamping job and requires integration with existing equipment.
- c) It is not the intent to specify herein all details of material. Any item related to this work not covered, but necessary to complete the system will be deemed to have been included in the scope of the work and to be finalized during detail engineering as specified in the scope of work. Customization required for successful completion of the project during progressive execution of the contract has to be undertaken by the contractor and shall be deemed as a part of the scope of work within the battery limit.
- d) During the course of erection, testing and commissioning work, certain rework/modification / rectification / repairs / fabrication etc. may be necessary on account of existing system/ already commissioned and / or units also on account of design changes and manufacturing incompatibilities and site operation / maintenance requirements. Contractor shall carryout such rework / modification / rectification / fabrication / repairs etc, promptly and expeditiously and the same shall be deemed to be part of the scope of work.
- e) The work shall be executed in the running/ operating plant & in conjunction with numerous other operations at site. The bidder and his personnel shall co-operate with the existing operating setup and proceed in a manner that shall not affect the operation. A mutually agreed shutdown schedule is to be followed.
- f) The contractor shall carry out the work in accordance with instructions/ drawings/ specification/ standard practices/ national and international norms.
- g) Good quality and accurate workmanship for proper performance of equipment / systems shall be guaranteed by the contractor on every stage of supplies and works.

 <b>नलको</b> <b>NALCO</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	91 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	92 of 103

- h) Preservation of all components at all stages of pre-assembly/ erection/testing and commissioning till completion of trial run of unit.
- i) On Completion of work all the temporary buildings, structures, pipe lines, cable etc. shall be dismantled and levelled and the contractor at his cost shall remove debris as per instruction of Nalco. This should be completed before submission of Final Bill. In the event of his failure to do so, the expenditure towards clearance of the same will be recovered from the contractor.
- j) Within one month of final handing over of the system, the contractor has to dismantle the site office/ware house, disconnect electricity/water supply, take back the container (if brought from own source) from plant premises. Then only, their final bill shall be considered for payment.
- k) The Contractor shall deploy experienced Engineers, Supervisors all the skilled workmen like High Pressure Welders (gas, TIG and arc) Carbon, alloy steel welders, Gas cutters, electricians, Riggers, Serangs, rectors, carpenters, fitters etc. in addition to other skilled semi-skilled and unskilled workmen required for all the works of handling and transportation from site storage to erection site, transportation, erection, testing and commissioning contemplated under this specification. They shall hold valid certificates wherever necessary.
- l) The contractor's supervisory staff shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work, good workmanship and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship conform to the design/ specifications/ instruction and expected level of the client/ customer.
- m) If the contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road, kerb, fence, enclosure, water pipes, cables, drains, electric or telephone posts or wires, trees or any other property or to any part of erected components etc. The contractor has to reinstate the same at his own expense.
- n) The work covered under this scope of work is of highly sophisticated nature requiring best quality / proven workmanship engineering and construction management. It should also ensure successful and timely commercial operation of equipment installed. The contractor must have adequate quantity of precision tools, construction aids in possession. Contractor must also have adequate trained qualified and experienced supervisory staff and skilled personnel.
- o) All the necessary statutory certificates and licenses required to carry out this scope of work are to be arranged by the contractor then and there at no extra cost. The statutory approvals related to consent to establish the new facility, is to be arranged by NALCO with necessary document support from the vendor. All other statutory approvals like PF,

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	92 of 103




PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	93 of 103

ESI, Labor license, Electrical license, load test certificates of lifting equipment / tools etc. to be used by the vendor to be arranged by themselves.

- p) The contractor shall deploy adequate number of qualified safety personnel at site to supervise day-to-day construction safety. The contractor shall be responsible for taking all safety precautions within the project battery limit during the construction and leaving the site safe at all times. When the work is temporarily suspended he shall protect all construction materials, equipment and facilities from causing damage to existing property interfering with the operations of the station when it goes into service. The contractor shall comply with all applicable provisions of the safety regulations clean-up programme and other precautionary measures, which the NALCO has in effect at the site.
- q) All electrical installation covered in contractors scopes, as per applicability, are to be inspected/approved by the electrical inspector/statutory authority. Contractor is responsible for getting the Electrical inspector approval. Necessary completion/test certificate for the Electrical equipment like DC systems, UPS etc if addressed in the scope of work shall be supplied by the contractor and shall be arranged by him.
- r) It shall be the responsibility of the contractor to apply touch up painting on all vendor supplied equipment before erection. It shall be contractor's responsibility to arrange for required labour, brush and other consumables like cotton waste, cloth etc. for carrying out preservative painting. The quoted rates shall be inclusive of above work. The contractor shall effectively protect the finished work from action of weather and from damage or defacement and shall cover the finished parts, then and there for their protection.

Provision of all types of labor, Supervisors, Engineers, safety personnel, watch and ward as required tools and tackles, instruments as required, consumables as required under various clauses of tender specification for handling transportation, erection, testing and commissioning.


- s) Special Conditions of Contract shall be read in conjunction with the standard terms and conditions(STC) of NIT , General Conditions of Contract, Schedule of Rates, Specification of work, Drawings and any other document forming part of this contract wherever the context so requires.
- t) Notwithstanding the sub-divisions of the document into these separate sections and volumes, every part of each shall be deemed to be supplementary to and complementary to every other part and shall be read with and into the contract so far as it may be practicable to do so.
- u) The materials, design and workmanship shall satisfy the applicable standards, specifications contained herein and codes referred to. Where the Technical Specifications

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	93 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	94 of 103


stipulate requirements in addition to those contained in the Standard Codes and Specifications, those additional requirements shall also be satisfied.

- v) Wherever it is mentioned in the specifications that the Contract shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his own cost and the Contract Price shall be deemed to have included cost of such performances and provisions, so mentioned.
- w) The offer submitted by the bidder shall be accompanied by a tentative time schedule showing individual time period for each activity like Design, Engineering, supply, erection, shutdown plan (if required), commissioning, PG Test and Hand Over.
- x) The successful tenderer shall submit a detailed project schedule within one month from effective date of order. This project schedule will be in the form of PERT/CPM network prepared system wise containing major milestones in all phases of execution of contract. Each event/activity will also have earliest completion date, latest completion date and float in number of days/weeks. The final project schedule as mutually agreed upon would form the basic document from which schedules for design, engineering, procurement, construction and commissioning will be arrived at. These schedules will be prepared discipline or system wise. The final project schedule shall also form the basis for review of schedules, short-term programme and progress reporting for the entire run of the contract. The frequency/periodicity of programming and reporting will be mutually agreed upon. Progress reporting shall be done by the Contractor on mutually agreed formats.
- y) The weekly or fortnightly progress review meeting shall be conducted at site with the contractor's site-in-charge/Engineers during erection and commissioning period. The actual progress during the week vis-à-vis scheduled activities shall be discussed for action to be taken for achieving targets. The contractor shall update/reschedule the site activities based on material and manpower availability to meet the overall completion period.
- z) The Contractor shall have independent account codes from concerned Regional Provident Fund Commissioner for Provident Fund and Independent account code from Regional Director ESI for ESI. Fulfilling all statutory stipulations towards PF & ESI is mandatory for the bidders.
- aa) Before starting of work, the Contractor shall obtain a license from the concerned authorities under the Contract Labour (Abolition and Regulation) Act 1970, and furnish copy of the same to the Nalco.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	94 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	95 of 103


- bb) Contractor shall observe all Codes specified in respective specification, all national and local laws, ordinances, rules and regulations and requirements pertaining to the work and shall be responsible to fulfil all such norms.
- cc) Contractor shall have at all times during performance of the work, post a technically competent person to supervise the work at the work premises. Any instruction given to such a person by the Manager-in-charge or his/her authorized representative shall be construed as having been given to the Contractor.
- dd) Nalco reserves the right to inspect all phases of Contractor's operations to ensure conformity to the specifications. Nalco will have engineers, inspectors or other duly authorized representatives, made known to the Contractor, present during progress of the work and such representatives shall have free access to the work at all times. The presence or absence of Nalco representative does not relieve the Contractor of the responsibility for quality control in all phases of the work. In the event that any of the work being done by the Contractor is found by Nalco representatives to be unsatisfactory or not in accordance with the drawings, procedures and specifications, the Contractor shall, upon verbal notice of such discrepancy or deficiency, take immediate steps to revise the work in a manner to conform to the relevant drawings, procedures and specifications.
- ee) The Contractor shall carry out required supervision and inspection as per Quality Assurance Plan and furnish all assistance required by Nalco in carrying out inspection work during this phase. The Nalco will have engineers, inspectors or other authorized representatives present who are to have free access to the work at all time. If Nalco representative notifies the Contractor's authorized representative of any deficiency, or recommends action regarding compliance with the specifications, the Contractor shall make every effort to carry out such instructions to complete the work conforming to the specifications and approved drawings in the fullest degree consistent with best industry practices.
- ff) The Contractor shall without prejudice to his overall responsibility to execute and complete the works as per specifications and time schedule progressively deploy adequate qualified and experienced personnel together with skilled/unskilled manpower and augment the same after mutual agreement depending on the exigencies of work to suit the construction schedule without any additional cost to Nalco. The works under this contract are to be carried out in areas declared as plant limits, adjacent / adjoining to the existing operating plant. As such, Contractor is required to abide by all safety and security regulations of the Nalco enforced from time to time.
- gg) The Contractor has to apply for photo entry passes/Biometric passes for his workers & staff in a prescribed Performa available with Nalco for persons requiring entry in to Plant premises as required. Identity card issued by the Security Section should always be carried/ displayed by the Contractor's employee or person while working inside the

 <b>नाल्को NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	95 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	96 of 103

Plant. Permits are to be obtained separately for use of vehicles/ trailers etc. at work site. The following requirements are to be met to obtain vehicle permit:

- hh) To bring materials/ equipment/ tools/ tackles etc., to Construction site the work, the Contractor has to produce challan/ proper documents to the Nalco security personnel at gate. The materials shall be checked thoroughly by the security personnel at Gate and recorded in their register before allowing any materials to the site. It is Contractor's responsibility to see that the recorded entry No., date, signature of Nalco's authorized representative with stamp are there on the challan/ supporting documents before taking any materials into work site. In addition to above, entry of the material will be permitted only during the stipulated working hour, and more so, if consignee is available to receive the said material.
- ii) The work shall be carried out inside the plant as per safety practices enforced by Nalco safety department and instructions of Manager-in-charge or his/her authorised representative issued from time to time. Many times it may happen that the working hours shall be drastically reduced or increased to meet certain safety requirements and the Contractor shall meet these requirements without any financial implications. To obtain work permit, height permit, confined area permit and to satisfy all conditions laid down therein, shall be the responsibility of the Contractor. No claim for idling of machinery, plant, manpower etc., for safety reasons or non-issuance of work permit by In-charge, Safety department shall be considered. The Contractor shall abide by all safety regulations of the plant and ensure strict adherence to the safety instructions issued by Nalco from time to time. Any deviation to this laid down procedure would lead to stoppage of work for which contractor shall be responsible.
- jj) NALCO being an ISO 14001 Company, the Contractor shall comply with all the provisions of ISO 14001 (EMS Criteria) for proper disposal of debris, unused oils, lubricants etc. in consultation with Manager-in-charge or his/her authorised representative. The contractor shall also abide by other stipulations of ISO 14001 as laid down by the said system. The Contractor shall from time to time clear and remove all rubbish and constructions, equipment, unused materials, etc. resulting in the execution of the work. The disposal of rubbish will have to be done only in the areas earmarked by Nalco as per the direction of the Manager-in-charge or his/her authorised representative. All streets and driveways in the work area shall be kept clear and unobstructed at all times. Working site should be always kept cleaned up to the entire satisfaction of Manager-in-charge or his/her authorised representative. Before handing over of any work to Nalco, the Contractor in addition to other formalities to be observed as detailed in the document shall clear the site to the entire satisfaction of Manager-in-charge or his/her authorised representative.
- kk) Construction shall be carried out as per drawings (excluding fabrication drawings) /specifications issued/ approved by Manager-in-charge or his/her authorised representative issued from time to time during the course of execution of work. The


नालको  NALCO SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	96 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	97 of 103

quoted rates shall be deemed to include cost of preparation and submission of fabrication drawings (if any) for review and approval of Manager-in-charge or his/her authorised representative. It is however, clearly agreed by the Contractor that review and approval of the drawings by Manager-in-charge or his/her authorised representative shall not absolve the Contractor of his responsibility to carry out the work as per specifications.

II) The contractor shall submit the Quality Assurance Plan (QAP) containing the overall quality management and procedures which is required to be adhered to during the execution of contract. Separate QAP for supply items and works portions to be prepared agency-wise prior to commencement of supply and works respectively. The Contractor shall establish document and maintain an effective quality assurance system.


mm) All inspection and test for complete or major supply items shall be made as required. Various stages of inspection and testing shall be identified after receipt of Quality Assurance Plan (QAP) from the Contractor / manufacturer. Pespach Inspection calls shall be given by the vendor/contractor for association of Manager-in-charge or his/her authorised representative as per mutually agreed programme and Proforma with 15 days margin, giving details of equipment and attaching relevant test certificates and internal inspection report of the Contractor. All drawings, general arrangement and other contract drawings, specifications, catalogues etc., pertaining to equipment offered for inspection shall be got approved by Manager-in-charge or his/her authorised representative and copies shall be made available to Manager-in-charge or his/her authorised representative beforehand for undertaking inspection. The Contractor shall ensure full and free access to the Manager-in-charge or his/her authorised representative at the Contractor or their sub-Contractor's premises at any time during contract period to facilitate him to carry out inspection and testing assignments. The Contractor shall provide all instruments, tools, necessary testing and other inspection facilities to the Manager-in-charge or his/her authorised representative free of cost for carrying out inspection. Where facilities for testing do not exist in the Contractor's laboratories, samples and test pieces shall be drawn by the Contractor in the presence of the Manager-in-charge or his/her authorised representative and duly sealed by the letter and sent for tests in Government approved Test House or any other testing laboratories approved by the inspection Engineer at the Contractor's cost. The Contractor shall comply with the instructions of the Inspection Engineer fully and with promptitude. The Contractor shall ensure that the equipment / assemblies / component of the plant and equipment required to be inspected are not assembled and despatched before inspection. The Contractor shall ensure that the parts once rejected by the Inspection Engineer are not used in the manufacture of the plant and equipment. Where parts rejected by the Inspection Engineer have been rectified or altered, such parts shall be segregated for separate inspection and approval, before being used in the work. On satisfactory completion of final inspection and testing, the final accepted equipment shall be stamped suitably and inspection Certificate shall be issued for all accepted items. For stage inspection and for rejected items, only inspection memo shall

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	97 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	98 of 103

be issued indicating there in the details of observations and remarks. The Contractor shall carry out the various tests as enumerated in the technical specifications of the Tender Document and the technical documents that will be furnished to him during the performance the works and no separate payment shall be made unless otherwise specified. The despatch clearance will be issued to the contractor/seller on the basis of the inspection report.

- nn) The construction work shall be carried out based on a pre-defined Field Quality Plan (FQP). The FQP shall be submitted by the contractor prior to commencement of site construction activities and get the approval of the Manager-in-charge or his/her authorised representative. The jobs carried out by the contract shall be subject to inspection at any time by the Manager-in-charge or his/her authorised representative. The Contractor shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the technical specifications of this tender, the technical documents and the relevant codes of practice furnished to him during the performance of the work. The nature of testing to be done, periodical intervals at which such testing are to be done, etc. as per the latest editions of relevant IS codes shall be determined by the Manager-in-charge or his/her authorised representative. The Contractor shall provide for purposes of inspection access ladders, lighting and necessary instruments at his own cost for inspection of work any work not conforming to the execution drawings, specifications or codes shall be rejected forthwith and the Contractor shall carry out the rectification at his own cost.
- oo) The erection protocols for individual items shall be prepared by the contractor and get prior approval of Manager-in-charge or his/her authorised representative. All results of inspection and tests will be recorded in the erection protocol and the reports shall be part of the completion documents. The mechanical completion certificate shall be issued by the Manager-in-charge or his/her authorised representative on the basis of the signed protocols. However, the inspection and acceptance of the work shall not relieve the Contractor from any of his responsibilities under this contract.
- pp) All Tools & tackles required for the satisfactory execution of work shall be arranged by contractor at his cost.
- qq) All instruments, measuring tools etc. should have valid calibration certificate from National accredited testing laboratories as a part of ISO requirement and necessary calibration certificates are to be submitted to Nalco before use.
- rr) If any defects noticed in the work are attributable to Contractor, these shall be attended by the Contractor at his own cost as and when they are brought to their notice by the Manager-in-charge or his/her authorised representative. Nalco shall have the right to

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	98 of 103




PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	99 of 103

have these defects rectified at the risk and cost of the Contractor if he fails to attend to these defects within specified time frame.

- ss) The contractor shall submit Site Acceptance Test (SAT) procedure for individual equipment/ assembly/ system prior to commissioning the same. The same shall be approved by the Manager-in-charge or his/her authorised representative. The final inspection shall be carried out by Nalco in association with the contractor on the basis of the SAT and the commissioning certificate shall be issued by the Manager-in-charge or his/her authorised representative on that basis of the SAT report.
- tt) It shall be entirely the Contractor's responsibility to provide, operate and maintain all necessary construction equipment, scaffoldings and safety gadgets, cranes and other lifting tackles, tools and appliances to perform the work in a professional and efficient manner and complete all the jobs as per time schedule.
- uu) Drains, pipes, cables, overhead wires and similar services encountered in the course of the works shall be guarded from injury by the Contractor at his own cost, so that they may continue in full and uninterrupted use to the satisfaction of the Nalco thereof, or otherwise occupy any part of the site in a manner likely to hinder the operation of such services. Should any damage be done by the Contractor to any mains, pipes, cables or lines, roads (whether above or below ground etc.), whether or not shown on the drawings the Contractor shall make good or bear the cost of making good the same without delay.
- vv) Co-ordination among the contractors/sub-contractors shall be the responsibility of the prime contractor. Where embedding of conduits in concrete slabs, walls etc. is involved, the Contractor shall ensure that the work of civil and other works shall not be held due to non-completion of the part of electrical work.
- ww) The contractor shall obtain approvals from the concerned electrical inspectorate for installation drawings and engineering of the electrical system and equipment covered under the contractor's scope. Any modification asked for by the electrical inspectorate shall have to be carried out by the contractor at his own cost without affecting time schedule.
- xx) The contractor shall arrange the actual inspection of work by the Electrical Inspector. Necessary coordination and liaison work in this respect shall be the responsibility of the contractor.

Statutory fees paid, if any for all such inspections and approvals by authorities, shall be in the scope of Owner.

 <b>नालको</b> <b>SMELTER DIVISION</b>	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	99 of 103


PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	100 of 103

Any change/additions required to be made to meet the requirements of the statutory authorities shall be carried out by contractor free of charge.

The Inspection and acceptance of work as above shall not absolve the Contractor from any of his responsibilities under this contract. Obtaining clearance for energizing the complete electrical facilities covered under this tender, and approval of installation and drawings from the Chief Electrical Inspectorate/CEA/SEB/ Power Supply Company shall be responsibility of the contractor.

Any other statutory approval of works required for the electrical installation (such as Factory Inspector etc.) is also included in contractor's scope.

- yy) While selection of the technology, equipment, and process contractor has to ensure that, latest technology & engineering practices are followed and complied with emphasis of safety, statutory & regulatory requirements as specified in national & international standard.
  - zz) All design basis, calculations, drawings, layout, & specifications etc. are to be ratified / verified by the contractor. The Contractor to ensure full compatibility of the proposed system with the existing layout/ system & processes.
  - aaa) While selecting of the equipment, protection, enclosures, safety devices, drives etc.; emphasis has to be laid down on existing site conditions and operational practices.
  - bbb) Shut down planning: There may be requirement of taking shut down of the existing running plant for carrying out installation of any new equipment or integration with existing system. For shut down required for less than 8 hrs, the vendor has to intimate one day prior to such shut down. NALCO will try to provide the same based on sparability. Normally, Nalco takes 16 hours planned shutdown in a week for carrying out scheduled PM jobs. It is always advisable to carry out some portion of work on weekly PM days to avoid stoppage of production. Such assessment is to be done during progressive execution of the project.
- For shut down required for more than one day may not be possible by hampering Plant Production. In such case, a micro planning for activities for such shut down shall be worked out by the contractor after discussion with Nalco personnel minimum 15 days prior to proposed shutdown. Adequate number of personnel, tools, tackles and other resources are to be organized by the contractor during the shutdown period to minimize the shutdown hours.
- ccc) Performance Guarantee test shall be carried out after successful completion of stabilization period as per laid down procedure. In case of the performance guarantee parameters are not achieved, the vendor shall repair/ rectify/ replace the equipment and demonstrate full compliance to these performance guarantee parameters, within mutually agreed time schedule limited to maximum of 3 months from PG test and


नालको  NALCO SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	100 of 103



PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	101 of 103


without any cost implication to NALCO. The vendor will get maximum of three chances to comply with performance guarantee parameters. If the vendor fails to demonstrate the PG parameters, the system supplied by the vendor shall be rejected and shall be governed by the relevant contract clauses along with encashment of CPBG.

- ddd) The visit of any specialist and other engineers for erection, commissioning stabilization & PG Test shall be an integral part of the contract. No additional remuneration or charges shall be admissible
- eee) Appropriate provision of access points like walkway, staircase, ladders etc. for operational and maintenance convenience are to be suitably incorporated in the detailed engineering.
- fff) Punch Points : From the date of commencement of erection till the completion of P.G. test, Nalco personnel might have observed some punch points in the system from operation and maintenance point of view. These punch points shall be issued to the vendor/contractor from time to time. The vendor/ contractor shall comply to mutually agreed punch points within a reasonable time on discussion with Nalco personnel and close them before final handing over.
- ggg) All correspondence, submission of Bills, Data sheet, documents shall be marked to the designated the Manager-in-charge or his/her authorized representative Compliance to statutory & regulatory requirements during consecution and erection shall be in the scope of EPC contractor.
- hhh) In the event of non-availability of data or information related to the project, the contractor has to collect actual data from site. Nalco will facilitate providing data depending upon the availability at Nalco's archives or site. If the required data/drawing is not available with Nalco, it is the responsibility of the contractor to prepare/obtain the same at their own cost. E.g. if the layout drawing of the shop is not available, the same is to be prepared by the contractor lifting the dimensions from site. Soil testing, if required for completing detailed engineering of the project, shall be in the scope of the contractor.
- iii) The contractor shall specify the manner for movement/ storage of construction material for so that normal operating plant is not affected.
- jjj) Provision of customer support training where ever required has to be reflected while preparation of detailed engineering. Training requirements such as schedule, programme content and other relevant information has to be brought out as soon as the commissioning of the plant is over.

	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	101 of 103

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	102 of 103

- kkk) Unless and otherwise specified, equipment/ system design shall be based on latest energy saving practices at the time of bidding and compatible to National and International Standard.
- III) The specification & description in this document are provided as a broad guideline for the bidders. However, the bidder has to quote as per his design, engineering & specification satisfying the said guidelines with an aim to achieve full functionality as per acceptance criteria.
- mmm) The site mobilization and work at site should start as per the time line mentioned approved Project schedule.
- nnn) NALCO General Condition of Contract (GCC) shall form a part of this contract. However, the clauses specified in SCC shall supersede those specified in the general conditions of contract.
- ooo) Notwithstanding anything herein provided and notwithstanding the transference of all risks in respect of the materials to the CONTRACTOR, the ownership in respect of the material shall at all times be and remain with NALCO. An inventory shall be made by the CONTRACTOR of all surplus construction materials and empties including but not limited to scrap, wastages and unserviceable material supplied and/or remaining in the hands of the CONTRACTOR upon completion of the contract for whatsoever reason, and the CONTRACTOR shall forthwith, upon being required to do so, place the NALCO in undisputed possession of and transport the said material to NALCO's stores or otherwise as reasonably directed by the Manager-in-charge or his/her authorised representative.

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DOC.PAGE
	Specification of Pipe Cleaning Machine	NAL-SMLT-CRG-PROJ-23-24-028	01	102 of 103


441973/2024/S

PROJECT TITLE	OVERALL PAGE
TECHNICAL SPECIFICATION FOR PIPE CLEANING MACHINE IN OLD LPC SHOP, POT LINE, SMELTER PLANT(NALCO)	103 of 103

## 21. TENDER DRAWINGS:

Sl. No	Drawing Title	Drawing No	Rev
1	Proposed Lay out For New Pipe Cleaning Machine in Old LPC Shop, Pot Line	PL/MECH/LAY/A2/11490	2
2	Tapping Spout Intermediate Tube and End Tube For Tapping Ladle, Pot Line	PL/PRJ/SPR/A1/11622	0




Signature Not Verified

 <b>नालको NALCO</b> SMELTER DIVISION	DOCUMENT TITLE	DOCUMENT	REVISION	DATE	DOC PAGE	AR JHA
	Specification of Pipe Cleaning Machine	NAL-SMLT-CR		2024.06.05 17:46:24 IST	103 of 103	

Date: 2024.06.05 17:46:24 IST  
Location: eProcure-EPROC



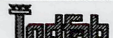




1.  EXISTING LADLE MELTING MACHINE , WEIGHING MACHINE CCM-1 & 2 , JIB CRANE & OTHER EQUIPMENTS.
1.  PROPOSED AREA FOR PIPE CLEANING MACHINE WITH PROPOSED HOPPER, DEDUSTING FAN & CHIMNEY.
2.  PROPOSED AREA FOR MCC/VD/HPP ROOM

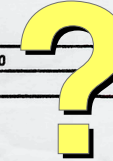
**NOTE:-**

- ALL DIMENSIONS ARE IN mm ONLY.



				2		07.04.23	DRAWING REVISED AS MARKED			SK PRADHAN		A. SAHOO		P. RAJA		B. ARYA					
				1		21.07.22	DRAWING REVISED AS MARKED			S. MISHRA		A. SAHOO		M.R. DAS		B. ARYA					
		REV. NO.		DATE		REVISION NOTE			BY.		CHD.		VFD.		APPD.						
APPD.	B. ARYA	20.10.21		PREPARED BY :-  FCI ROAD, NALCO NAGAR, ANGUL (ORISSA)			Drg. Code:		1	0	1	5	1	0	3	6	0	2	2		
VFD.	M.R. DAS	16.10.21		DRN.				S. MISHRA				NATIONAL ALUMINIUM CO LTD. SMELTER PLANT, ANGUL-759145									
CKD.	A. SAHOO	16.10.21		CKD.				A. MARANDI		TITLE:-		PROPOSED LAYOUT FOR NEW PIPE CLEANING MACHINE IN OLD LPC SHOP.									
				SCALE - AS SHOWN				DRG. No.		PL/MECH/LAY/A2/11490										REVISION 1/2	







*GENERAL CONDITIONS OF CONTRACT*

ANNEXURE-XXI


# GENERAL CONDITIONS OF CONTRACT

**NATIONAL ALUMINIUM COMPANY LIMITED  
NALCO BHAWAN, P-1 NAYAPALLI,  
BHUBANESWAR – 751 013**

Web site: [nalcoindia.com](http://nalcoindia.com)


## INDEX

Sl.No	Title	Page No.
1.	<b>Definitions and Interpretation (Section-I)</b>	
1.1	Definitions	
2.	<b>Facilities to Contractor (Section-II)</b>	
2.1	Location of Site climatic conditions and Access by Road	
2.1.1	Location of Site	
2.1.2	Access by Road	
2.2	Water Supply	
2.3	Power Supply	
2.4	Land for Contractor's field office, godown and workshop	
2.5	Land and Residential Accommodation	
	<b>General Instructions to Tenderers (Section-III)</b>	
3.	<b>Submission of Tender:</b>	
4.	<b>Documents:</b>	
4.1.2	Details to be submitted along with the tender	
4.2	All pages to be initiated	
4.3	Rates to be in figures and words	
4.4	Corrections and Erasures	
4.5	Signature of Tenderer	
4.6	Witness	
5	Transfer of Tender Documents	
6	Earnest Money	
7	Validity	
8	Addends/ Corrigenda	
9	Right of Owner to accept or reject Tender	
10	Time Schedule	
11	Collection of data Tenderer's responsibility	
12	Retired Government or Company Officers	
13	Signing of the Contract	
14	Field Management and Controlling Authority	
15	Note to schedule of Rates	
	<b>General Obligations (Section-IV)</b>	
16	Interpretation of contract documents	
17	Special Conditions of Contract	
18	Tenderer to obtain his own information	
19	Security Deposit	
20	Forfeiture of Security Deposit	
21.	Time of Performance	
22.	Extension of Time	
23.	Force Majeure	
24.	Compensation for delay.	
25.	Failure by the contractor to comply with the provisions of the contract.	


	GENERAL CONDITIONS OF CONTRACT
---	--------------------------------

26.	Contractor remains liable to pay compensation if action not taken under Clause 25.	
27.	No Compensation for alteration in or restriction of work.	
28.	Change in Constitution	
29.	Termination of Contract for death	
30.	Members of the Owner not individually liable	
31.	Owner not bound by personal representations	
32.	Contractor's Office at Site	
33.	Contractor's subordinate staff and their conduct	
34.	Sub-letting of work	
34.1	General	
34.2	Sub-Contracting of works	
34.3	List of sub-contracted works to be supplied	
34.4	Contractor's liability not limited by sub-contractors	
34.5	Owner may terminate sub-contracts	
34.6	No remedy for action taken under this clause	
35.	Power of Entry	
36.	Contractor's responsibility with other agencies	
37.	Other agencies at site	
38.	Serving of Notices	
38.1	To the Contractor	
38.2	To the Owner	
39	Rights of various interests	
40	Patents, Royalties, Rent and excavated material	
41.	Liens	
41.1	General	
41.2	Nothing extra for adverse sub-soil conditions	
41.3	Slip and Falls in excavation	
41.4	No compensation in case of change on location of site	
	<b>Performance of Work (Section V)</b>	
42.	Execution of Works	
43.	Coordination and inspection of works	
44.	Work on monsoon and dewatering	
45.	Work on Sundays and Holidays	
46.	General Conditions of Construction and Erection Work	
47.	Drawing to be supplied by the Owner	
48.	Drawings to be supplied by the Contractor	
49.	Setting out works	
50.	Responsibility for Level and Alignment	
50.1	General	
50.2.	Lighting, Watch and Ward	
51.	Materials to be supplied by Contractor	
52.	Stores supplied by the Owner	
53	Conditions for issue of materials	
54.	Return of Surplus	




	GENERAL CONDITIONS OF CONTRACT
---	--------------------------------

55.	Materials obtained from dismantling	
56.	Articles of value found	
57.	Inspection of works	
58.	Assistance to the Engineer	
59.	Discrepancies between Instructions	
60.	Alterations in specifications & designs and extra works	
61.	Action where no specification is issued	
62.	Abnormal Rates	
63.	Test for quality of Works	
64.	Samples	
65.	Liabilities for defect imperfections etc and rectification's thereof	
66.	Suspension of works	
67.	Possession prior to completion	
68.	Twelve months period of liability form the date of issue fo completion certificate	
68.1	Guarantee	
68.2	Suggestions to fulfill the guarantees	
68.3	Care of works	
68.4	Defects prior to taking over	
68.5	Defects after taking over	
68.6	Guarantee/ Transfer of Guarantee	
	<b>Certificate and Payments (Section-VI)</b>	
69.	Schedule of Rates and Payments.	
69.1	Contractor's Remuneration.	
69.2	Schedule of Rates to be inclusive.	
69.3	Schedule of Rates to cover constructional plant, materials, labour etc.	
69.4	Schedule of Rates to cover royalties, rents and claims	
69.5	Schedule of Rates to cover taxes and duties.	
69.6	Schedule of Rates to cover risks of delays.	
69.7	Schedule of Rates can not be altered.	
70.	Procedure for measurement/ billing of work in progress.	
70.1	Measurements.	
70.2	Billing.	
70.3	Secured Advance on materials.	
70.4	Dispute in mode of measurement.	
70.5	Rounding of Amounts	
71.	Lumpsum in Tender	
72.	Running Account payment to be regarded as advances	
73.	Notice of claims for additional payment	
74.	Payment of Contractor's Bill	
75.	Receipt for payment.	
76.	Completion Certificate.	
76.1	Application for completion certificate.	
76.2	Completion Certificate.	

	GENERAL CONDITIONS OF CONTRACT
---	--------------------------------

76.3	Completion Documents.	
77.	Final Decision and final Certificate.	
78.	Certificate and payments no evidence of completion.	
	<b>Taxes and Insurance (Section –VII)</b>	
79.	Taxes, duties, octroi etc.	
80.	Insurance	
80.1	Employees State Insurance act.	
80.2	Workmen compensation and employer's liability insurance	
80.3	Any other insurance required under law or regulations or by Owner	
80.4	Accident or Injury to workmen	
80.5	Transit Insurance	
81.	Damage to property or to any person or any third party	
82.	Demurrage dues.	
	<b>Labour Laws and Arbitration (Section – VIII)</b>	
83.	Labour laws.	
84.	Implementation of Apprentices Act 1961.	
85.	Contractor to Indemnify the Owner	
86.	Health and sanitary arrangements for workers	
87.	Arbitration	
88	Jurisdiction/ Governing Laws	
	<b>Safety Code (Section-IX).</b>	
89.	General	
90.	Safety Regulations	
91.	First Aid and Industrial Injuries	
92.	General Rules.	
93.	Contractor's Barricades.	
94.	Scaffolding.	
95.	Excavation and Trenching.	
96.	General Safety	
97.	Care in handling Inflammable gas.	
98.	Temporary combustible Structures.	
99.	Precautions against fire.	
100.	Explosives.	
101.	Mines Act.	
102.	Preservation of peace.	
103.	Out Break of infectious diseases.	
104.	Treatment of Contractor's Staff in Owner's Hospital	
105.	Use of intoxicants.	
	<b>Proforma (Section-X)</b>	
A.	Proforma of Bank Guarantee.	
B.	Proforma of Agreement	
C.	Security Deposit Guarantee Bond	
	<b>Proposal forms - (Appendixes)</b>	-

<b>नालको</b>  <b>NALCO</b>	<i>GENERAL CONDITIONS OF CONTRACT</i>
---	---------------------------------------

IA.	Details of works of similar nature and magnitude carried out during the last 5 years.	
IB.	Concurred commitments of the tenderer	
II	Details of equipment, tools tackle.	
III.	Details of Minimum manpower proposed to be deployed on this work.	
IV.	Organisation Chart showing no. of qualified engineers and supervision)	
V.	List of proposed sub-contractors.	
VI.	Progress Billings.	
VII.	Information about Tenderers (Form H)	
VIII	List of enclosures (Form-I)	
IX.	Exceptions and Deviations (Form –J)	



## SECTION – 1

### DEFINITIONS AND INTERPRETATION

#### 1. DEFINITION & INTERPRETATION:

##### 1.1 Definition:

In the contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires.

- 1.1.1 The ‘Owner’ shall mean the National Aluminium Company Limited (NALCO), a Company incorporated under the Companies Act, 1956 having its registered office at IDCO Tower, 8<sup>th</sup> Floor, Janapath, Bhubaneswar –751007 or any other place as modified subsequently and shall include its Chairman-cum-Managing Director or other Administrative Officers authorised to deal with these presents are concerned on his behalf posted in the any of the Offices of NALCO and shall also include Owner’s successors and assignees.

The Chairman-cum-Managing Director has nominated the following persons as the representative of the ‘Owner’ for the purpose of all contractual matters.

Smelter	-	General Manager (Smelter)	} Projects
CPP	-	General Manager (CPP)	
Mines	-	General Manager (Mines)	
Alumina	-	General Manager (Alumina)	

- 1.1.2 The ‘Tender’ shall mean the tender submitted by the tenderer for acceptance by the Owner.
- 1.1.3. The ‘Chairman-cum-Managing Director’ shall mean the Chairman-cum-Managing Director of National Aluminium Co. Ltd., or his successors in office as designated by the Owner.
- 1.1.4. The ‘Project Head’ shall mean General Manager/ Deputy General Manager of the Project of National Aluminium Company Ltd., or his successor in office or his authorised representative.
- 1.1.5. The ‘Contractor’ shall mean the person or persons, firm or company whose tender has been accepted by owner and includes the contractor’s legal representatives, his successors and permitted assigns.
- 1.1.6. The ‘Sub-contractor’ shall mean any person or firm or company (other than the contractor to whom any part of the work has been entrusted by the contractor, with the written consent of the owner or his representative and the legal representatives, successors and permitted assignee of such person, firm or company.



- 1.1.7. The ‘Engineer-in-Charge’ shall mean the person nominated by the Owner from time to time and shall include those who are expressly authorised by the Owner to act for and on his behalf for all function pertaining to operation of this contract. All functions pertaining to the operation of contract means all acts necessary for execution of the contract coordinating between the different agencies and final closing of the contract.
- 1.1.8. The ‘Works’ shall mean and include all works to be executed in accordance with the contract or part thereof as the case may and shall include all extras, addition, altered or substituted works as required for the purpose of the contract or as may be required to be executed by the owner/ engineer-in-charge.
- 1.1.9. The ‘Contract’ shall mean the agreement between the Owner and the contractor for the execution of the works including therein all documents such as the invitation to tender, instructions to Tenders, General Conditions of Contract, Special Conditions of Contract, Job Specifications, General Requirements, Time Schedule of Completion of Job, Drawings, Letter of Intent awarding the work, Agreed variations, if any etc.
- 1.1.10. The ‘Contract Document’ shall mean collectively the tender documents, designs, drawings specifications, agreed variations, if any and other documents constituting the tender and acceptance thereof.
- 1.1.11. ‘Constitutional Plant’ shall mean all appliances or things of whatsoever nature required in or about the execution, completion or maintenance of the works or temporary works (as hereinafter defined) but does not include materials or other things intended to form or forming part of the permanent work.
- 1.1.12. ‘Temporary Works’ shall mean all temporary works of every kind required in or about the execution, completion or maintenance of the works.
- 1.1.13. ‘Specifications’ shall mean all directions, various technical specification, provisions, and requirements, attached to the contract, which pertain to the method and manner of performing the work or works to the quantities and qualities of the work or works and the materials to be furnished under the contract for the work or works as may be amplified or modified by the Owner or the Engineer-in-charge during the performance of Contract in order to provide the unforeseen conditions or in the best interests of the work or works. It shall also include the latest edition including all addenda/ corrigenda or relevant Indian Standard Specifications and other relevant codes.
- 1.1.14. ‘Plans’ shall mean all maps, sketches, and layouts as are incorporated in the contract in order to define broadly the scope and specifications of the work or works, and all reproductions thereof.



- 1.1.15. 'Drawings' shall include maps, plans and tracings or prints thereof with any modifications approved in writing by the Engineer-in-Charge and such other drawings as may, from time to time, be furnished or approved in writing by the Engineer-in-charge.
- 1.1.16. 'Foreign consultant' shall mean a person, agency or firm including their successors and assigns, who are nonresidents of India and are responsible for supply of process Technology for expansion plant based on review of existing plant including material flow, energy balance, additional facilities and improvement on the basis of the recent experience.
- 1.1.17. 'Indian Consultant' shall mean a person, agency or firm including their successors and assign who are responsible for detailed engineering and construction management of the project.
- 1.1.18. 'Project manager' shall mean the authorised representative of the consultant posted at site. He shall be responsible for supervision of the work by the contractors as well as coordinate with different agencies within the organisation or otherwise.
- 1.1.19. 'Site' shall mean the lands and other places on, under in or through which the permanent works are to be carried out and any other lands or places provided by the owner for the purpose of the contract.
- 1.1.20. 'Notice in writing or written Notice' shall mean a notice in written, typed or printed characters sent (unless delivered personally or other wise proved to have been received) by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received in the ordinary course of post it would have been delivered.
- 1.1.21. The 'Completion Certificate' shall mean the certificate to be issued by the owner or his representative when the works have been completed to his satisfaction.
- 1.1.22. The 'Final Certificate' in relation to the work shall mean the certificate regarding the satisfactory compliance of the various provisions of the contract to be issued by the owner or his representative after the period of liability is over.
- 1.1.23. 'Approved' shall mean approved in writing including subsequent written conformation of previous verbal approval and 'Approval' means approved in writing including as aforesaid.
- 1.1.24. The 'Period of Liability' in relation to a work means the specified period from the date of issue of completion certificate up to the date of issue of final certificate which the contractor stands responsible for rectifying all defects that may appear in the works.



- 1.1.25. The ‘Appointing Authority’ for the purpose of arbitration shall be the Chairman and managing Director or any other person so designated by him.
- 1.1.26. The ‘Alteration Variation Order’ means an order given in writing by the Engineer-in-Charge/ owner to effect additions to or deletions from or alteration in the works.
- 1.1.27. ‘Letter of Intent’ shall mean an intimation by a letter to tenderer that the tender has been accepted in accordance with the provisions contained in the letter.
- 1.1.28. ‘Days’ means a day of 24 hours from mid night irrespective of the number of hours worked in that day.
- 1.1.29. ‘Working Day’ mean any day which is not declared to be holiday or rest day by the Owner.
- 1.1.30. ‘Week’ means a period of any consecutive seven days.
- 1.1.31. ‘Metric System’: All technical documents regarding the construction of works are given in the metric system and all work in the project should be carried out accordingly to the metric system. All documents concerning the work shall also be maintained in the metric system.
- 1.1.32. ‘Value of Contract’ shall mean the sum accepted or the sum calculated in accordance with the prices accepted in tender and / or the contract rates as payable to the contractor for the entire execution and full completion of the work.
- 1.1.33. ‘Headings and Marginal Notes’ in these contract documents are given solely for facility of reference and are not part of the contract documents and are not to be taken into account in the interpretation of the provisions of the contract.
- 1.1.34. ‘Language for Drawings & Instruction’: All the drawings, titles, notes, instruction, dimensions etc. shall be in English Language.
- 1.1.35. ‘Singular and Plural’: The singular shall include the plural and vice versa wherever the context so requires.





## SECTION - II

### 2. FACILITIES TO CONTRACTOR

#### 2.1 Location of Sites and Access by Road:

##### 2.1.1 Locations of Sites:

The general information about Mines Alumina, Aluminium Smelter and Captive power Plants furnished below is of indicative nature only and shall not be considered as binding in any way on the Owner and shall not govern either the scope of work or the nature of the respective rights and the obligations of the parties to such contract.

##### (a) Alumina Plant and Mines:

Alumina plant is on south-western side of the Panchpatmali hill near Damanjodi village in Koraput District, Orissa State. The site is situated at 12 Km from the national highway No. 43 off Semiliguda village. The Alumina Plant Site has the form of saddle between groups of low hills. The location of Red Mud Pond is in the natural basis of hills situated at a distance of 2 Km from the western side of the plant. The Bauxite mine is located at 14 Km away from the Alumina Plant Site.

##### (b) Smelter Plant:

Aluminium Smelter is on the Southern side of National Highway No. 42, with its approximate latitude and longitude as 20°51'N and 85°10'E respectively. The area, at a higher elevation in comparison with adjacent land, is not subjected to either normal or flash foods. The prevalent directions of wind are from North-West and West.

##### (c) Captive Power Plant:

Captive Power Plant is located at Angul, District Angul, Orissa on the south of Talcher Thermal Power Station of Orissa State Electricity Board the main plant site is about 3 Km on the north of the junction of the National Highway Nos. 42 and 23, between the villages Balaram Prasad Patna and Gotamara. The access roads to the main plant site may be taken from either of the highways.

##### 2.1.2. Access by Road:

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

Non-availability of access roads, railway siding and railway wagons for the use of contractor shall in no case condone any delay in the execution of works not be the cause for any claim for compensation against the Owner.



## 2.2 Water Supply:

2.2.1. Unless other wise provided in the Contract, the Contractor shall be responsible for the arrangements to obtain supply of water necessary for the works, his labour colony, his workshops, his offices etc. All pumping installations, pipe network and distribution system will have to be carried out by the Contractor at his own cost.

2.2.2. The Owner may agree to supply water to the Contractor for use in the Owner's works on specified terms and conditions as shall be determined by the Owner, which shall be binding on the Contractors. The tenderer is however required to exercise his option to receive such water supply from Owner's main at the time of submission of his tender.

2.2.3. When the water is supplied by the Owner, the Owner's main will be within 500 metres form the site of work. The Contractor shall provide at his own cost, all necessary ferrules, pipes, fitting, couplings and tanks and temporary works required and he shall maintain all such works in satisfactory condition. The Contractor shall remove all such works and shall re-instate and make good any work disturbed, to the satisfaction of the Engineer-in-Charge.

2.2.4. In the event of the Contractor's drawing water from the Owner's main/ source, he shall not claim any compensation for interruption or failure of Owner's water supply caused due to any reasons beyond the control of the owner.

2.2.5. The water so supplied by the Owner shall be free of cost for the Constructional work only.

## 2.3 Power Supply:

2.3.1 Subject to availability, Owner will supply power at 400/440 V at only one point at the nearest substation, from where the contractor will make his own arrangement for temporary distribution. The point of supply will not be more than 500 Metres away from the Contractor's premises. All the works will be done as per IEA regulations and passed by the Engineer-in-Charge. The temporary line will be removed forthwith after the completion of work or if there is any hindrance caused to the other works due to the alignment of these lines, the contractor will re-route or remove the temporary lines at his own cost. The Contractor at his cost will also provide suitable electric metres, fuses, switches, etc. for purposes of payment to the Owner which should be in the custody and control of the Owner. The cost of power supply shall be payable to the owner every month. Rs. 1/- per kWh for power, which will be deducted from the running bills. The owner shall not, however, guarantee the supply of electricity and no compensation for any failure or short supply of electricity will be entertained and this does not relieve the contractor of his



responsibility for timely completion of this works as stipulated in the contract.

- 2.3.2 It shall be the responsibility of the contractor to provide and maintain the complete installation of the load side of the supply with due regard to safety requirement at site. All cabling, equipment, installations etc. shall comply in all respects with the latest statutory requirements and safety provisions i.e. as per and the Central/ State Electricity Acts and Rules etc. The Contractor will ensure that his equipment and Electrical wiring etc. are installed modified, maintained by a licensed Electrician/ Supervisor. A test certificate is to be produced to the Engineer-in-Charge for his approval, before power is made available.
- 2.3.3 At all times, IEA regulations shall be followed failing which the Owner has a right to disconnect the power supply without any reference to the contractor. No claim shall be entertained for such disconnection by the Engineer-in-Charge. Power supply will be reconnected only after production of fresh certificate from authorised electrical supervisors.
- 2.3.4 The Owner is not liable for any loss or damage to the Contractor's equipment as a result of variation in voltage or frequency or interruption in power supply or other loss to the Contractor arising there from.
- 2.3.5 The Contractor shall ensure that the Electrical equipment installed by him are such that average power factor does not fall below 0.90 at his premises. In case power factor falls below 0.90 in any month, he will reimburse to the Owner at the penal rate determined by the Owner for all units consumed during the month.
- 2.3.6 The Power supply required for Contractor's colony near the plant site will be determined by the Owner and shall as per state Electricity Board's Rules and other Statutory provisions applicable for such installations from time to time. In case of power supply to Contractor's colony, the power will be made available at a single point and the Contractor shall make his own arrangement at his own cost for distribution to the occupants of the colony as per Electricity Rules & Acts. The site area and colony shall be sufficiently illuminated to avoid accidents.
- 2.3.7 The Contractor will have to provide and install his own light and power meters, which will be governed as per Central/ State Government Electricity Rules. The meters shall be sealed by the Owner.
- 2.3.8 In case of damage to any of the Owner's equipment on account of fault, intentional or unintentional on the part of the Contractor the Owner reserves the right to recover the cost of such damage from the contractor's bill. Cost of HRC Fuses replaced at the Owner's terminals due to any fault



in the Contractor's installation shall be to contractor's account at the rates decided by the Engineer-in-Charge.

- 2.3.9 Only motors upto 3 HP will be allowed to be started direct on line. For motors above 3 HP and up to 100 HP a suitable starting devices approved by the Engineer-in-Charge shall be provided by the Contractor For Motor s above 100 HP slipping induction motors will suitable starting devices as approved by the Engineer-in-Charge shall be provided by the Contractor.
- 2.3.10 The Contractor shall ensure at his cost that all electric lines and equipment and all installations are approved by the State Electricity Inspector before power can be supplied by the Owner.
- 2.3.11 The total requirement of power shall be indicated by the tenderer along with his tender.

#### **2.4. Land for Contractor's Filed Office, Godown and Workshop :**

- 2.4.1. The Owner will at his discretion and convenience and for the duration of the execution of the work may provide the land for construction of Contractor's field office, godown, workshops and assembly yard required for the execution of the contract nearer to the site.

The Contractor shall at his cost construct all these temporary buildings structures and provide suitable water supply and sanitary arrangement as approved by the Engineer-in-Charge and other inspectorates.

- 2.4.2. On completion of the works undertaken by the Contractor, he shall remove all temporary works erected by him and have the site cleared as directed by Engineer-in-Charge. If the Contractor fails to comply with these requirements, the Engineer-in-Charge has the right to remove any structure, such surplus, rubbish materials and depose off the same as he deems fit and get the site cleared and the contractor shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such surplus materials disposed as aforesaid. The Owner reserves the right to ask the Contractor at any time during the pendancy of the contract, to vacate the land by giving 7 (seven) days notice on security reasons or on national interest or otherwise. A token rent of Rs. 100/- (Rupees One hundred only) per hectare or part thereof per annum or part thereof shall be charged for the land so made available.

Land provided shall be solely on licence basis which is terminable by at any time without notice or without assigning any reasons. In the event of any such termination or the termination of the contract/completion thereof, the contractor shall forthwith vacate the premises.

**2.5. Land for Residential Accommodation:**

Land for residential accommodation for staff and labour may be made available at the discretion of the Engineer-in-Charge and rent for the same will be as decided by the Engineer-in-Charge according to location and the area occupied by the Contractor.



## SECTION - III

### GENERAL INSTRUCTIONS TO TENDERERS

#### 3. SUBMISSION OF TENDER:

3.1. The documents issued to the tenderers shall be as follows:

- (i) One complete set of tender documents as per index sheet and drawings marked 'ORIGINAL' (To be submitted along-with the quotation).
- (ii) One complete set of tender documents as per index sheet marked 'TENDERER'S COPY' (To be retained by the tenderer for reference).

3.1.1. The tender documents shall be in 2 parts viz. Technical Bid and Price Bid. Technical and Price Bid should be put in separate sealed cover and marked with the tender reference and name of the work. In addition, a note on the Price Bid "Quotation do not open" is to be superscribed. Both the sealed covers are to be put in a single sealed cover. The name of the work the tender reference and date of opening are to be superscribed on this sealed envelope also.

The technical Bid shall be opened in the first instance. Clarifications, confirmations, if any, shall be obtained with regard to technical specifications. After technical specifications are firmed up, if a tenderer revises his price bid, he is required to submit justification in support of the revision made. The price bid shall be opened thereafter.

3.2. If Addenda/ Corrigenda are issued to this tender document, they must be signed, submitted along-with the tender documents. The tenderer should write clearly the revised quantities in schedule of Rates of Tender Document and should price the work based on revised quantities when amendments on quantities are issued in addenda.

3.3. Tenderers are advised to submit quotations based strictly on the terms and conditions and specifications contained in the tender documents and not stipulate any deviations. Should it however become unavoidable, deviations should be stipulated in the prescribed proforma only, contained in the proposal form. Owner reserves the right to evaluate the quotations containing deviations having financial implications, by adding the cost for such deviations are determined by Owner.

3.4. Tenders should be submitted in double sealed envelope with the name of work superscribed thereon and with the note "QUOTATION DO NOT OPEN" written prominently. The full name, postal address and telegraphic address of the tenderer shall be written on the bottom left hand corner of the sealed cover.

#### 4.0. DOCUMENTS:



4.1.1 Bidders shall submit with his bids the particular/ documents as envisaged from Appendix (i) to (x) along with tentative construction net work/ Bar chart for completion of work taking into account various intermediate completion milestones/ component milestones and the overall completion of work under the contract.

4.1.2. Details to be submitted along with tender:

The tenders, as submitted will consist of the following:

The technical Bid and Price Bid shall be submitted as stated in para 3.1.1 Documents to be attached with price bid.

- (i) Complete set of the tender document (marked ORIGINAL) as issued duly filled in by the tenderer as prescribed in different clauses of the tender document, signed and date affixed.

Documents to be attached with Technical Bid.

- (ii) Earnest money in the manner specified in Clause 6 hereof.
- (iii) The following proposal forms in FIVE copies
  - (a) Details of works of similar nature and magnitude carried out during last 5 years as per the Appendix – 1(A)
  - (b) Concurrent commitments of the tenderer as per the Appendix – 1(B).
  - (c) Details of equipments, tools and tackles proposed to be deployed for this work as per the Appendix – (II).
  - (d) Details of manpower proposed to be deployed for this work as per the Appendix – (III), indicating the qualification.
  - (e) Site organisation chart showing number of qualified engineers and supervisors etc. indicating their bio-data as per the Appendix – (IV), indicating the qualification.
  - (f) List of proposed sub-contractors to be deployed as per the Appendix – (V).
  - (g) Progress Billing as per the Appendix – (VI).
  - (h) Information about tenderers as per the Appendix – (VII).
  - (i) List of enclosures as per the Appendix – (VIII).
    - a) Power of attorney
    - b) Income tax & Sales tax clearance certificate.
    - c) Solvency certificate from nationalised Bank
    - d) Documents showing annual turnover.
  - (j) Exception and deviation which tenderer may desire to stipulate as per Appendix – (IX).

**4.2 All pages to be initialled:**





All signatures in tender documents shall be dated, as well as the pages of all sections of tender documents shall be initialled at the lower right hand corner or signed wherever required in the tender papers by the tenderer or by a person holding power of attorney authorising him to sign on behalf of the tenderer before submission of tender.

#### 4.3. Rates to be in Figures and Words:

The tenderer shall quote in English, in figures and in words for the rates and amount tendered by him in the Schedule of Rates forming part of the documents, in such a way that interpolation is not possible. The amount of each item shall be worked out and entered and requisite total given of all items. The tendered amount for the work shall be entered in the tender and duly signed by the tenderer.

If some discrepancies are found between the rates given in works and figures or the amount shown in the tender, the following procedure shall be followed:-

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

#### 4.4. Corrections and Erasures:

All corrections and alterations in the entries of tender papers shall be signed in full by the tenderer with date. No erasures or over writings are permissible.

#### 4.5. Signature of Tenderer:

- 4.5.1. The tender shall contain the name, residence and place of business of person or persons making the tender and shall be signed by the tenderer with his usual signature. Partnership firms shall furnish the full names of the partners in the tender. It should be signed in the partnership's name by all the partners or by duly authorised representative followed by the name and designation of the person signing. Tender by a corporation shall be signed by an authorised representative and a power of attorney on the behalf shall accompany the tender. A copy of constitution of the firm with names of all partners shall be furnished.
- 4.5.2. When the tenderer signs a tender in a language other than English, the total amount tendered should in addition be written in the same language. The signature should be attested by at least one witness.



**4.6 Witness:** Witness and sureties shall be persons of status and property. Their name occupation and address shall be stated below their signature.

**5. TRANSFER OF TENDER DOCUMENTS:**

Transfer of tender document purchased by one intending tenderer to another is not permissible.

**6. EARNEST MONEY:**

6.1. The tenderer must pay earnest money as given in the Letter/ Notice Inviting Tenders. Tenders not accompanied with earnest money deposit will be rejected. The earnest money can be paid in cash or by crossed demand draft or fixed deposit or Bank Guarantee from any Nationalised/ Scheduled Bank or Insurance Guarantee in the prescribed proforma as indicated in the tender document in favour of National Aluminium Company Ltd.

6.2. The Bank Guarantee so furnished by the tenderer shall be only in the proforma prescribed by the Owner and valid for six months from the date of opening of the tender. No interest shall be paid by the Owner on the Earnest Money deposited by the tenderer.

7. **VALIDITY:** Tender submitted by tenderers shall remain valid for acceptance for a period of four months from the date of opening of the tender. The tenderers shall not be entitled during the said period of four months, without the consent in writing of the Owner, to revoke or cancel his tender or to vary the tender given or any term thereof. In case of tenderer revoking or canceling his tender or varying any terms in regard thereof without the consent of a Owner in writing, the earnest money paid by him along-with the tender shall be forfeited.

**8. ADDENDA/ CORRIGENDA:**

8.1. Addenda/ Corrigenda to the tender documents may be issued prior to the date of opening of the tenders to clarify documents or to reflect modification in the design or contract terms.

8.2. The Addenda/ Corrigenda will be issued in duplicate to each person or organisation to whom a set of tender documents has been issued. Each recipient should acknowledge the receipt of the same and attach one copy of the addenda/ corrigenda along-with his offer. All addenda/ corrigenda issued shall become part of Tender Documents.

**9. RIGHT OF OWNER TO ACCEPT OR REJECT TENDER:**

9.1. The right to accept the tender will rest with the Owner. The Owner further does not bind himself to accept the lowest tender and reserves the authority to reject any or all the tenders received without assigning any reason whatsoever. The whole work may be split up between two or more contractors or accepted in part (not entirely) if considered expedient. The quoted rates would hold good for such eventualities. Tenders in which any of the particulars and prescribed information are missing or incomplete in any respect and / or the prescribed conditions are not



fulfilled are liable to be rejected. The decision for the owner in respect of the above shall be final and binding on the contractor.

9.2. Canvassing in connection with tenders is strictly prohibited. The submitted tenders of the tenderers who resort to canvassing are liable to rejection. Tenders containing uncalled remarks or any additional conditions are liable to be rejected.

#### **10. THE SCHEDULE:**

10.1. The work shall be executed strictly as per the Time Schedule given in Appendix –1. The period of construction given in time Schedule includes the time required for mobilisation as well as testing, rectification if any, re-testing and completion in all respects to entire satisfaction of the Engineer-in-Charge.

10.2. A joint programme of execution of the work will be prepared by the Engineer-in-Charge and contractor based on priority requirement of this project. This programme will take into account the time of completion mentioned in 19.1 above and the time allowed for the priority works by the Engineer-in-Charge.

10.3. Monthly/ weekly construction programme will be drawn up by the Engineer-in-Charge jointly with the Contractor, based on availability of work fronts and the joint construction programme as per 10.2 above. The contractor shall scrupulously adhere to these targets/ programs by deploying adequate personnel construction tools and tackles and he shall also supply himself materials of his scope of supply in good time to achieve the targets/ programmes. In all matters concerning the extents of targets set out in the weekly and monthly programmes and the degree of achievement, the decision of the Engineer-in-Charge will be final and binding on the contractor.

#### **10.4. CONSTRUCTION SCHEDULE AND PRESENTATION:**

The construction schedule shall be in the form of network of PERT CHART/ CPM or other suitable presentation for the programme of the work indicating therein the different components item of works and time required for completion of each components item wise/ month wise season wise so as to complete the work in all respects within the stipulated period. Before award of the work the contractor is also required to make the presentation to satisfy owner of their proposal for construction schedule in the form of BAR CHART and organizational resources, equipments, machinaries, manpower to be deployed for timely completion of the project.

#### **11. TENDERER'S RESPONSIBILITY:**

The intending tenderers shall be deemed to have visited the site and familiarised themselves thoroughly with the site conditions before submitting the tender. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the works in strict conformity with the drawings and specifications.

#### **12. RETIRED GOVERNMENT OR COMPANY OFFICERS:**



No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering department of the State/ Central Government or of the owner is allowed to work as a contractor for a period of two years after his retirement from Government service or from the employment of the Owner without the previous permission of the Owner. The contract if awarded, is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person, who had not obtained permission of the owner as aforesaid before submission of tender or engagement in the contractor's service as the case may be.

**13. SIGNING OF THE CONTRACT:**

The successful tenderer shall be required to execute an agreement with the Owner in the proforma attached with tender document within 10 days of the receipt by him of the notification of acceptance of the tender. In the event of failure on the part of the successful tenderer to sign the agreement within the above stipulated period, the earnest money or his initial security deposit will be forfeited and the acceptance of the tender shall be considered as cancelled. No bills shall be payable unless the agreement is executed.

**14. FIELD MANAGERMENTS AND CONTROLLING AUTHORITY:**

14.1 The field management will be responsibility of the Project Manager posted at site by the consultant and nominated by the owner. The Project manager shall work in accordance with the directions given to him from time to time by the project head.

14.2. The Engineer-in-Charge shall only co-ordinate with the other agencies engaged to work at site, to ensure minimum disruption of work carried out by different agencies. It shall be the responsibility of the contractor to plan and execute the works strictly in accordance with site instructions and avoid hindrance to the works being executed by other agencies. The instructions of the Engineer-in-Charge shall be binding on the contractor.

**15. NOTE TO SCHEDULE OF RATES:**

15.1. The schedule of rates should be read in conjunction with all the other sections of the tender.

15.2. The tenderer shall be deemed to have studied the drawings, specifications and details of work to be done within time schedule and to have acquainted himself of the conditions prevailing at site.

15.3. Rates must be filled in the original tender document. If quoted in separate typed sheets, no variation in time description or specification shall be accepted. Any exceptions taken by the tenderer to the schedule of rates shall be brought out in the terms and conditions of offer.

15.4. The quantities shown against the various items are only approximate. Any increase or decrease in the quantities shall not form the basis of alternation of the rates quoted and accepted.

15.5. The owner reserves the right to interpolate the rates for such items of work falling between similar items of lower and higher magnitude.



## SECTION - IV GENERAL OBLIGATIONS

### 16. INTERPRETATION OF CONTRACT DOCUMENTS:

- 16.1. Complete documents forming the contract are to be taken as mutually explanatory. Should there be any discrepancy, inconsistency, error or omission in the contracts or any of them the matter may be referred to Engineer-in-Charge who shall give decisions and Issue to the contractor instructions directing in what manner the work is to be carried out. The decision of Engineer-in-Charge shall be final and conclusive and the contractor shall carry out work in accordance with this decision.
- 16.2. Works shown in the drawing but not mentioned in the specification or described in specification but not shown in the drawings shall nevertheless be deemed to be included in the same manner as if they had been specifically shown upon the drawings as well as described in the specifications.
- 16.3. Unless otherwise stated specifically, the 'singular' shall also mean 'plural' and vice versa wherever the context so requires words implying 'persons' shall include relevant 'corporate companies or registered association' or 'body of individuals' or 'firm of partnership' as case may be.

### 17. SPECIAL CONDITIONS OF CONTRACT:

- 17.1. Special Conditions of Contract shall be read in conjunction with the General Condition of Contract Specifications of work, drawing and any other documents forming part of this contract wherever the context so requires.
- 17.2. Notwithstanding the sub-divisions of the documents into the separate sections and volumes each part shall be deemed to be supplementary to complementary of every other part and shall be read with and into the contract so far as it may be practicable to do so.
- 17.3. In case of any discrepancy between various sections of the contract, the following order of preference shall be observed.
  - (1) Schedule of quantities
  - (2) Technical specifications
  - (3) Special Conditions of Contract
  - (4) General Conditions of Contract
- 17.4. Wherever it is mentioned in the specifications that the Contractor shall perform certain work or provide certain facilities it is understood that the Contractor shall do so at his cost.
- 17.5. The materials, design and workmanship shall satisfy the relevant Indian Standard, the job specifications contained herein and codes referred to.



Where the job specifications stipulate the requirements in addition to those contained in the standard codes and specification, these additional requirements shall also be satisfied.

**18. Tenderer to Obtain his Own Information:**

- 18.1. The tenderer shall for all purposes and whatsoever reason may be, deemed to have himself independently obtained all necessary information for the purpose of preparing his tender. The correctness of the details given in the Tender Document as guideline information to help the tenderer but to make-up the tender is not guaranteed.
- 18.2. The tenderer shall be deemed to have examined the tender documents, to have obtained his own information in all matters whatsoever that might influence carrying out of the works at the scheduled rates and satisfied himself to the sufficiency of his tender. Any error in description or quantity or omission therefrom shall not vitiate the contract or release the contractor from executing the work comprised in the contract according to drawings and specifications at the scheduled rates. He is deemed to know the scope, nature and magnitude of the works, the requirements of materials and labour involved etc. and as what works he has to complete in accordance with the contract document whatever be the defects, omissions or errors that may be found in the Contract Document. The contractor shall be deemed to have visited site and surroundings areas, to have satisfied himself to the nature of all existing structures, and also as to the nature and the conditions of available facilities like Railways, roadways, bridges culverts, means of transport and communications like by land, water or air and possible interruptions thereto the access to and egress from site and to have made enquiries, examined satisfied himself of the sites for obtaining sand, stones, bricks and other materials, the sites for disposal of surplus materials, the available accommodation like depots, buildings as may be necessary for executing and completing the works, to have made local independent enquiries as to the sub-soil water and variations thereof, storms, prevailing winds and climatic conditions and all other similar matters affecting the works. He is deemed to have acquainted himself his liability for payment of Government Taxes, Customs Duties and other charges.
- 18.3. Any neglect or failure on the part of the tenderer in obtaining necessary and reliable information or issues stated at 18.2 or any other matters affecting the contract shall not relieve him from any risks or liabilities or the entire responsibility for completion of the works at the scheduled rates and time in strict accordance with the contract documents.
- 18.4. Any change in layout due to site conditions or technological requirement shall be binding on the contractor and no extra claim on this account shall be entertained.





- 18.5. No verbal agreement or inference from conversation with any officer or employee of the Owner either before, during or after the execution of the contract agreement shall in any way affect or modify and of the terms or obligations herein contained.

**19. Security Deposit:**

- 19.1. A sum of 10% of the accepted value of the tender or actual value of the work done whichever is higher for contracts not exceeding Rs. 1 Crore, 7 1/2 % for the value of contracts over Rs. 1 up to Rs. 5 crores and 5% for the value of contracts over Rs. 5 crores shall have to be deposited by the person/ persons (hereinafter called as contractor) as security deposit with the owner until the expiry of defect liability period.
- 19.2. This may be deposited initially at 2 1/2% of the value of the contract (referred as initial Security deposit) within 20 days of receipt by him of the notification of acceptance of tender and the balance will be recovered in installments through the deduction @ 10% of the gross value of the each running account bill for the contract upto Rs. 1 crore, 7 1/2 % for contract between Rs. 1 to Rs.5 crores and 5% for contract over Rs. 5 crores, till total security deposit is collected. No further deduction from the bills will be made on this account subject to clause 19.6 below.
- 19.3. Alternatively the contractor may at his option to deposit the full amount percentage as mentioned 19.1 above towards deposit within 10 days of issue of notification accepting his tender. This amount will have to be suitably enhanced to the tune of above percentage of the executed value.
- 19.4. The earnest money deposited with the tender shall be adjusted towards security deposit.
- 19.5. Contractor can furnish the initial or total security deposit amount (a) in Demand Draft or (b) through a Bank Guarantee from any Scheduled bank in the prescribed proforma.
- 19.6. If contractor /sub-contractor or their employees damages, breaks, deface or destroy the property belonging to the owner or other during the execution of the contract, the same shall be made good by the contractor at his own expense and in default thereof; the Engineer-in-Charge may cause the same to be made good by other agencies and recover expenses from the contractor (for which the certificate of Engineer-in-Charge shall be final).
- 19.7. All compensation or other sums of money payable by the contractor to the Owner or recoveries to be made under terms of this contract may be deducted from or paid by the sale of a sufficient part of his security deposit or from any sums which may be due or may become due to the contractor by the Owner on any account whatsoever. In the event of his security being reduced by reasons of any such deduction or sale, the contractor shall within ten days





thereafter make good in cash, bank drafts, any sum or sums which may have fallen short or Security deposit amount or any part thereof. No interest shall be payable by the Owner for sum deposited as security deposit.

- 19.8. The security deposit will be refunded after the expiry of the period of liability as stipulated in the contract.

**20. Forfeiture of Security Deposit:**

Whenever any claim against the Contractor for the payment of a sum of money arises out of or under the contract, the Owner shall be entitled to recover such sum by appropriating in part or whole the security deposit of the contractor, and to sell any Government securities, etc. forming whole or part of such security deposit. In the event of security being insufficient or if no security has been taken from the contractor, then the balance or the total sum recoverable as the case may be, shall be deducted from any sum then due or which at any time thereafter may become due to the contractor. The contractor shall pay to the Owner on demand any balance remaining due.

In the event of any breach by the contractor or any loss or damage occasioned to the owner which in the opinion of the owner has arisen, the decision whereof shall be final and binding on the contractor or in the event of the termination of the contract for any such breach, the security deposit is liable to be forfeited. The decision of forfeiture by the Owner shall be final and binding on the contractor.

**21. Time of performance:**

The work covered by this contract shall be commenced within twenty one days after the issue of the letter of acceptance of tender and be completed in stages on or before the dates as mentioned in the time schedule of completion of works. The contractor should bear in mind that time is the essence of the contract, unless such time be extended pursuant to the provision of clause No.22 Request for Revision of Construction time after tenders are opened will not receive consideration. The above period of twenty one days is included within the overall completion schedule, not over and above the completion time.

**22. Extension of Time.**

- 22.0. The application for extension of time is to be given to project head through the engineer –in-charge and the project head may authorise extension of time after considering the due merits.

Whenever extension of time is granted by the project head, the same shall be on the existing terms and conditions of the contract and without any additional financial liability to the Owner. The contractor in any case shall have no claim whatsoever for any type of compensation on account of any delay attributable to any one.

**23. Force Majeure:**

- 23.1 Any delays in or failure of the performance of either parties thereto shall not constitute default hereunder or give rise to any claims for damages, if any, to the extent such delays or failure of performance caused by occurrences such as acts of God or the public enemy, expropriation or confiscation of facilities by Government authority, compliance with any order or request of any Governmental authorities, acts or war rebellion, sabotage, fire, floods, explosions riots or illegal strikes, provided always that such occurrences result in impossibility of performances of the contract.
- 23.2 Only events of Force Majeure which impedes the execution of the contract at the time of its occurrence shall be taken into cognizance.

**24. Compensation For Delay:**

- 24.1. Time is essence of the contract. In case the contractor fails to complete the work within the stipulated period, he shall be liable to pay to the Owner as compensation, an amount equal to 1% of the value of contract per week of the delay subject to a maximum of 10% of the value of the contract. This is a genuine pre-estimate of the loss/ damage which will be suffered on account of delay /breach on the part of the contractor and he agrees to pay the said amount on demand without going in for any proof of the actual loss or damages caused by such delay/ breach.
- 24.2. To ensure good progress during execution of work, the contractor shall be bound in all case in which the time allowed for any work exceeds by one month to complete one-fifth of the work before one-fourth of the time allowed under the contractor has elapsed, three-eighth of the work before the half of such time has elapsed and three-fourth of the work before three-fourth of such time has elapsed. In the event of the contractor failing to comply with this condition, he shall be liable to pay as compensation for delay an amount as stipulated above. The compensation for delay so paid shall not relieve the contractor from his obligations to complete the work or from any other obligations and liabilities under this contract.

**25. Failure by the Contractor to Comply with the Provisions of the Contract:**

- 25.1. If the contractor refuses or fails to execute the work or any separate part thereof with such diligence as will ensure its completion within the time specified in the contract or extension thereof or fails to perform any of his obligation under the Contract or in any manner commits a breach of any of the provisions of the contract it shall be open to the Owner at its option by written notice to the Contractor to: -
- (a) Determine the Contract: In which event the Contract shall stand terminated and shall cease to be in force and effect on and from the date appointed by the Owner on that behalf, whereupon the contractor shall stop forth with any of the contractor's work then in progress, except such work as the Owner may, in writing, requires to be done to safeguard any property or work, or



installations from damage, and the owner, for its part, may take over the work remaining unfinished by the Contractor and complete the same through fresh contractor or by other means, at the risk and cost of the Contractor, and any of his sureties if any, shall be liable to the owner for any excess cost occasioned by such work having to be so taken over and completed by the Owner over and above the cost at the rates specified in the schedule of quantities and rates.

- (b) Without determining the Contract: To take over the work of the contractor or any part thereof and complete the same through a fresh contractor or by other means at the risk and cost of the Contractor. The contractor and any of his sureties are liable to the Owner for any excess cost over and above the cost at the rates specified in the schedule of quantities/ rates, occasioned by such works having been taken over and completed by the Owner. Besides, the contractor shall also be liable for any compensation accruing under clause 24.
- (c) In other cases, the decision of the Owner is binding on the contractor.

25.2. In such events of clause 25.1 (a) or (b) above

- (a) The whole or part of the security deposit furnished by the Contractor is liable to be forfeited without prejudice to the right of the Owner to recover from the contractor the excess cost referred to in the sub-clause aforesaid, the Owner shall also have the right of taking possession and utilizing in completing the works or any part thereof, such of materials, equipment and plants available at work site belonging to the contractor as may be necessary and the Contractor shall not be entitled for any compensation for use or damage to such materials, equipment and plant.
- (b) The amount that may have become due to the Contractor on account of work already executed by him shall not be payable to him until after the expiry of six (6) calendar months reckoned from the date of termination of contract or from the taking over of the work or part thereof by the Owner as the case may be, during which period the responsibility for faulty materials or workmanship in respect of such work shall under the contract, rest exclusively with the contractor. This amount shall be subject to deduction of any amounts due from the Contractor to the Owner under the terms of the contract authorised or required to be reserved or retained by the Owner.

25.3. Before determining the contract as per clause 25.1 (a) or (b) provided in the judgement of the Owner, the default or defaults committed by the Contractor is/are curable and can be cured by the Contract if an opportunity given to him, then the Owner may issue notice in writing calling the Contractor to cure the default within such time specified in the notice.

25.4. The Owner shall also have the right to proceed or take action as per 25.1 (a) or Clause 25.1(b) above, in the event that the contractor becomes bankrupt, insolvent, compounds with his creditors, assigns the contract in favour of his



creditors or any other person or persons or being a company or a corporation goes into liquidation, provided that in the said events it shall not be necessary for the Owner to give any prior notice to the contractor.

- 25.5. Termination of the Contract as provided for in sub-Clause 25.1 (a) above shall not prejudice or affect their rights of the Owner which may have accrued upto the date of such termination.

**26. Contractor Remains Liable to Pay Compensation if Action Not Taken Under Clause 25.**

In any case in which any of the powers conferred upon the owner by clause 25 hereof shall have become exercisable and the same had not been exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any further case of default by the contractor for which by any clause or clauses hereof he is declared liable to pay compensation amount to the whole of his security deposit and the liability of the contractor for past and future compensation shall remain unaffected. In the event of the Owner putting in force the powers vested in him under the proceeding clause no. 25 he may if he do so desires, take possession of all or any tools and plants, materials and stores in or upon the works of the site thereof belonging to the contractor or procured by him and intended to be used for the execution of the work or any part thereof paying or allowing for the same in account at the contract rates or in case of these not being applicable at current market rates to be certified by the Engineer-in-Charge whose certificate thereof shall be final, otherwise the Engineer-in-Charge may give notice in writing to the contractor or his clerk of the works, foremen or other authorised agent, requiring him to remove such tools, plant, materials or stores from the premises (within a time to be specified in such notice), and in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expenses or sell them by auction or private sale on account of the contract and at his risk in all respects without any further notice as to the date, time or place of sale and the certificate of the Engineer-in-Charge as to the expense of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

**27. No Compensation For Alteration in or Restriction of Work:**

At any time from the commencement of the work if the Owner decides for whatsoever reason, not to carryout the whole work or part thereof as specified in the tender, then owner shall give notice in writing of the fact to the contractor, who shall have no claim to any payment or compensation on whatsoever account (profit or advantage which he might have derived by executing the work in full) neither shall he have any claim for compensation by reason of any alterations having been made from the original specifications, drawings, designs and instructions which may involve any curtailment of the work as originally contemplated.

**28. Change in Constitution:**

When the contractor is a partnership firm the prior approval in writing from the Owner shall be obtained before any changes are made in the constitution of the firm, where the contractor is an individual or a Hindu undivided family business concern. Such approval as aforesaid shall, like wise be obtained before such contractor enters into any agreement with other parties, where under the reconstituted firm would have the right to carry out the work hereby undertaken by the contractor. In either case if prior approval is not obtained. The contractor shall be deemed to have been allotted in contravention of Clause - 34 hereof and the action and consequence shall ensure as provided in that clause.

**29. Termination of Contract For Death:**

If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies or if the contractor is a partnership concern and one of the partners dies then, unless the Owner is satisfied that the legal representative of the individual or the proprietary concern or the surviving partners are capable of carrying out and completing contract, he (the Owner) is entitled to cancel the contract for the uncompleted part without being in any way liable for any compensation payment to the estate of the deceased contractor and/or to the surviving partners of the contractor's firm on account of the cancellation of contract. The decision of the Owner in such assessment shall be final and binding on the parties. In the event of such cancellation, the Owner shall not hold the estate of the deceased contractor and / or the surviving partners of the contractor's firm liable for any damages for non-completion of contract.

**30. Members of the Owner Not individually Liable:**

No Director or official or employee of the Owner shall in any way be personally bound or liable for the acts or obligations of the Owner under the contract or answerable for any default or omission in the observance or performance of the acts, matters or things which are herein contained.

**31. Owner Not Bound by Personal Representation:**

The Contractor shall not be entitled to any increase on the scheduled rates or any other rights or claims whatsoever by reason of any representation, explanation, statement or alleged understanding promise or guarantees given or to have been given to him by any person.

**32. Contractors Office at Site:**

The Contractor shall provide and maintain an office at the site for the accommodation of his agent and staff and such office shall be open at all reasonable hours to receive instructions, notices or other communications. The contractor at all time shall maintain a site instruction book and compliance of these shall be communicated to the Engineer –in-Charge from time to time and the whole document to be preserved and handed over after completion of works.



**33. Contractor's Sub-ordinate Staff and their conduct :**

- 33.1. The contractor on award of the work shall name and depute a qualified engineer having sufficient experience in carrying out work of similar nature to whom the equipment, materials if any, shall be issued and instruction for works given. The contractor shall also provide to the satisfaction of the Engineer-in-charge sufficient and qualified staff to supervise the execution of the works, competent sub-agents, foremen and leading hands including those specially qualified by previous experience to supervise the types works comprised in the contract in such manner as will ensure the best quality and expeditious working. At any time of in the opinion of the Engineer-in-Charge any additional, qualified experienced staff is considered necessary, they shall be employed by the contractor without additional charge. The contractor shall ensure to the satisfaction of the Engineer-in-Charge that sub-contractors, if any, shall provide competent and efficient supervision over the work entrusted to them.
- 33.2. If any of the contractor's sub-contractor's, agents, sub-agents, assistants, foremen or any employee in the opinion of Engineer-in-Charge be guilty of any misconduct or be incompetent or insufficiently qualified or negligent in the performance of their duties or that in the opinion of the Owner Engineer-in-Charge, undesirable for administrative or any other reasons, for such or person (s) to be employed on the works, then at the directions of Engineer-in-Charge the Contractor shall at once remove such person (s) from employment with the works without the written permission of the Engineer –in-Charge. Vacancy so created shall be immediately filled at the expenses of the contractor by a qualified and competent substitute. Should the contractor be requested to repatriate any person removed from the works he shall do so and shall bear all costs in connection therewith.
- 33.3. The contractor shall be responsible for the proper behaviour of all the staff, foremen, workmen and others, shall exercise proper degree of control over them and in particular without prejudice to the said generality the contractor shall be bound to prohibit/ prevent any employees from trespassing or acting in any way detrimental or prejudicial to the interest of the community or the properties or the occupiers of land or properties in the neighborhood. In the event of such trespassing, the contractor shall be responsible for all consequent claims or actions for damages or injury or any other grounds whatsoever. The decision of the Engineer-in-Charge upon any matter arising under this clause shall be final.
- 33.4. If and when required by the Owner, all contractor's personnel entering upon the owner's premises shall be properly identified by badges of a type acceptable to the owner which must be worn at all times on Owner's premises.





33.5. It is made clear that no relationship of employer and employee is created between the owner and the contractor labourer and no claim for employment of any such labourer shall be tenable or entertained.

**34. Sub-Letting Work:**

34.1. No part of the contract nor any share or interest there in shall in any manner or degree be transferred, assigned or sublet by the contractor directly or indirectly to any person, firm or corporation whatsoever except as provided for in the succeeding sub-clauses without the consent in writing of the Owner.

**34.2. Sub – Contracting of Works:**

The Engineer-in-Charge may give written consent to sub-contract for the execution of any part of the works at the site, provided the contractor submits each individual sub-contract to the Engineer-in-Charge for approval of mode of operation and agency for the work. The contractor is advised not to enter into contract before the consent of Engineer-in-Charge.

**34.3. List of sub-contracted works to be furnished:**

At the commencement of each month, the contractor shall furnish to the Engineer-in-charge, a list of sub-contractors, persons or firms engaged by the contractor and worked at the site during the previous month with particulars like general nature of the sub-contract or works done by them.

**34.4. Contractor's liability not Limited by Sub-Contractors:**

Notwithstanding any sub-letting with such approval as aforesaid and notwithstanding that the Engineer-in-Charge shall have received copies of any sub-contracts, the contractors shall be and shall remain solely responsible for the quality and proper and expeditious execution of the works and the performance of all the conditions of the contract in all respects as if such sub-contract or sub-letting had not taken place, and as if such work had been done directly by the contractor.

**34.5. Owner may terminate sub-contracts:**

If any sub-contractor engaged upon the works at the site executes any work which in the opinion of the Engineer-in-Charge is not in accordance with the contract documents, the owner may by written notice to the contractor request him to terminate such sub-contract. The contractor upon the receipt of such notice shall terminate and dismiss the sub-contract and the sub-contractor. The owner shall have the right to remove such sub-contractor from the site if contractor fails to vacate the sub-contractor immediately.

**34.6. No remedy for action taken under this clause:**

For action taken by the owner under the clause shall not relieve the contractor of any of his liabilities under the contract or give rise to any right or compensation, extension of time or otherwise.

**35. Power of Entry:**





If the contractor shall not commence the work in the manner described in the contract documents or if he at any time in the opinion of the Engineer-in-Charge.

- (i) fail to carry on the works in conformity with the contract documents or
- (ii) fail to carry on the works in accordance with the contract schedule or
- (iii) substantially suspend work or the works for a period of fourteen days without authority from the Engineer-in-Charge or
- (iv) fail to carry on and execute the works to the satisfaction of Engineer-in-Charge or
- (v) fail to supply sufficient or suitable constructional plant, temporary works, labour materials or other things or
- (vi) Commit, suffer or permit any other breach of any of the provisions of the contract on his part to be performed or observed or persist in any of the above mentioned breaches of the contract for fourteen days, after notice in writing shall have been given to the contractor by the Engineer-in-Charge requiring such breach to be remedied or
- (vii) If the contractor abandons the works or
- (viii) If the contractor during the continuance of the contract shall become bankrupt, make any arrangement or composition with his creditors, or permit any execution to be levied or go into liquidation whether compulsory or voluntary not being merely a voluntary liquidation for the purpose of amalgamation or reconstruction then in any such case, the owner shall have the power to enter upon the works and take possession thereof and of the materials, temporary works, constructional plant, and stock thereon, and to revoke the contractor's licence to use the same, and to complete the works by his agents, other contractors, or workmen, or to relate the same upon any terms and to such other person, firm or corporation as the Owner in his absolute discretion may think proper to employ and for the purpose aforesaid to use or authorize the use of any materials, temporary works, constructional plant, and stock as aforesaid, without making payment or allowance to the contractor for the said materials other than such as may be certified in writing by the Engineer-in-Charge to be reasonable, and without making any payment or allowance to the contractor for the use of temporary said works, constructional plant and stock or being liable for any loss or damage thereto and if the Owner shall by reason or his taking possession of the work or of the works being completed by other contractor (due account being taken of any such extra work or works which may be omitted) than the amount of such excess as certified by the Engineer-in-Charge shall be deducted from any money which may be due for work done by the contractor under the contract and not paid for any deficiency shall forthwith be made good and paid to the Owner by the contractor and the Owner shall have power to sell in such manner and for such price as he may think fit all or any of the constructional plan, materials etc. constructed by or belonging to and



to recoup and retain the said deficiency or any part thereof out of the proceeds or the sale.

**36. Contractor's Responsibility with other Agencies:**

36.1 Without repugnance to any other condition, it shall be the responsibility of the contractor executing the work of civil construction to work in close cooperation and to coordinate in the works with the mechanical, electrical, air-conditioning and intercommunication contractors and other agencies or their authorised representatives, in providing the necessary grooves, recesses, cuts and opening etc. in wall, slabs beams and column etc. and making good the same to the desired finish as per specification, for the placement of electrical and intercommunication cables, conduits, air-conditioning inlets and outlets, grills and other equipment in the false ceiling and other partitions, the contractor before starting up the work shall in consultation, with the electrical, mechanical, inter-communication, air-conditioning contractors and other agencies prepare and put up a joint scheme, showing the necessary opening, grooves, recesses, cuts, the methods of fixing required for the works of the aforesaid, and the finishes therein, to the Engineer-in-Charge and get the approval. The contractor before finally submitting the scheme to the Engineer-in-Charge, shall have the written agreement of the other agencies. The Engineer-in-Charge, before communicating his approval to the scheme, with any required modifications shall get the final agreements of all the agencies, which shall be binding. No claim shall be entertained on account of the above.

36.2 The contractor shall conform in all respect with the provisions any statutory regulation, ordinance or bye-laws of any local or duly constituted authorities or public bodies which may be applicable from time to time to the works or any temporary works. The contractor shall keep the Owner indemnified against all penalties and liabilities of every kind, arising out of non-adherence to such statutes, ordinances, laws, rules, regulations, etc.

**37. Other Agencies at Site:**

The contractor shall have to execute the work in such place and condition where other agencies will also be engaged for other works such as site grading, filling and leveling, electrical and mechanical engineering works etc. No claim shall be entertained due to work being executed in the above circumstances.

**38. Serving of Notices:**

**38.1. To the Contractor:**

Any notice may be served on the contractor or his duly authorised representatives at the job site or by registered mail directly to the address furnished by the contractor. Proof of issue of such notice should be conclusive of the contractor having been duly informed of the contents.

**38.2. To the Owner:**



Any notice to be given to the Owner under the terms of the contract shall be served by sending the same by Registered mail to or delivering the same at the respective site offices of M/s. National Aluminium Co. Ltd. addressed to the head/ site in-charge.

**38.3. Rights of various Interests:**

- (i) The Owner reserves the right to distribute the work between more than one contractor. The contractor shall cooperate and afford the other contractors all reasonable opportunity for access to the works for the carriage and storage of materials and execution of their works.
- (ii) Wherever the work being done by any department of the Owner or by the contractor employed by the Owner as per the contingent upon work covered by this contract, the respective rights and various interests involved shall be determined by the Engineer-in-Charge to secure the completion of the various portions of the work in general harmony.

**40. Patents, Royalties, Rent and Excavated Material:**

- 40.1. The contractor, if licensed under any patent covering equipment, machinery, materials or compositions of matter to be used or supplied or methods and process to be practiced or employed in the performance of this contract, agrees to pay all royalties and licence fees which may be due with respect thereto. If any equipment, machinery, materials composition matters, to be used or supplied or methods and processes to be practiced or employed the performance of this contract, is covered by a patent under which the contractor is not licensed then the contractor before supplying or using the equipment, machinery, materials, composition, method or processes shall obtain such licenses and pay such royalties and license fees as may be necessary for performance of this contract. In the event the contractor fails to pay any royalty or obtain any such license, any suit for infringement of such patents which is brought against the contractor or the Owner as a result of such failure will be defended by the contractor at his Own expense and the contractor will pay damages and costs awarded in such suit. The contractor shall promptly notify the Owner if the contractor has acquired knowledge of any plant under which a suit for infringement could be reasonably brought because of the use by the owner of any equipment, machinery, materials, process, methods, to be supplied hereunder. The contractor agrees to and does hereby grant to Owner, together with the right to extent the same to any of the subsidiaries of the Owner as irrevocable, royalty-free licence to use in country, any invention made by the contractor or his employee in or as a result of the performance of the work under the contract.
- 40.2. All charges on account of royalty, tollage, rent octroi terminal or sales tax and/ or other duties or any other levy on materials obtained for the work or temporary work or part thereof (excluding materials provided by the Owner) shall be borne by the contractor.



- 40.3. The contractor shall not set or otherwise dispose of or remove except for the purpose of this contract, the sand stone, clay, ballast, earth, rock or other substances, or materials obtained from any excavation made for the purpose of the works or any building or produce upon the sited at the time of delivery of the possession thereof, but all such substances, materials buildings and produce shall be the property of the Owner provided that contractor may with the permission of the Engineer-in-Charge, use the same for the purpose of the works by payment of cost of the same at such a rate as may be determined by the Engineer-in-Charge.

The Owner shall indemnify and save harmless the contractor from any loss on account of claims against contractor for the contributory infringement of patent rights arising out and based upon the claim that the use by the Owner of the process included in the design prepared by the Owner and used in the operation of the plant infringes on patent right. With respect of any sub-contract entered into by the contractor pursuant to the provisions on the respect to any sub-contract entered into by the contractor pursuant to the provisions of the relevant clause thereof, the contractor shall obtain from the sub contractor an undertaking to provide the Owner with the same patent protection that contractor is required to provide under the provisions of this clause.

**41. Liens:**

- 41.1. If at any time there should be evidence or any lien, claim for which the Owner might have become liable, which is chargeable to the contractor, then the Owner may pay and discharge the same and deduct the amount so paid from any amount which may be or may become due and payable to the contractor, if any lien or claim remain unsettled after all payments are made, the contractor shall refund or pay to the Owner the cost such lien or claim including all payment and reasonable expenses. Owner reserves the right to the same.

**41.2. Nothing Extra for Adverse Sub-Soil Conditions:**

The nature of sub-soil of the work site varies widely horizontally and vertically. The KI and KII values also vary widely from place to place. In addition the water bearing seems are also conspicuous with the water table at a depth of 0.75 to 3.0 metres from ground level. A number of cohesive and non-cohesive strata are available particularly everywhere. The contractor shall have to make cuts and resort to pumping with due care to avoid collapsing of sides and occurrence of 'Piping'. The Contractor shall also be careful to avoid occurrence of excessive 'heaving' by avoiding keeping the excavation proposed to atmosphere for a longer period.

- 41.3. Slips and falls in excavation shall be cleared by the contractor at his own cost.



Excessive heaving shall have to cut and refill with lean concrete by the contractor at his own cost. The contractor shall have to adopt under-water work in case of occurrence of piping/ quick condition without any additional cost to the Owner.

The contractor will be paid for the earthwork as per the drawing. The slopes etc. as required for the safety of the work has to be provided as per the decision of the Engineer-in-Charge at his own cost. All types of dewatering including seepage, rain water entering. The earthwork in excavation or from any other source is to be done by the contractor at his own cost till the completion of foundation upto ground level including back filling.

**41.3. No Compensation in case of change of Location of site :**

Change of location of site do not invalidate the contract and tenderer have no claim for any compensation for such changes.



## **SECTION – V**

### **PERFORMANCE OF WORK**

**42. Execution of Works:**

All the work shall be executed in strict conformity with the provisions of the contract documents explanatory detailed drawings, specifications and instructions by the Engineer-in-Charge whether mentioned in the contract or not. The contractor shall be responsible for ensuring that works are executed in the most substantial, proper and workman like manner using the quality materials and labour, through out the job Completion in strict accordance with the specifications and to the entire satisfaction of the Engineer-in-Charge.

**43. Coordination and inspection of Works:**

The coordination and inspection of the day-to-day work under the contract shall be the responsibility of the Engineer-in-Charge or his authorised representative. A work order book will be maintained by the contractor for each sector in which the aforesaid written instructions will be entered. These will be signed by the contractor or his authorised representative by way of acknowledgement within 12 hours.

**44. Works in Monsoon and Dewatering:**

44.1 The execution of work may entail working in the monsoon also. The contractor must maintain a minimum labour force as may be required for the job. And plan execute the construction and erection according to the prescribed schedule. No extra will be considered for such work in monsoon.

44.2 During monsoon and other period, it shall be the responsibility of the contractor to keep the construction work site free from water at his own cost.

**45. Work on Sundays and Holidays:**

For carrying out works on Sundays and holidays, the contractor will to keep Engineer-in-Charge or his representative at least two days in advance and obtain permission in writing. The contractor shall observe all labour laws and other statutory rules and regulations in force. In case of any violation of such laws, rules and regulations, consequence if any, including the cost thereto shall be exclusively borne by the contractor and the Owner shall have no liability whatsoever on his account.

**46. General Conditions of Construction and Erection Work:**

46.1 The working time at the time of work is 48 hours per week. Overtime work is permitted in case of need and the owner will not compensate the same. Shift-working at 2 or 3 shifts per day will become necessary and the contractor should take this aspect into consideration for formulating his rates for quotation. No extra claims will be entertained by the Owner on this account.



- 46.2 The contractor must arrange for the placement of workers in such a way that the delayed completion of the work or any part thereof or for any reason whatsoever will not affect their proper employment. The Owner will not entertain any claim for old time payment whatsoever.
- 46.3 The contractor shall submit to the Engineer-in-Charge reports at regular intervals regarding the state and progress of work. The contract shall provide display boards showing progress and labour strength at work site, as directed by the Engineer-in-Charge.
- 46.4 The site of work will be released progressively in stages and no claim for any compensation or damages will be tenable for non-release of the entire site at a time.
- 47. Drawings to be supplied by Owner:**
- 47.1 The drawings attached with tender are only for the general guidance to the contractor to enable him to visualise the type of work contemplated. The contractor will be deemed to have studied the drawings and formed an idea about the total work involved.
- 47.2 In the Course the progress of work detailed working drawings on the basis of which actual execution of the work has to proceed, shall be furnished in stages. The contractor shall be deemed to have gone through the drawings supplied to him thoroughly and carefully, in conjunction will all other connected drawings and discrepancies if any, shall be brought to the notice of the Engineer-in-Charge, before actually carrying out the works.
- 47.3 Copies of all detailed working drawings relating to the works shall be kept at the contractor's office on the site and shall be made available to the Engineer-in-Charge at any time during the contract period. The drawings and other documents issued shall be returned to the Owner on completion of the works.
- 48. Drawings to be supplied by the Contractor:**
- 48.1 The drawings/data which are to be furnished by the contractor are enumerated in the special conditions of contract and shall be furnished within the specified time.
- 48.2 Where approval of drawings for manufacture/construction/fabrication has been specified it shall be contractor's responsibility to have these drawings prepared as per the directions of Engineer-in-Charge and get them approved before proceeding with manufacture/construction/fabrication works as the case may be. Any changes that may have become necessary in these drawings during the execution of the work shall have to be carried out by the contractor to the satisfaction of Engineer-in-Charge at no extra cost. All final approved drawings shall bear the certification stamp duly signed by both the contractor and the Engineer-in-Charge as indicated below.





## GENERAL CONDITIONS OF CONTRACT

“Certified true for .....  
(Name of work)

Agreement No .....

Signed  
(Contractor) (Engineer-in-Charge)

- 48.3 A period of 3 weeks from the date of receipt shall be required for approval of drawings by the Engineer-in-Charge.
- 48.4 As built drawing showing all Corrections, adjustments etc. shall be furnished by the Contractor in five copies and one transparent to record purposes to the owner.
- 49 Setting Out Works:**
- 49.1 The Engineer-in-Charge shall furnish to the contractor with only the four corners of the work site that is plant boundary limits, and a level bench mark only. The contractor shall set out the works, provide an efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.
- 49.2 The contractor shall provide, fix and be responsible for the maintenance of all stacks, templates, level marks, profiles and other similar things and shall take all necessary precautions to prevent their removal or disturbance. He shall be responsible for their consequences arising of such removals, disturbances corrections thereon and for their efficient and timely reinstatement. The contractor shall also be responsible for the maintenance of all existing survey marks, boundary marks, distance marks and centre line marks, either existing or supplied and fixed by the contractor. The work shall be set out to the satisfaction of the Engineer-in-Charge. The approval thereon or jointing with the contractor by the Engineer-in-Charge in setting out the work, shall not relieve the contractor of any of his responsibilities.
- 49.3 Before beginning the work the contractor shall at his own cost, provide all necessary reference and level posts-pegs, bamboos, flags, ranging rods, strings, and other materials for proper layout of the work in accordance with the scheme for bearing marks acceptable to the Engineer-in-Charge. The centre, longitudinal, face and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct mark at the centre to enable the theodolite to be set over it. No work shall be started until all these points are checked and approved by Engineer-in-Charge in writing, but such approval shall not relieve the contractor of any of his responsibilities. The contractor shall also provide all labour, materials and other facilities as necessary, for the proper checking or layout and inspection of the points during construction.
- 49.4 Pillars bearing geodetic marks located at the sites of units of works under construction should be protected and faced by the contractor.



49.5 On completion of work, the contractor must submit the geodetic documents according to which the work was carried out.

**50. Responsibility for Level and Alignment:**

50.1 The contractor shall be entirely and exclusively responsible for the horizontal and vertical alignment, the level and correctness of every part of the work shall rectify effectually any errors or imperfections therein. Such rectification shall be carried out by the contractor at his own cost, when instructions are issued to that effect by the Engineer-in-Charge.

**50.2 Lighting, Watch & Ward:**

The contractor shall in connection with works provide and maintain at his own cost all lightings, guards, fencing and watch and ward and the security of the entire work in progress including all the machineries, materials shall be the responsibility of the contractor till taken over by the owner by way of the written taking over certificate.

**51. Materials to be Supplied by Contractor :**

51.1 The contractor shall procure and provide the whole of the materials required for the construction including M.S. Rods, Cement and other building materials, tools, tackles, construction plant and equipment for the completion and maintenance of the work except the materials which will be issued by the Owner and shall make his own arrangement for procuring such materials and for the transport thereof. The owner may give necessary recommendation to the respective authorities, if so desired by the contractor, but assumes no further responsibility of any nature. The owner will insist on the procurement of materials which has the approval of Indian Standards Institution having ISI stamp and/or which are supplied by reputed suppliers borne on DGS & D list.

51.2 The contractor shall properly store all materials either issued to him or brought by him to the worksite to prevent damages due to rain, wind, direct exposure to sun etc. as also from theft, pilferage, etc. for proper and speedy execution of his works. The contractor shall maintain sufficient stocks of all materials required by him.

51.3 No material shall be despatched from the contractor's stores before obtaining the approval in writing of the Engineer-in-Charge.

51.4 All plants, tools and other materials brought by the contractor to the site must be declared at the time of bringing the same to the site.

**52. Stores Supplied by the Owner:**

52.1 If the specification of the work provides for the use of any material other than Steel & Cement of special description to be supplied from the Owner's stores or it is required that the contractor shall use certain stores to be provided by



the Engineer-in-Charge, such materials and stores, and price to be charged therefore as hereinafter mentioned being so far as practicable for the convenience of the contractor, but no so as in way to control the meaning or effect of the contract, the contract shall be bound to purchase and shall be supplied much materials and stores as are from time to time required to be used by him for the purpose of the contract only. The sums due from the contractor for the value of materials supplied by the Owner will be recovered from the Running Account Bill on the basis of actual consumption of materials (after taking into account any wastage allowance as may be provided for in the contract). The contractor should raise requisite copies of indents in a proforma as prescribed by the Engineer-in-Charge and no claim whatsoever will be entertained by the Engineer-in-Charge on this account. After completion of the works, the contractor is required to account as per relevant clauses in this document, for the full quantity of materials supplied to him.

52.2 The value of the stores/materials as may be supplied to the contractor by the Owner will be debited to the contractor's account at the rates shown in the schedule of materials and if they are not entered in the schedule, they will be debited at cost price, which for the purpose of the contract shall include the cost of carriage and all other expenses whatsoever such as normal storage supervision charges which shall have been incurred in obtaining the same at the Owner's stores. All materials so supplied to the contractor shall remain the absolute property of the Owner and shall not be removed on any account from the site of the work and shall be at all times open for inspection to the Engineer-in-Charge. Any such materials remaining unused at the time of the completion or termination of the contract shall be returned to the Owner's stores or at a place as directed by the Engineer-in-Charge in perfectly good condition at contractor's cost.

### 52.3 Steel & Cement:

52.3.1 If the specification of the work provides for the use of steel or cement such items of steel and cement to the extent required as per the specification of the works, shall be supplied at Owner's stores by the Owner for utilisation in the work on non-chargable basis from time to time depending upon the progress of the work. The tender rates shall be exclusive of the cost of steel and cement to be supplied as per the specification of the work, However, in case of flats and chequered plates the same have to be procured by the contractor at his own cost.

52.3.2 Such materials of steel and cement shall be issued only for permanent works and not for making other temporary works etc. Contractor shall bear all cost including lifting and loading carting from issue points to work site/contractor stores, custody and handling etc. and return of surplus serviceable/unserviceable materials to owner's store or other places to be designed by owner and no separate payment for such expenditure shall be made.



52.3.3 Items of steel as per specification of the work as mentioned above shall be supplied in the available length only. No claim on account of supply of non-standard length shall be entertained. Steel materials shall be issued on actual weight basis.

52.3.4 Cement as mentioned above will be supplied to the contractor a receive from the manufacturer/stockist. The theoretical weight of each bag of cement supplied will be considered as 50 Kg.

**52.3.5 Scraps & Surplus Material:**

The Contractor shall return all the surplus/unutilised as well as the scraps and wastages out of the materials supplied to him to the Owner's stores in a perfectly good condition at the contractor's cost. However, the following scraps allowances are permissible.

	<u>Unaccountable</u>	<u>Accountable</u>
(i) Cement	3%	Nil
(ii) Reinforcement Steel	½%	2.5%
(iii) Steel structural (Plates & Sections)	½%	4.5%
(iv) M.S. Plates for fabrication of Pipes	½%	As per cutting diagrams approved by Engineer-in-Charge before cutting and fabrication.

**52.3.6 Return of unutilised/surplus materials and scrap/wastage:**

In respect of any utilised/surplus quantities of cement and steel supplied by not accounted for and or returned by the contractor shall pay to the Owner amounts at the penal rate of twice the SAIL, Bhubaneswar Stock-yard rate of that particular section of steel and cement as the case may be as on the date of accountability. If the Contractor fails to return the scraps/wastage generated as per the above percentage, recovery of such scrap/wastage shall be made at the rate of Rs. 7000/- per tonne.

The charging of penal rate shall be without the prejudice to the other remedies or action available to the owner against the contractor including any criminal action.

**52.3.7. Accounting for Materials:**

Every month the Contractor shall submit a statement for all the materials supplied to him by the owner in the proforma prescribed by the Engineer-in-Charge.

52.3.8 On completion of the work, the Contractor shall submit material appropriation statement for the materials supplied to him by the Owner.

**52.3.9** All materials supplied to the contractor shall remain the absolute property of the all times and title therein shall not pass to the contractor at any time. The possession of the materials in the hands of the contractor is only for the



purpose of incorporating the same in the Owner's work. The material supplied shall not be removed by the contractor on any account from the site of work and shall be at all times open for inspection by the Engineer-in-Charge or owners representative. The contractor shall not use the materials supplied to him for any purpose or work other than the work, which the said materials are supplied.

**53. Conditions for issue of Materials:**

- (i) Materials specified as to be issued by the Owner will be supplied to the contractor by the Owner from his stores. It shall be the responsibility of the contractor to take delivery of the materials and arrange for its loading, transport and unloading at the site work at his own cost. The material shall be issued during the working hours of his Stores and as per the rules of the Owner framed from time to time.
- (ii) The contractor shall bear all incidental charges for the storage and safe custody of materials at site after these have been issued to him.
- (iii) The contractor shall construct suitable godown at the site of work for storing the materials safe against damage by rain, dampness, fire, theft, etc. He shall also employ necessary watch and ward establishment for the purpose.
- (iv) Materials specified as to be issued by the Owner shall be issued in standard sizes as obtained from the manufacturers.
- (v) It shall be duty of the contractor to inspect the materials supplied to him at the time of taking delivery and satisfy himself that they are in good condition. After the materials have been delivered by the Owner, it shall be the responsibility of the contractor to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and/or replaced by him at his own cost according to the directions of the Engineer-in-Charge.
- (vi) The Owner shall not be liable for delay in supply or non-supply of any materials, which the Owner has undertaken to supply where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstances beyond the control of the Owner. In no case, the contractor shall be entitled to claim any compensation or loss suffered by him on his account.
- (vii) It shall be the responsibility of the contractor to arrange in time all materials required for the works other than those to be supplied by the Owner. If however in the opinion of the Engineer-in-Charge the execution of the work is likely to be delayed due to the contractor's inability to make arrangements for supply of materials which normally he has to arrange for, the Engineer-in-Charge shall have the right at his own discretion to issue such materials if available with the Owner or procure the materials from the market or elsewhere. The contractor will be bound to take such materials at the rates decided by the Engineer-in-Charge. This however, does not in anyway absolve the contractor from responsibility of making arrangement for the supply of such materials in part or in full, should such a situation occur nor shall this constitute a reason for the delay in the execution of the work.



- (viii) Non of the materials supplied to the contractor will be utilised by the contractor for manufacturing item which can be obtained as supplied from standard manufacturer in finished form unless approved by Engineer-in-Charge in writing.
- (ix) The contractor shall, if desired by the Engineer-in-Charge, be required to execute an indemnity bond in the prescribed form for safe custody, usage and accounting of all materials issued by the Owner.
- (x) The contractor shall furnish to Engineer-in-Charge sufficiently in advance a statement showing his requirements of the quantities of the materials to be supplied by the Owner and the time when the same will be required by him for the works, so as to enable the Engineer-in-Charge to make necessary arrangement for procurement and supply of material.
- (xi) Account of the materials to be issued by the Owner shall be maintained by the contractor indicating the daily receipt, consumption and balance in hand in a manner prescribed by the Enginner-in-Charge. All connected papers requisitions, issues returns etc. shall be always available for inspection in the contractor's office at site.
- (xii) The contractor should see that only the required quantities of materials are got issued. The contractor shall not be entitled to cartage and incidental charges for returning the surplus materials, if any, to the stores, place of issue or to the place as directed by the Engineer-in-Charge.
- (xiii) Materials/equipment supplied by Owner shall not be utilised for any other purpose (s) than issued for.
- (xiv) The owner may issue the material in phases at his discretion keeping in view the programmes of the work.
- (xv) In case of free issue of materials, the contractor shall submit an indemnity bond in the prescribed format for 80% (eighty) value of the materials and a bank guarantee for 20% (twenty) of the value of the materials. The indemnity bond and bank guarantee shall be valid till the material account is totally settled.

**54. Return of Surplus:**

Notwithstanding anything contained to the contrary in any or all the clauses of this contract where any materials for the execution of the contract are procured with the assistance of the Owner either by issue from Owner's stock or purchases made under orders, or permits or licences issued by government the contractor shall hold the said materials as trustee for the owner and use such materials economically and solely for the purpose of the contract and not dispose them off without the permission of the Owner and return, if required by the project head all surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination for any reason whatsoever on his being paid or credited such price as the Project head shall determine having due regard so the condition of the materials. The price allowed to the contractor however, shall not exceed the amount charged to him excluding the storage charges, if any. The decision of the project head shall be final and conclusive in such matter. In the event of breach of the aforesaid conditions, the contractor shall, in the terms of the licences, or permits and/ or





for criminal breach of trust, be liable to compensate the Owner at double rate or any higher, in the event of those materials at the time having higher rate or not being available in the market, then any other rate to be determined by the project head and his decision shall be final and conclusive.

**55. Materials Obtained From Dismantling:**

If the contractor in the course of execution of the work is called upon to dismantle any part for reasons other than those stipulated in clauses 57 and 65 hereunder, the materials obtained in the work of dismantling etc. will be considered as the Owner's property and will be disposed off to the best advantage of the Owner.

**56. Articles of Value Found:**

All gold silver and other materials of any descriptions, precious stones, coins, treasures, relics, antiques and other similar things which shall be found, in, under or upon the site, shall be property of the Owner and the contractor shall duly preserve the same to the satisfaction of the Engineer-in-Charge and shall from time to time delivery the same to such person or persons indicated by the Owner.

**57. Inspection of Works:**

57.1 The Engineer-in-Charge will have full power and authority to inspect the works in progress at any time wherever the premises/ workshops situated, of the Contractor, person, firm or corporation where works in connection with the contract may be or where materials are being or intended to be supplied.. The contractor shall afford or procure every facility and assistance to Engineer-in-Charge carry out such inspection. The contractor shall, at all time during the usual working hours and at all other times at which reasonable notice of the intention of the Engineer-in-Charge or his representative to visit the works shall have been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing be present for the purpose. Orders given to the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

57.2 The contractor shall give not less than seven days notice in writing to the Engineer-in-Charge before covering up or otherwise placing beyond reach of inspection and measurement any work in order that the same may be inspected and measured. In the event of failure of above the same shall be uncovered and all facilities made available again at contractor's expense for carrying out such measurement or inspection.

57.3 The contractor is to provide at all times during the progress of the work and maintenance period proper means at access with ladders gangways etc. and the necessary attendance to move and adopt as directed for inspection or measurement of the works by the Engineer-in-Charge.

**58. Assistance to the Engineer:**

The Contractor shall make available to the Engineer-in-Charge free of cost all necessary instructions and assistance in checking of settling out of works and





in the checking of any works made by the contractor for the purpose of setting out and taking measurements of work.

**59. Discrepancies between instructions:**

Should any discrepancy arise between the various instructions furnished to the contractor or his agents or staff or if any doubt arises on the meaning or implementation of any such instructions or should there be any difference of opinion on the issues, the contractor shall refer the matter immediately in writing to the Engineer-in-Charge whose decisions thereon shall be final and conclusive. No claim on losses alleged to have been caused by such discrepancies between instructions, doubts or misunderstanding shall in any event be admissible.

**60. Alterations in Specifications and Designs and Extra Works:**

- (a) The Project Head shall have power to make any alterations, in omission from additions to or substitutions, for the schedule of rates, the original specifications, drawings and instructions that may appear to him to be necessary or advisable during the progress of the work, and the contractor shall be bound to carry out such altered/ extra/ new items of work in accordance with any instructions which may be given to him in writing signed by the Project Head and such alterations, omissions, additions or substitutions shall not invalidate the contract and any altered, additional or substituted work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work. The time of completion of work may be extended for the part of the particular job at the discretion of the Project Head for any such alterations, additions, or substitutions of the work, as he may consider as just and reasonable. The rates for such additional, altered or substituted work under the clause shall be worked out in accordance with the following provisions:-
- (b) If the rates for the additional, altered or substituted work are specified in the contract for the work, the contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the contract.
- (c) If the rates for the additional, altered or substituted work are not specifically provided in the contract for the work, the rates will be derived from rates for similar class of work as are specified in the contract for the work. The opinion of the Project head as to whether or not the rates can be reasonably so derived from the items in this contract will be final and binding on the contractor.
- (d) If the rates for the additional, altered or substituted work can not be determined in the manner specified in sub-clause (a) & (b) above, then the contractor shall within 7 days of the date of receipt of order to carry out



the work, inform the Project Head of the rate which it is his intention to charge for such class of work, supported by analysis of the rate or rates claimed, and the project Head shall determine the rate or rates on the basis of the prevailing market rates of materials plus labour cost including equipment hire charge at schedule of hourly/ daily rates plus 15% to cover contractor's supervisions overhead and profit and pay to the contractor accordingly. The opinion of the Project Head to current market rates of the materials and the quantum of labour and equipment involved per unit of measurement will be final and binding on the contractor. The schedule of hourly/ daily rates shall be as enclosed.

**61. Action Where no Specification is issued:**

In case of any class of work for which there is no such specification supplied by the Owner as is mentioned in the tender document such work shall be carried out in accordance with the Indian Standard Specifications. If the Indian Standard Specifications do not cover the same, the work should be carried out as per standard Engineer in Practice subject to the approval of the Engineer-in-Charge.

**62. Abnormal Rates:**

The contractor is expected to quote the rate for each item after careful analysis of cost involved for the satisfactory performance and completion of item work considering all specifications and conditions of contract. This will avoid loss of profit or gain in case of curtailment or change in specification for any other item. In case the rate quoted by the tenderer for any item are usually high or unusually low it will be sufficient cause of the rejection of the tender unless the Owner is convinced about the reasonableness of the analysis for such rate furnished by the tenderer (on demand) after scrutiny.

**63. Tests For Quality Works:**

63.1 All materials and workmanship shall be of the respective kinds described in the contract documents and in accordance with the instructions of the Engineer-in-Charge and shall be subjected from time to time to such tests at contractor's cost as the Engineer-in-Charge may direct at the place of manufacture or fabrication or at the site or at all or any such places. The contractor shall provide assistance, instruments, machines, labour and materials as are required for examining, measuring and testing any workmanship as may be selected and required by the Engineer-in-Charge.

63.2 All the tests that will be necessary in connection with the execution of the work as decided by Engineer-in-Charge shall be carried out at the field testing laboratory of this Owner if available by paying the charges as decided by the Owner from time to time. In case of non-availability of testing facilities with the Owner, the required laboratory as directed by Engineer-in-Charge.

63.3 If any tests are required to be carried out in connection with the work or materials or workmanship not supplied by the contractor, such tests shall be



## GENERAL CONDITIONS OF CONTRACT

carried out by the contractor as per the instructions of Engineer-in-Charge and cost of such tests shall be reimbursed by the Owner.

**64. Samples:**

The contractor shall furnish to the Engineer-in-Charge for approval when request or if required by the specifications, adequate samples of all materials and finished to be used in the work. Such samples shall be submitted before the work is commenced and in sample time to permit tests and examinations thereof. All materials furnished and finishes applied in actual work shall be fully equal to the approved samples.

**65. Liabilities for Defect, Imperfections etc. and Rectifications Thereof:**

If it shall appear to the Engineer-in-Charge that any work has been executed with unsound, imperfect or unskilled workmanship, or with materials of any inferior description, or that any materials or articles provided by the contractor for the execution of work are unsound or of quality inferior to that contracted for, or otherwise not in accordance with the contract, the contractor shall on demand in writing from the Engineer-in-Charge or his authorised representative specifying the work, materials or articles complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify or remove and reconstruct that work so specified and provide other proper and suitable materials or articles at his own charge and cost, and in the event of failure to do so within a period to be specified by the Engineer-in-Charge in his demand aforesaid, the Engineer-in-charge may on expiry of notice period rectify or remove, and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expense in all respects of the contract. The decision of the Engineer-in-Charge as to any question arising under this clause shall be final and conclusive.

**66. Suspension of Works:**

- (i) Subject to the provision of sub para (ii) of this clause, the contractor shall if ordered in writing by the Engineer-in-Charge, or his representative, temporarily suspend the works or any part thereof such period and such time as so ordered and shall not, after receiving such written orders, proceed with the work therein, ordered to be suspended until he shall have received a written order to proceed therewith. The contractor shall not be entitled to claim compensation for any loss or damage sustained by him by reason of temporary suspension of the works aforesaid. An extension of time for completion, corresponding with the delay caused by any such suspension of the works as aforesaid will be granted to the contractor should he apply for the same provided that the suspension was not consequent to any default or failure on the part of the contractor.
- (ii) In case of suspension of entire work, ordered in writing by the Engineer-in-Charge, for a period of more than two months, the contractor shall have the option to terminate contract.

**67. Possession Prior to Completion:**

The Engineer-in-Charge shall have the right to take possession of or any completed or partially completed work or part of the work. Such possession or use shall not be deemed to be an acceptance of any work completed in accordance with the contract. If such prior possession or use by the Engineer-in-Charge delay the progress of work, equitable adjustment in the time of completion will be made and the contract agreement shall be deemed to be modified accordingly.

**68 Twelve months Period of Liability from the Date of Issue of Completion Certificate:**

- 68.1 The contractor shall guarantee the installation/work for a period of 12 months from the date of completion of work as certified by the Engineer-in-Charge which is indicated in the completion certificate. Any damage or defect that may arise though remained undiscovered at the time of issue of completion certificate, connected in any way with the equipment or materials supplied by him or in the workmanship shall be rectified or replaced by the contractor at his own expenses as deemed necessary by the Engineer-in-Charge or in default the Engineer-in-Charge may cause the same to be made good by other agency and deduct expenses (of which the certificate or Engineer-in-Charge shall be final) from any sums that may be then or at any time thereafter become due to the contractor or from his security deposit, or the proceeds of sale thereof or of a sufficient portion thereof.
- 68.2 If the contractor feels that any variation in work or in quality of materials or proportions would be beneficial or necessary to fulfil the guarantees called for, he shall bring this in writing to the notice of the Engineer-in-Charge.


**68.3 Care of works:**

From the commencement of completion of the work, the contractor shall take full responsibility for the care of all works including all temporary works and in case any damage, loss or injury shall happen to the work or to any part thereof or to any temporary works from any cause whatsoever, shall at his own cost repair and make good the same so that on completion the work shall be in good order and in conformity in every respects with the requirements of the contract and the Engineer-in-Charge's Instructions.

**68.4 Defects Prior to Taking Over:**

If at any time before the work is taken over, the Engineer-in-Charge shall:

- (a) Decide that any work done or materials used by the contractor or any sub-contractor is defective or not in accordance with the contract, or that the works or any portion thereof are defective, or do not fulfil the requirements of contract (all such matter, being hereinafter, called 'Defects' in this clause) and (b) as soon as reasonably practicable gives to the contractor notice in writing of the said decision specifying particulars of the defects claimed to exist or to have occurred then the contractor shall at his own expenses and with all speed make good the defects so specified.

	<i>GENERAL CONDITIONS OF CONTRACT</i>
---	---------------------------------------

In case contractor shall fail to do so, the Owner may take, at the cost of contractor, such steps as may in all circumstances be reasonable to make good such defects. The expenditure so incurred by the owner be recovered from the amount due to the contractor. The decision of the Engineer-in-Charge with regard to the amount to be recovered from the contractor will be final and binding on the contractor. As soon as the works have been completed in accordance with the contract (except minor respects that do not affect their use for the purpose for which they are intended and except for maintenance thereof provided in clause 68.1 of General Conditions of Contract) and have passed the tests on completion, the Engineer-in-Charge shall issue a certificate (hereinafter called completion certificate) in which he shall certify the date on which the works have been so completed and have passed the said tests and the Owner shall be deemed to have taken over the works on the date so certified. If the works have been divided into various groups in the contract, the Owner shall be entitled to take over any group or groups before the other or others.

**68.5 Defect After Taking Over:**

In order that the contractor could obtain a completion certificate he shall make good with all possible speed, any defect arising from the defective materials supplied by the contractor or that may have been noticed or developed, after the works or group of the works has been taken over, the period allowed, for carrying out such work will be normally one month. If any defect be not remedied within a reasonable time, the owner may proceed to do the work at contractor's Risk and expenses and deduct from the final bill such amount as may be decided by the Owner.

If by reason of any default on the part of the contractor a completion certificate has not been issued in respect of every portion of the works within one month after date fixed by the contract for the completion of the works, the Owner shall be at liberty to use the work or any portion thereof in respect of which a completion certificate has not been issued, provided that the works or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completion of these works for the issue of completion certificate.

**68.6 Guarantee/Transfer of Guarantee:**

For works like water-proofing, acid & alkali resisting materials, pre-construction soil treatment against termite or any other specialized works etc. the contractor shall invariably engage sub-contractors who are specialists in the field and firms of repute and such a sub-contractor shall furnish guarantees for their workmanship to the Owner, through the contractor. In case such a sub-contractor/firm is not prepared to furnish a guarantee to the owner, the contractor shall give that guarantee to the Owner directly.



## SECTION – VI

### CERTIFICATE AND PAYMENT

#### 69. SCHEDULE OF RATE AND PAYMENTS:

##### 69.1 Contractor's Remuneration:

The price to be paid by the Owner to the contractor for the whole of the work done and for the performance of all the obligations undertaken by the contractor under the contract document shall be ascertained by the application of the respective schedule of rates (the inclusive nature of which is more particularly defined by way of application but not of limitation, with clause No. 69.2) and payment to be made accordingly to the work actually executed and approved by the Engineer-in-Charge. The sum so ascertained shall (exception only as and to the extent expressly provided here in ) constitute the sole and inclusive of remuneration of the contractor under the contract and no further or other payment whatsoever shall be or become due or payable to the contractor under the contract.

##### 69.2 Schedule of Rates to the Inclusive:

The prices/rates quoted by the contractor shall remain firm till the issue of final certificate and shall not be subject to escalation. Schedule of rates shall be deemed to include and cover all costs, expenses and liabilities of every description and all risks of every kind to be taken in executing, completion and handing over the work to the Owner by the contractor. The contractor shall be deemed to have known the nature, scope, magnitude and the extent of the works and materials required though the contract document may not fully and precisely furnish them. He shall make such provision in the schedule of rates as he may consider necessary to cover the cost of such items of work and materials as may be reasonable and necessary to complete the work. The opinion of the Engineer-in-Charge as to the items of work which are necessary and reasonable for completion of work shall be final and binding on the contractor although the same may not be shown on or described specifically in contract documents.

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

##### 69.3 Schedule of rates to cover Constructional Plant, Materials. Labours etc.:

Without in any way limiting the provision of other subclauses the schedule of rates shall be deemed to include the cover the cost of all constructional plant, temporary works (except as provided for herein), pumps, materials, labour, insurance, fuel, stores, and appliances to be supplied by the contractor and all other matters in connection with each items in the schedule of quantities and





the execution of the works or any portion thereof finished complete in every respect and maintained as shown or described in the contract documents or as may be ordered in writing during the continuance of the contract.

**69.4 Schedule of Rates to cover Royalties, Rents and Claims:**

The schedule of rates shall be deemed to include and cover the cost of all royalties and fees for the articles, processes, protected by letters, patent or otherwise incorporated in or used in connection with the works, also all royalties, rents, and other payments in connection with obtaining materials of whatsoever kind for the works and shall include an indemnity to the owner which the contractor hereby gives against all actions, proceedings, claims, damages, costs and expenses arising from the incorporation in or use on the works of any such articles, processes or charges if levied on materials, equipment or machinery to be brought to site for use on work, shall be borne by the contractor.

**69.5 Schedule of Rates to cover taxes and duties:**

No exemption or reduction of custom duties, excise duties, sales tax, quay or any port duties, transport charges, stamp duties or Central or State Government or Local Body (or from any other body) or Municipal Taxes or duties, taxes or charges whatsoever will be granted or obtained and all expenses of which shall be deemed to be included in and covered by the schedule of rates. The contractor shall be obtain and pay for all permits or other privileges necessary to complete the work.

**69.6 Schedule of Rates to cover Risk of Delay:**

The schedule of rates shall be deemed to include and cover the risk of all responsibilities of delay and interference with the contractor's conduct of work which occur from any cause including orders of the owner in the exercise of his powers and on account of extension of time granted due to various and for all other possible or probable causes of delay.

**69.7 Schedule of Rates cannot be altered:**

For work under unit rate basis no alteration will be allowed in the schedule of rates by reasons of works or any part of them being modified, altered, extended, diminished or omitted. The schedule of rates is of fully inclusive rates which have been fixed by the contractor and agreed to by the Owner and cannot be altered.

- 69.7.1 The schedule of rates to cover for working in operating plant. Contractor's rates shall be deemed to include taking into account that he has to work in operating plant and shall take sufficient care in moving the plants, equipments and materials from one place to another, so that they do not cause any damage to any person or to the property of the owner or to third party including overhead and underground cable/pipe lines. In the event of such damages including eventual loss of production and operation of the plant or services in any plant or establishment as estimated by the owner or ascertained or by the





third party shall be borne by the contractor. Since the work is to be executed for the expansion of the plant, the rate of the contractor shall also deem to include all interference/obstruction/interruption for which no compensation shall be paid to be contractor.

**70. Procedure For Measurement/ Billing of Work in Progress:**

- 70.1 All measurements shall be in metric system. All the works in progress will be jointly measured by the representative of the Engineer-in-Charge and the contractor's authorised agent progressively. Such measurements will be got recorded in the measurement book by the Engineer-in-Charge or his authorised representative and signed in token of acceptance by the contractor or his authorised representative.

For the purpose of taking joint measurement the contractor's representative shall be bound to be present whenever required by the Engineer-in-Charge. If, however, he absents for any reason whatsoever the measurements will be taken by the Engineer-in-Charge or his representative and this will be deemed to be correct and binding on the contractor.

**70.2 Billing:**

The contractor will submit a bill in approved proforma in accordance with the contract terms and the agreed billing schedules in quintuplicate to the Engineer-in-Charge giving abstract and detailed measurement for the various items executed during a month, before the expiry of the first week of the succeeding month. The Engineer-in-Charge shall take or cause to be taken the requisite measurements for the purpose of having the same verified and the claim as far as admissible, adjusted, if possible, before the expiry of 10 days from presentation of the bill.

- 70.2.1 The bill shall be submitted by the contractor in computerised formats approved by the owner. The bills along-with floppies containing measurement of work, particulars of materials, recoveries etc. have to be submitted to the owner.

- 70.2.2 For lump-sum contracts, the payment will be according to agreed billing schedule. No adjustment shall be allowed in lump-sum prices for any variations in the quantities, specifications etc. shall take or a cause to be taken the requisite measurement for the purposes of having the same verified and the claim as far as admissible, adjusted, if possible, before the expiry of 10 days from presentation of the bill.

**70.3 Secured Advance on Materials:**

In case of tenders for completed items of works, contractor may be allowed "Secured Advance" on the security of materials brought to site for execution of the contracted items of work to the extent of 75% of the value of materials which go into the completed works as assessed by the Engineer-in-Charge provided that the materials are of an imperishable nature and that formal



agreement is drawn up with the contractor under which the Owner secures a lien on the materials and is safe guarded against losses due to the contractor postponing the execution of the work or to the improper storage &/or misuse of the materials and against the expenses entitled for their proper watch and safe custody. Recoveries of advances so made would not be postponed until the whole of the work entrusted to the contractor is completed. They should be adjusted from his running account bills for work done as the materials are used, the necessary deductions being made whenever the items of work in which they are used and billed for.

**70.4 Dispute in Mode of Measurement:**

In case of any dispute as to the mode of measurement not covered by the contract to be adopted for any item of work, mode of measurement as per latest Indian Standard Specifications shall be followed.

**70.5 Rounding of Amounts:**

In calculating the amount of each item due to the contractor in every certificate prepared for payment, sum of less than 50 paisa shall be omitted and the total amount on each certificates shall be rounded off to the nearest, i.e. sum of less than 0.50p shall be omitted and sums of 0.50p and more upto one rupee shall be reckoned as one rupee.

**71. LUMPSUMS IN TENDER:**

For the item in tender where it includes lumpsum in respect of parts of work, the contractor shall be entitled to payment in respect of the items at the same as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-Charge capable of measurement, or determination, the Owner may at his discretion pay the lumpsum amount entered in the tender or a percentage thereof and the certificate in writing of the Engineer-in-Charge shall be final and conclusive against the contractor with regards to any sum payable to him, under the provisions of this clause.

**72. RUNNING ACCOUNT PAYMENTS TO BE REGARDED AS ADVANCE:**

All Running Account Payment shall be regarded as Payments by way of advance against the final payment only and not as payment for work actually done and completed, and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due Performance of the contract, or any part thereof, in this respect, or of the accruing of any claim by the contractor, nor shall it, conclude, determine or affect in any way the powers of the Owner under these conditions or any of them as to the final settlement and adjustments of the accounts or otherwise, or in any other way vary or affect the contract. The final bill shall be submitted by the contractor within one month from the date of physical completion of the work, otherwise,



the Engineer-in-Charge's certificate of the measurement and of total amount payable for the work accordingly shall be final and binding on all parties.

**73. NOTICE OF CLAIMS FOR ADDITIONAL PAYMENT:**

Should the contractor consider that he is entitled to any extra payment or compensation or to make any claims whatsoever in respect of the works arising under the terms of this contract he shall forthwith give notice in writing to the Engineer-in-Charge that he claims extra payment within ten days from the ordering of any work or happening of any event upon which the contractor bases such claims and such notice shall contain full particulars of the nature of such claims with necessary particulars as above within the time above specified shall be an absolute waiver thereof. No omission by the Owner to reject any such claim and no delay in dealing therewith shall be waiver by the Owner of any right in respect thereof.

**74. PAYMENT OF CONTRACTOR'S BILL:**

No payment shall be made for works estimated to cost less than Rs. 10,000/- till the whole of the work shall have been completed and a certificate of completion given. But in case of works estimated to cost more than Rs. 10,000/- the contractor, on submitting the bill thereof be entitled to receive a monthly payment proportionate to the part thereof approved and passed by the Engineer-in-Charge, whose certificate of such approval and passing of the sum so payable be final and conclusive against the contractor. This payment will be made after making necessary deductions as stipulated elsewhere in the contract document for materials, security deposit etc. or any statutory recoveries.

Payment due to the contractor shall be made by the Owner, by Crossed Account Payee Cheque forwarding the same to registered office or the notified office of the contractor. In no case will owner be responsible if the Cheque is mislaid or misappropriated by un-authorized person/ persons. In all cases, the contractor shall present his bill duly pre-receipted on proper revenue stamp.

**All payment shall be made in Indian Currency.**

**75. Receipt For Payment:**

Receipt for payment made on account of work when executed by a firm, must be signed by a person holding due power of attorney in this respect on behalf of the contractor, except when the contractors are described in their tender as limited company in which case the receipts must be signed in the name of the company by one of its principal officers or by some other persons having authority to give effectual receipt for the company.

**76. Completion Certificate:**

**76.1. Application for completion certificate:**



When the contractor fulfils his obligation under clause 69.4 he shall be eligible to apply for completion certificate in respect of the work by submitting the completion documents along with such application for completion certificate.

The Owner or his representative shall normally issue to the contractor the completion certificate within one month after receiving an application therefor from the contractors after verifying from the completion documents and satisfying himself that the work has been completed in accordance with and as set out in the construction and erection drawings, and the contract documents.

The contractor, after obtaining the completion certificate, is eligible to present the final bill for the work executed by him under the terms of contract.

#### **76.2. Completion Certificate:**

Within one month of the completion of work in all respects, the contractor, shall be furnished with a certificate by the owner or his representative of such completion but no completion certificate shall be given not shall the work be deemed to have executed until all, scaffolding, surplus materials and rubbish is cleared off the site completely not until the work shall have been measured by the Engineer-in-Charge, whole measurement shall be binding and conclusive. The work will not be considered as complete and taken over by the owner, until all the temporary work, labour and staff colonies etc. constructed are removed and work site cleared to the satisfaction of the Engineer-in-Charge.

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

#### **Completion Certificate shall be in 3 parts as follows:**

- (1) Physical/ Mechanical Completion work.
- (2) Satisfactory completion of commissioning of equipment with load.
- (3) Satisfactory completion of guarantee.

The contractor shall clearly indicate the 3 dates separately.

#### **76.3. Completion Documents:**

For the purpose of Clause 76 the following documents will be deemed to form the completion documents:

- (i) The technical documents according to which the work was carried out.



- (ii) Three sets of construction drawings showing therein the modification and corrections made during the course of execution and signed by the Engineer-in-Charge.
- (iii) Completion Certificate for embedded and covered –up works.
- (iv) Certificate of final levels as set out for various works.
- (v) Certificate of tests performed for various works.
- (vi) Material appropriation statement to the materials issued by the owner for the works and list of surplus materials returned to the owner's store duly supported by necessary documents.
- (vii) Physical/ Mechanical Completion work.
- (viii) Satisfactory completion of commissioning of equipment with load.
- (ix) Satisfactory completion of guarantee.

The Contractor shall clearly indicate the 3 dates separately.

**77. Final Decision And Final Certificate:**

Upon the expiration of the period of liability and subject to the Engineer-in-Charge being satisfied that the works have been duly maintained by the contractor during monsoon or such period as herein provided in clause 68.1 and that the contractor has in all respect duly made up all subsidence and performed all his obligations under the contract, the Engineer-in-Charge shall (without prejudice to the right of the Owner to retain the provisions of relevant clause hereof) otherwise give a certificate, herein referred to as the final certificate, to the effect and the contractor shall not be considered to have fulfilled the whole of his obligations under the contract until Final Certificate shall have been given by the Engineer-in-Charge notwithstanding any previous entry upon the work and taking possession, working or using of the same or any part thereof by the Owner.

**78. Certificate And Payments No Evidence of Completion:**

Except the final certificate no other certificate or payment against a certificate or on general account shall be taken to be an admission by the Owner of the due performance of the contract of any part thereof or of occupancy or validity of any claim by the Contractor.

## SECTION – VII



## TAXES AND INSURANCE

### 79. TAXES, DUTIES, OCTROI ETC.

- 79.1. The Contractor shall defray all charges, such as rent, toll local taxes excise duty, other payments and compensations, if any, in connection with the procurement and handling of materials, fabrication and execution of works or any method or process connected with the works or Temporary works.

Sales Tax or any other tax on materials required for the works as also Tax on works contract shall be payable by the Contractor and the Owner will not entertain any claim whatsoever in this regard.

- 79.2. Notwithstanding anything contained elsewhere in the contract, the owner shall deduct at source from the payments due to the contractor, the taxes as required under Section -13-AA of the Orissa Sales Tax Act or as amended from time to time or under any other statute. The amounts so deducted shall be deposited by the Owner with the Sales Tax authorities as per Law. It is for the contractor to deal with the Sales Tax authorities directly in respect of any claim or refund relating to the above deductions and the owner shall not be liable or responsible for any claims or payments or reimbursement in this regard.

### 80. INSURANCE:

Contractor shall at his own expense carry and maintain insurance with reputed insurance companies to the satisfaction of the Owner as follows:

#### 80.1 Employees State Insurance Act:

The contractor agrees to and does hereby accept full and exclusive liability for compliance with all obligations imposed by the Employees State Insurance Act., 1948, and the contractor further agrees to defend, indemnify and hold Owner harmless from any liability of penalty which may be imposed by the Central, State or Local authority by the reason of any asserted violation by contractor or Sub-contractor of the Employee's State Insurance Act, 1948 and also from all claims, suits or proceeding that may be brought against the Owner arising under, growing out of or by reasons of the work provided for by this contract whether brought by employees of the contractor, by third parties or by Central or State Government authority or any political sub-division thereof.

The contractor agrees to fill in with the Employees State Insurance Corporation, the Declaration Forms and all forms which may be required in respect of the contractor's or sub-contractor's employees, whose aggregate remuneration is Rs. 560.00 per month or less and who are employed in the work provided for or those covered by ESI from time to time under the Agreement. The contractor shall deduct and secure the agreement of the sub-contractor to deduct the employee's contribution as per the first schedule of the Employee's State Insurance Act from wages and affix the employee's



contribution cards at wages payments intervals. The contractor shall remit and secure the agreement of the sub-contractor to remit to the State Bank of India, Employees State Insurance Corporation Account, the employee's contribution as required by the Act. The contractor agrees to maintain all cards and records as required under the Act in respect of employees and payments and the contractor shall secure the agreement of the sub-contractor to maintain such records. Any expenses incurred for the contributions, making contributions or maintaining records shall be to the contractor's or sub-contractor's account.

The Owner shall retain such sum as may be necessary from the total contract value until the contractor shall furnish satisfactory proof that all contribution as required by the Employees State Insurance Act, 1984, have been paid. This will be pending on the contractor when the Employees State Insurance Act is extended to the place of work.

**80.2 Workmen Compensation and Employees Liability Insurance:**

Insurance shall be affected for all the contractor's employees engaged in the performance of this contract. If any of the work is subject, the contractor shall require the sub-contractor to provide workmen's compensation and employer's liability insurance for the latter's employees if such employees are not covered under the contractor insurance.

**80.3 Any other insurance required under Law or Regulations or by Owner:**

Contractor shall also carry and maintain any and all other insurance, which he may be required under any law or regulation from time to time. He shall also carry and maintain any other insurance, which may be required by the Owner.

**80.4 Accident or Injury to workmen:**

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

**80.5 Transit Insurance:**

In respect of all items to be transported by the Contractor to the site of work, the cost of transit insurance should be borne by the contractor and the quoted price shall be inclusive of this cost.

**81 DAMAGE TO PROPERTY OR TO ANY PERSON OR ANY THIRD PARTY:**

81.1 Contractor's rate shall deem to include taking into account that he has to work in operating plant and shall take sufficient care in moving the plants, equipment and materials from one place to another so that they do not cause





any damage to any person or to the property of the Owner or to a third party including over head and underground cables, pipelines. In the event of such damages including eventual loss of production and operation of the plants or services in any plant or establishment as estimated by the Owner or ascertained or by the third party shall be borne by the Contractor.

81.2 Contractor shall also be responsible for making good to the satisfaction of the Owner any loss or any damage to all structures and properties belonging to the Owner or being executed or procured or being procured by owner or by other agency within the premises of all the work or Owner. If such loss or damages is due to fault and or the negligence or willful acts or omission of the contractors, his employees, agents, representatives or sub-contractors.

81.3 The contractor shall indemnify and keep the owner harmless of all claims for damages to property other than owner's property arising under or by reason of this contract if such claims result from the fault and/ or negligence or willful acts or omission of the contractor, agents, representative or sub-contractor.

**82 DEMURRAGE DUES:**

The contractor shall pay demurrage charges incurred by the Owner because of the contractor's failure to load or unload any goods or materials within the time allowed by the Railway and/ or Transport Agency for such loading or unloading as charges incurred by the contractor within the permissible time as also charges due on consignments booked by or to him. In case the contractor fails to pay these charges, these charges shall be deducted from any sums, which may be due or become due to the contractor in terms of this contract and/ or any other contract.

## SECTION – VIII

### LABOUR LAWS AND ARBITRATION

#### 83 LABOURER LAWS:

Contractor shall comply with any and all laws, ordinances, regulations and decision of courts (which shall be deemed to be a part of this Agreement) concerning the health, sanitary arrangements, wages, welfare, safety and employment of any and all of his workers upon the Project or any portion thereof and shall exclusively bear the consequences of failure to comply therewith Contractor shall Indemnify and hold Engineer and Owner harmless from any claims, fines or penalties which may be made against Engineer or Owner as result of Contractor's failure to fulfil these obligations.

Without limiting the generality of the foregoing, Contractor shall fully comply with.

The contractor shall obtain clearance from the Labour Department regarding the compliance of the labour laws on 6 monthly basis and submit to the owner for record.

- (i) No labour below the age of 18 (eighteen) years shall be employed on the work.
- (ii) The contractor shall not pay less than what is provided under law to labourers engaged by him on the work.
- (iii) The contractor shall at his expense comply with all labour laws and keep the Owner indemnified in respect thereof .
- (iv) The contractor shall pay equal wages for men and women in accordance with applicable labour laws.
- (v) If the contractor is covered under the contractor labour (Regulation and Abolition) Act, he shall obtain a licence from licensing authority (i.e. office of the labour commissioner) by payment of necessary prescribed fee and the deposit, if any, before starting the work under the contract.
- (vi) The Contractor shall employ labour in sufficient numbers either directly or through sub-contractors to maintain the required rate of progress and of quality to ensure workmanship of the degree specified in the Contract and to satisfaction of the Engineer-in-Charge. The contractor shall not employ in connection with the works any person who has not completed his 18 (eighteen) years of age.
- (vii) The Contractor shall furnish to the Engineer-in-Charge the distribution return of the number and description, by trades of the work people



employed on the works. The Contractor shall also submit on the 4<sup>th</sup> and 19<sup>th</sup> of every month to the Engineer-in-Charge a true statement showing in respect of the second half of the preceding month and the first half of the current month (1) the accidents that occurred during the said fortnight showing the circumstance-under which they happened and the extent of damage and injury caused by them and (2) the number of female workers who have been allowed Maternity benefit as provided in the Maternity Benefit Act 1961 or Rules made thereunder and the amount paid to them.

- (viii) The contractor shall comply with the provisions of the payment of Wages Act 1936, Minimum Wages Act 1938, Employees Liability Act 1928, Workmen's Compensation Act, 1923, Industrial Dispute Act 1947, the Maternity Benefit Act 1961, Employees Provident Fund Act, 1952 and Contract Labour regulation and abolition Act 1937, Employment of Children Act 1938 or any modifications thereof or any other law relating thereto and rules made thereunder from time to time.
- (ix) The Engineer-in-Charge shall on a report having been made by an Inspecting Officer as defined in Contract Labour (Regulation and Abolition) Act 1970 have the power to deduct from the moneys due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker or Workers by reason of non-fulfillment of the Conditions of the Contractor for the benefit of workers, non-payment of wages or of deductions made from his or their wages which are not justified by the terms of the Contract or non-observance of the said regulations.
- (x) The Contractor shall indemnify the Owner against any payments to be made under and for the observance of the provisions of the aforesaid Acts without prejudice to his right to obtain indemnity from his sub-contractors. In the event of the contractor committing a default or breach of any of the provisions of the aforesaid Acts as amended from time to time, of furnishing any information or submitting or filling any Form/Register/Slip under the provisions of these Acts which is materially incorrect then on the report of the inspecting Officers the Contractor shall without prejudice to any other liability pay to the owner a sum not exceeding Rs. 50.00 as liquidated damages for every default, breach of furnishing, making submitting, filling materially incorrect statement as may be fixed by the Engineer-in-Charge and in the event of the contractor's default continuing in this respect the liquidated damages may be enhanced to Rs. 50.00 per day of default subject to a maximum of one percent of the estimated cost of the works put to tender. The Engineer-in-Charge shall deduct such amount from bills or security deposit of the Contractor and credit the same to the welfare fund constituted under these acts. The decision of the Engineer-in-Charge in this respect shall be final and binding.

**84 Implementation Of Apprentices Act 1961:**

The contractor shall comply with the provisions of the Apprentices Act 1961 and the Rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer-in-Charge may, at his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising of any violation by him of the provisions of the Act.

**85 Contractor to Indemnify the Owner:**

85.1 The contractor shall indemnify the Owner and every member, Officer and employee of the owner, also the Engineer-in-Charge and his staff against all actions, proceedings, claims, demands costs and expenses whatsoever arising out of or in connection with the matter referred to in clause 81 and elsewhere and all actions, proceedings, claims demands costs and expenses which may be made against the Owner for or in respect of or arising out of any failure by the contractor in the performance of his obligations under the contract. The Owner shall not be liable for or in respect of any demand or compensation payable by law in respect or in consequence of any accident or injury to any workman or other person in the employment of the contractor or his sub-contractor and contractor shall indemnify and keep indemnified the Owner against all such damage and compensation and against all claims, damages, proceedings, costs, charges and expenses whatsoever thereof or in relation thereto.

**85.2 Payment of Claims and Damages:**

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

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

**86. Health and Sanitary Arrangements For Workers:**

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

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

**87. Arbitration:**

All disputes or differences whatsoever which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof of the contract or the rights touching or concerning the works or the execution or maintenance thereof of this contract or the construction meaning operation or effect thereof or to the rights or liabilities of the parties or arising out of or in relation thereto whether during or after completion of the contract or whether before or after determination, fore closure or breach of the contract (other than those in respect of which the decision of any person is by the contract expressed to be final and binding shall after written notice by either party to the contract to the other of them and to the Appointing Authority hereinafter mentioned be referred for adjudication to a sole Arbitrator to be appointed as hereinafter provided.

For the purpose of appointing the sole Arbitrator referred to above, the Appointing Authority will send within thirty days of receipt of the notice, to the contractor a panel of three names of persons.

The contractor shall on receipt of the names as referred selected any one of the person names to be appointed as a sole Arbitrator and communicate his name to the Appointing Authority within thirty days of receipt of the names. The appointing Authority shall there upon without any delay appoint the said person as the sole Arbitrator. If the contractor fails to communicate such selection as provided above within the period specified, the Appointing Authority shall make the selection and appoint the selected person as the sole Arbitrator.

If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacate his office due to any reason whatsoever sole Arbitrators shall be appointed as aforesaid. The work under the contract shall, however continue during the arbitration proceedings.

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



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

The Arbitrator shall give a separate award in respect of each dispute or difference and shall give a reasoned and speaking award/ awards.

The venue of arbitration shall be at Bhubaneswar. However, if the situation so warrants, it may, as and when required, be held at the place where the site of work is situated.

The fees, if any, of the Arbitrator shall, if required to be paid before the award is made and published be paid half and half by each of the parties. The costs of the reference and of the award including the fees, if any of the Arbitrator shall be in the discretion of the Arbitrator who may direct to and by whom and in what manner, such costs or any part thereof shall be paid may fix or settle the amount of costs to be so paid.

The award of the arbitrator shall be final and binding on both the parties.

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

For Public Sector Enterprises guidelines as per the circular of BPE No. 15/9/86-BPE (FIN) dated 30.03.89 as amended time to time will be followed.

#### **88. Jurisdiction/ Governing Laws:**

##### **(a) Jurisdiction:**

For all disputes arising of this contract, the jurisdiction shall be lie under the jurisdiction of direct courts in the respective areas in the State of ORISSA (India) only.

##### **(b) Governing Laws:**

The contract shall be governed by and constructed according to the laws in force in INDIA.



## SECTION – IX SAFETY CODE

### 89. GENERAL:

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

### 90. SAFETY REGULATIONS:

90.1. In respect of all labour, directly or indirectly employed in the work for the performance of contractor's part of this agreement, the contractor shall at his own expense arrange for all the safety provisions as per (i) Safety codes of CPWD & Indian Standards Instructions (ii) The electricity Act, (iii) The Mines Act, and (iv) Regulations. Rules and orders made thereunder and such other acts as applicable.

90.2. The contractor shall observe and abide by all fire and safety regulations of the Owner. Before starting construction work, contractor shall consult Owner's Safety Engineer or Engineer-in-Charge and must make good to the satisfaction of the Owner any loss or damage due to fire to any portion of the work done under this contract or to any of the Owner's existing property.

### 91. First Aid and Industrial Injuries:

(i) Contractor shall maintain first aid facilities for his employees and those of his subcontractors.

(ii) Contractors shall make outside arrangements for ambulance service and for treatment of industrial injuries. Name of those providing these services shall be furnished to Owner prior to start of constructions and their telephone numbers shall be prominently posted in Contractor's field office.

(iii) All critical industrial injuries shall be reported promptly to owner, and a copy of Contractor's report covering each personal injury requiring the attention of a physical shall be furnished to the Owner.

### 92. General Rules:

Smoking within the Battery Areas, rank farm, or dock limits is strictly prohibited. Violators of the "No Smoking" rules shall be discharged immediately.

### 93. Contractor's Barricades:

(i) Contractor shall erect and maintain barricades required in connection with his operation to guard or protect.





- (a) Excavations.
  - (b) Hosting Areas.
  - (c) Areas adjudged hazardous by Contractor's or Owner's Inspectors.
  - (d) Owner's existing property subject to damage by Contractor's operation.
  - (e) Rail road unloading spots.
- (ii) Contractor's employees and those of his sub-contractors shall become acquainted with Owner's barricading practice and shall respect the provisions thereof.
  - (iii) Barricades and hazardous areas adjacent to but not located in normal routes of travel shall be marked by red flasher lanterns at nights.

**94. Scaffolding:**

- (i) Suitable scaffoldings should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period works as can be done safely from ladders. When a ladder is used a Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal and 4 vertical).
- (ii) Scaffolding or staging more than 4 metres above the ground or floor swing on suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise retarded at least one metre high above the floor or platform of such scaffolding or staging and extending along with entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
- (iii) Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally and if the height of the platform of gangway or the stairway is more than 4 metres above ground level or floor level, they should closely boarded, should have adequate width and should be suitably fastened as described in (ii) above.
- (iv) Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 metre.
- (v) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length. The width between the side rails in run ladder shall in no case be less than 30 cm. For ladder upto and including 3 metres in length; for longer ladders this width should be

increase at least 15 mm for each additional metre of length. Uniform step spacing shall not exceed 30 cms. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or public. The contractor shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defence of every suit, action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit or action or proceedings to any such person or which may with the consent of the contractor be paid to compromise any claim by any such person.

**95. Excavation and Trenching:**

All trenches 1.2 metres or more in depth, shall at all times be supplied with at least one ladder for each 50 M length or fraction thereof.

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

**96. General Safety:**

- (i) Before any demolition work is commenced and also during the process of the demolition work.
  - (a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
  - (b) No electric cable or apparatus which is liable to be a source of danger shall remain electrically charged.
  - (c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
- (ii) All necessary personal safety equipment as considered adequate by the Engineer-in-Charge, should be kept available for the use of the persons employed at the site and maintained condition suitable for immediate use and the contractor should take adequate steps to ensure proper use of equipment by persons concerned as outlined below:



- (a) Workers employed on mixing asphalt materials, cement and lime mortars shall be provided with protective footwear and protective gloves.
- (b) Those engaged in white washing and mixing or stacking of cements bags or any materials which are injurious to the eyes shall be provided with protective goggles.
- (c) Those engaged in welding and cutting works, shall be provided with protective face and eye –shields, hand gloves etc.
- (d) Stonebreakers shall be provided with protective goggle and protective clothing and seated at sufficiently safe intervals.
- (e) When workers are employed in sewers and manholes which are in use, the contractor shall ensure that the manhole cover are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or board to prevent accident to the public.
- (f) The contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken:
  - (1) No paint containing lead or lead products shall be used except in the form paste or readymade paint.
  - (2) Suitable facemasks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
  - (3) Overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash them on cessation of work.
- (iii) When the work is done near any place where there is a risk of drowning all necessary safety equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
- (iv) Use of hoisting machines and tackles including their attachments anchorage and supports shall conform to the following standard or conditions:
  - (a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defect and shall be kept in good working order.
  - (b) Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.



## GENERAL CONDITIONS OF CONTRACT

- (c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding which or give signals to the operator.
- (d) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be marked with the safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
- (e) In case of department machines, the safe working load shall be notified by the Engineer-in-Charge. As regards contractor's machines, the contractor shall notify the safe working load of the machine to the Engineer-in-Charge, whenever he brings any machinery to site of work and get it verified by the Engineer-in-Charge.
- (v) Motors, gears, transmission lines, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safe-guards. Hoisting appliances should be provided with such means as to reduce to the minimum the accidental descent of the load, adequate precaution should be taken to reduce to the minimum the risk of any part or parts of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel such as gloves sleeves and boots as may be necessary should be provided. The workers shall not wear any rings, watches and carry keys or other materials, which are good conductors or electricity.
- (vi) All scaffolding, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffoldings, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of works.
- (vii) These safety provisions should be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.
- (viii) The ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the contractor shall be open to inspection by the welfare officer Engineer-in-Charge or safety Engineer of the Administration or their representatives.
- (ix) Notwithstanding the above clauses there is nothing in these to exempt the contractor from the operations of any other Act or rules in force in the Republic of India. The works throughout, including any temporary works, shall be carried out in such a manner as not to interfere in any way whatsoever with the traffic on any roads or footpaths at the site or in vicinity thereto or any existing works whether the property of the Administrations or of a third party.

**97. Care in handling Inflammable gas:**

The Contractor has to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinder/ inflammable liquids/ paints etc. as required under the law and/ or as advised by the fire authorities of the Owner.

**98. Temporary Combustible Structures:**

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

**99. Precautions Against Fire:**

The Contractor will have to provide Fire Extinguisher/ Fire Buckets and drums at work site as recommended by Engineer-in-Charge. They will have to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinders/ inflammable liquid/ paints etc. as advised by Engineer-in-Charge. Temporary combustible structures will not be build near or around the work-site.

**100. Explosives:**

Explosives shall not be stored or used on the works or on the site by the contractor without the permission of the Engineer-in-Charge in writing and then only in the manner and to the extent to which such permission is given. When explosives are required for the works they shall be stored in a special magazine to be provided at the cost of the contractor in accordance with the Explosive Rules. The contractor shall obtain the necessary licence for the storage and the use of explosives and all operations in which or for which explosives are employed shall be at sole risk and responsibility of the contractor and the contractor shall indemnify the owner against any loss or damage resulting directly or indirectly therefrom.

**101. Mines Act:**

101.1 Safety Code: The contractor shall at his own expense arrange for the safety provisions as required by the Engineer-in-Charge in respect of all labour directly employed for performance of the works and shall provide all facilities in connection therewith. In case the Contractor fails to make arrangements and provides necessary facilities as aforesaid. The Engineer-in-Charge shall be entitled to do so and recover the costs thereof from the Contractor.

101.2 Failure to comply with Safety code or the provisions relating to report on accidents and to grant of maternity benefits to female worker shall make the Contractor liable to pay Company liquidated damages an amount not exceeding Rs. 50/- for each default or materially incorrect statement. The decision of the Engineer-in-Charge in such matters based on reports from the Inspecting Officer or from representatives of Engineer-in-Charge shall be final and binding and deductions for recovery of such liquidated damages may be made from any amount payable to the Contractor from all the provisions of the Mines Act 1952 or any statutory modification's or re-enactment thereof the time being in force and any Rules and Regulations made thereunder in respect of all the



## GENERAL CONDITIONS OF CONTRACT

persons employed by him under this contractor and shall indemnify the Owner from and against any claim under the Mines Act or the rules and regulations framed thereunder by or on behalf of and persons employed by him or otherwise.

**102. Preservation of Peace:**

The Contractor shall taken requisite precautions and use his best endeavors to prevent any riotous or unlawful behaviour by or amongst his workmen and other employed on the works and for the preservation of peace and protection of the inhabitants and Security of property in the neighborhood of the work. In the event of the Owner requiring the maintenance of a special Police force at or in the vicinity of the site during the tenure of works, the expenses thereof shall be borne by the Contractor and if paid by the Owner shall be recoverable from the Contractor.

**103. Outbreak of Infectious Diseases:**

The Contractor shall remove from his camp such labour and their families as refuse protective inoculation and vaccination when called upon to do so by the Engineer-in-Charge's Representative. Should Cholera, Plague or other infectious diseases break out the Contractor shall burn the huts, bedding clothes and other belonging of or used by the infected parties and promptly erect new huts on healthy sites as required by the Engineer-in-Charge failing which within the time specified in the Engineer's requisition, the work may be done by the Owner and the cost thereof recovered from the Contractor.

**104. Treatment of Contractor's Staff in Company's Hospital:**

The Contractor and his staff, other than labourers and their families requiring medical aid from the Owner's hospitals and dispensaries will be treated as private patients and charged accordingly. The contractor's labourers and their families will be granted from treatment in the Owner's hospitals and dispensaries where no other hospitals or dispensaries are available provided the contractor pays the cost of medicines dressing and money accordingly to the normal scale as also additional charges if any for special examination e.g. X- Ray etc.

**105. Use of Intoxicants:**

The sale of dent spirits or other intoxicating beverages upon the work in any of the buildings, encampments or tenements owned, occupied by or within the control of Contractor or any of his employee is forbidden and the contractor shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.

In addition to the above, the contractor shall abide by the safety code provision as per CPWD safety code and Indian Standard Code framed from time to time.





GENERAL CONDITIONS OF CONTRACT

**PROFORMA FOR BANK GUARANTEE FOR EARNEST MONEY DEPOSIT**

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

B. G. No. \_\_\_\_\_

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

1. WHEREAS, M/s National Aluminium Company Limited (A Government of India Enterprise), having its Corporate Office at NALCO BHAWAN, P-1 Nayapalli, Bhubaneswar (hereinafter called "Company"/ "Owner" which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) has issued tender paper vide its Tender No. .... for ..... (hereinafter called "the said tender") to M/s. .... (here in after called the said Tenderer(s)" which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns and as per terms and conditions of the said tender, the tenderer shall submit a Bank guarantee for Rs. .... (Rupees .....only) towards earnest money in lieu of cash.
2. WE .....Bank having its branch office at .....do hereby undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Company stating that in the opinion of the company which is final and binding, the amount claimed is due because of any withdrawal of the tender or any material alteration to the tender after the opening of the tender by way of any loss or damage caused to or would be caused or suffered by the Company by reason of any breach by the said tenderer(s) of any of the terms and conditions contained in the said tender or failure to accept the letter of Intent Agreement or that the amount covered under this Guarantee is forfeited. Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bank under this guarantee, However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....(Rupees.....only).
3. We undertake to pay to the Company any money so demanded not withstanding any dispute or disputes raised by the tenderer (s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under this present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under. Our liability to pay is not dependent or conditional on the owner proceeding against the tenderer.
4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said tenderer(s) but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said contract(s)/ Order(s) are fulfilled.





## GENERAL CONDITIONS OF CONTRACT

5. WE ..... Bank Ltd. further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the finalisation of the said tender and that it shall continue to be enforceable till the said tender is finally decided and order placed on the successful tenderer(s) and or till all the dues of the company under or by virtue of the said tender have been fully paid and its claims satisfied or discharged or till a duly authorised officer of the company certifies that the terms and conditions of the said tender have been fully and properly carried out by the said tenderer (s) and accordingly discharges the guarantee.
6. That the Owner Company will have full liberty without reference to us and without affecting this guarantee to postpone for any time or from time to time. The exercise of any of the power of the owner under the tender.
7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry we shall be discharged from all the liabilities under this guarantee.
8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time on the request of Tenderer (s).

Date.....

.....Bank  
Corporate Seal of the Bank

By its constitutional Attorney

Signature of duly  
Authorised person  
On behalf of the Bank  
With seal & signature code

(BGs to be furnished from any of the banks listed in Annexure)

**PROFORMA FOR BANK GUARANTEE FOR SECURITY DEPOSIT**

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

**B. G. No.** \_\_\_\_\_**Date:** \_\_\_\_\_

In consideration of National Aluminium Company Limited (A Government of India Enterprise), having its Corporate Office at NALCO BHAWAN, P-1 Nayapalli, Bhubaneswar (hereinafter called “Company”/ “Owner” which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) having agreed to exempt M/s. .... (Hereinafter called “the said Contractor (s)/ Seller(s)” which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns) from the demand under the terms and conditions of Contract(s)/ Order(s) No. .... , dt. .... of cash security deposit for the due fulfillment by the said contractor(s) seller(s) of the terms and conditions contained in the said Contract(s)/Order(s), on production of Bank Guarantee for Rs..... (Rupees.....only).

2. We .....Bank having its branch office at .....do hereby agree and undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Company stating that in the opinion of the company which is final and binding, the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of any breach by the said Contractor(s)/seller(s) of any of the terms and conditions contained in the said contract(s) orders(s) or by reasons of the said Contractor(s)/ Seller(s) failure to perform the said Contract(s)/ Order(s) including defect liability obligations or that the amount covered under this guarantee is forfeited. Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees.....only).

3. We undertake to pay to the Company any money so demanded notwithstanding any dispute or disputes raised by the contractor (s)/ Seller(s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment thereunder. Our liability to pay is not dependent or conditional on the owner proceeding against the Contractor(s)/ Seller(s).

4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said Contractor(s)/ Seller(s) but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said contract(s)/ Order(s) are fulfilled.

5. We .....Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the



## GENERAL CONDITIONS OF CONTRACT

performance of the said Contract(s)/ Order(s) and that it shall continue to be enforceable till all the dues of the company under or by virtue of the said Contract(s)/Order(s) have been fully paid and its claims satisfied or discharged or till a duly authorised officer of the company certifies that the terms and conditions of the said Contract(s)/Order(s) have been fully and properly carried out by the said contractor(s) and accordingly discharges the guarantee.

6. We .....Bank further agree with the Company that the company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract(s)/ Order(s) or to extend the time of performance by the said Contractor(s) Seller(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Contractor(s)/ Seller(s) and to forbear or enforce any of the terms and conditions relating to the said Contract(s)/ Order(s) and we shall not be relieved from our liability by reason of any such variations, or extension being granted to the said Contractor (s)/ Seller(s) or for any forbearance, act or omissions on the part of the Company or any indulgence by the Company to the said Contractor(s)/ Seller(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have affect of so relieving us.

7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry we shall be discharged form all the liabilities under this guarantee.

8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time at the request of Contractor(s)/ Sellers(s).

Date.....

.....Bank

Corporate Seal of the Bank

By its constitutional Attorney

Signature of duly  
Authorised person  
On behalf of the Bank  
With seal & signature code

(BGs to be furnished from any of the banks listed in Annexure)



GENERAL CONDITIONS OF CONTRACT

**PROFORMA FOR CONTRACT CUM PERFORMANCE GUARANTEE BY  
SELLER/ CONTRACTOR**

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

**B. G. No.....**

**Date.....**

WHEREAS National Aluminium Company Limited (A Government of India Enterprise) having its Corporate Office at NALCO BHAWAN, P-1 Nayapalli, Bhubaneswar (hereinafter called "Company"/ "Owner" which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) has entered into a contract with M/s. .... / has placed a purchase order on M/s.....(hereinafter referred to as "Contractor(s)/ Seller(s)" which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns) for .....on the terms and conditions as set out inter alia, in the Company's contract No./ P.O. No. .... date .....and various documents forming part thereof hereinafter referred to as the "said contract" which expression include all amendments, modifications and/ or variations thereto and where as the Contractor(s)/ Seller(s) has agreed for due execution of the entire contract and guarantees its performance including any parts executed through any other agencies/ subcontractors.

AND WHEREAS one of the conditions of the "said contract" is that "contractor(s)/seller(s) shall furnish to the owner a Bank Guarantee from a bank for .....%(.....percent) of the total value of the "said contract" against due and faithful performance of the "said contract" including defect liability obligations" and the performance guarantee obligations of the contractor(s)/seller(s) for execution/ supplies made under the "said contract."

2. We .....Bank having its branch office at .....do hereby agree and undertake to pay the amount due and payable under this guarantee without any demur merely on a demand from the Company stating that in the opinion of the Company, which is final & binding, the amount claimed is due by reason of default made by the Contractor(s)/ Seller(s) in performing any of the terms & conditions of the said Contract including defect liability obligations, in fulfilling the performance guarantee obligation or loss or damage caused to or would be caused to or suffered by the Company by reason of any breach by the said Contractor (s)/ Seller(s) of any of the terms & conditions of the contract. Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However our liability under this guarantee shall be restricted to Rs..... (Rupees.....only).

3. We undertake to pay to the Company any money so demanded not withstanding any dispute or disputes raised by the contractor (s)/ Seller(s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under this present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment



## GENERAL CONDITIONS OF CONTRACT

thereunder. Our liability to pay is not dependent or conditional on the owner proceeding against the Contractor(s)/ Seller(s).

4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said Contractor(s)/ Seller(s) but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said contract(s)/ Order(s) are fulfilled.

5. We .....Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract(s)/ Order(s) and that it shall continue to be enforceable till all the dues of the company under or by virtue of the said Contract(s)/Order(s) have been fully paid and its claims satisfied or discharged or till a duly authorised officer of the company certifies that the terms and conditions of the said Contract(s)/Order(s) have been fully and properly carried out by the said contractor(s) and accordingly discharges the guarantee.

6. We .....Bank further agree with the Company that the company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract(s)/ Order(s) or to extend the time of performance by the said Contractor(s) Seller(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Contractor(s)/ Seller(s) and to forbear or enforce any of the terms and conditions relating to the said Contract(s)/ Order(s) and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor (s)/ Seller(s) or for any forbearance, act or omission on the part of the Company or any indulgence by the Company to the said Contractor(s)/ Seller(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have affect of so relieving us.

7. Notwithstanding anything contained herein before, out liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry we shall be discharged form all the liabilities under this guarantee.

8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time at the request of Contractor(s)/ Sellers(s).

Date.....

Corporate Seal of the Bank

.....Bank

By its constitutional Attorney

Signature of duly Authorised person on behalf of the Bank with seal & signature code

(BGs to be furnished from any of the banks listed in Annexure.)



GENERAL CONDITIONS OF CONTRACT

**BANK GUARANTEE FOR ADVANCE PAYMENT**

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

**B.G. No.** \_\_\_\_\_**Date:** \_\_\_\_\_

In consideration of National Aluminium Company Limited (A Government of India Enterprise), having its Corporate Office at NALCO BHAWAN, P-1 Nayapalli, Bhubaneswar (hereinafter called "Company"/ "Owner" which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) having agreed to make an advance payment of Rs. .... (Rupees.....only) to M/s. .... (here in after called "the said Contractor (s)/ Seller(s)" which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns) from the demand under the terms and conditions of Contract/Order dated. ....on production of a bank guarantee of equivalent amount.

2. We .....Bank having its branch office at .....do hereby agree and undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Company stating that in the opinion of the company which is final and binding, the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of non-payment / adjustment of any part of the said advance or any dues to the company or any breach by the said Contractor(s)/seller(s) of any of the terms and conditions contained in the said contract(s) orders(s) or by reasons of the Contractor(s)/ Seller(s) failure to perform the said Contract(s)/ Order(s). Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bank under this guarantee, However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....(Rupees.....only).
3. We undertake to pay to the Company any money so demanded not withstanding any claim dispute or disputes raised by the contractor (s)/ Seller(s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under this present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment thereunder. Our liability to pay is not dependable or conditional on the owner proceeding against the Contractor(s)/ Seller(s).
4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said tenderer(s) but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said tender are fulfilled.



## GENERAL CONDITIONS OF CONTRACT

5. We .....Bank Ltd. further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the finalisation of the said tender and that it shall continue to be enforceable till the said tender is finally decided and order placed on the successful tenderer(s) and/or till all the dues of the company under/ or by virtue of the said tender have been fully paid and its claims satisfied or discharged or till a duly authorised officer of the company certifies that the terms and conditions of the said tender have been fully and properly carried out by the said tenderer(s) and accordingly discharges the guarantee.
6. That the Owner/Company will have full liberty without reference to us and without affecting this guarantee to postpone for any time or from time to time, the exercise of any of the power of the owner under the tender.
7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry we shall be discharged from all the liabilities under this guarantee.
8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time on the request of the Tenderer(s).

Date.....

.....Bank

Corporate Seal of the Bank

By its constitutional Attorney  
Signature of duly  
Authorised person  
On behalf of the Bank  
With seal & signature code

BGs to be furnished from any of the banks listed in Annexure.





## **LIST OF STANDARDISED BANKS**

### **1. SCHEDULED PUBLIC SECTOR BANKS (INDIAN)**

1. State Bank of India.
2. State Bank of Bikaner and Jaipur
3. State Bank of Hyderabad
4. State Bank of Indore.
5. State Bank of Mysore.
6. State Bank of Patialia.
7. State Bank of Saurashtra
8. State Bank of Travancore.
9. Allahabad Bank
10. Andhra Bank
11. Bank of Boroda
12. Bank of India
13. Bank of Maharashtra
14. Canara Bank
15. Central Bank of India
16. Corporation Bank
17. Dena Bank
18. Indian Bank
19. Indian Oversea Bank
20. Oriental Bank of Commerce
21. Punjab National Bank
22. Punjab and Sid Bank
23. Syndicate Bank
24. Union Bank of India
25. United Bank of India
26. UCO Bank
27. Vijaya Bank.

(Twenty Seven Banks)

**2. SCHEDULED PRIVATE SECTOR BANKS (INDIAN):**

1. Vysya Bank
2. UTI Bank Ltd.
3. SBI Commercial & International Bank Ltd.
4. ICICI Banking Corporation Bank Ltd.
5. HDFC Bank Ltd.
6. IDBI Bank Ltd.

(Six Banks)

**3. SCHEDULED FOREIGN BANKS:**

1. American Express Bank Ltd.
2. ANZ Grindlays Bank Plc
3. Bank of American NT & SA
4. Bank of Tokyo Ltd,
5. Banque Nationale de Paris
6. Barclays Bank Plc
7. Citi Bank N.A.
8. Deutsche Bank A.G.
9. Hongkong & Shanghai Banking Corporation.
10. Standard Chartered Bank
11. The Chase Manhattan Bank Ltd.
12. Dresdner Bank AG.

(Twelve Banks)



GENERAL CONDITIONS OF CONTRACT

*APPENDIX –I A*

**DETAILS OF WORKS OF SIMILAR NATURE & MAGNITUDE  
CARRIED OUT DURING THE LAST 5 YEARS**

Sl. No.	Name of work done	Estimated cost	When started	When completed	Date of Completion As per contract	Remarks
------------	----------------------	-------------------	-----------------	-------------------	--	---------

- Note :** 1. In the remarks column, please state whether the works stated above are carried out by you in the name of the Firm in which the present Bid is submitted or any other names. If later, state the relationship of the firm and also a copy of the Partnership Deed.
2. Please enclose the true copy of the certificate issued by the authorities, if any.

*Signature of Bidder*



*GENERAL CONDITIONS OF CONTRACT*

APPENDIX –I B


Name of Work:

Name of Tenderer:

CONCURRENT COMMITMENTS OF THE TENDERER

Full Postal Address of Client & Name of Officer-in-Charge	Description of the work	Value of contract	Date of commencement of work	Scheduled Completion period	Percentage Completion as on date	Expected date of completion	Remarks if any

***SIGNATURE OF TENDERER***

	GENERAL CONDITIONS OF CONTRACT
---	--------------------------------

**APPENDIX –II****NAME OF WORK:****NAME OF TENDERER:****DETAILS OF EQUIPMENTS, TOOLS TACKLES**

Tenderer shall submit herein details of equipment, tools, tackles, etc required to perform the work and shall note in each case whether the same is (a) already owned by tenderer and available for use on this contract (b) anticipated to be hired by Contractor or (c) anticipated to be purchased by Contractor, in case of (a) anticipated (b) and (c) Location of hirer or supplier shall be stated.

Sl. No.	Description, Make Mode & Capacity	Year of Manufacture	Category (a) or (b) or (c) below	Location	Remarks
(1)	(2)	(3)	(4)	(5)	(6)

- Contractor agrees to augment the above chart with additional number/ categories of equipment, if required to complete the work within the agreed time schedule of completion and directed by the Engineer-in-charge.
- In case of hiring of equipment from other agencies, copies of the arrangements made with the hirer/ supplier shall have to be furnished.

***SIGNATURE OF TENDERER***



GENERAL CONDITIONS OF CONTRACT

**APPENDIX – III**

**DETAILS OF MINIMUM MANPOWER PROPOSED TO BE  
DEPLOYED ON THIS WORK**

Sl. No.	Details of Manpower	No.	Remarks
---------	---------------------	-----	---------

Note : Please furnish the above details in two categories – To be deployed by (I) Contractor and (ii) Sub- contractors.

Minimum manpower deployment shall be based broadly as above and will be modified as mutually agreed to suit the detailed construction programme jointly worked out; further if any additional man power is required for completion of work in time, the same shall be provided by you as directed by Engineer without any extra cost.

The manpower proposed to be deployed in the work needs to be given quarter wise separately for direct personnel of the contractor and the manpower proposed to be deployed through the sub-contractors.



GENERAL CONDITIONS OF CONTRACT

**APPENDIX - IV**

**ORGANISATION CHART SHOWING NO. OF QUALIFIED  
ENGINEERS & SUPERVISORY PERSONNEL ETC.**

Sl. No.	Details of personnel to be deployed on this work	No.
------------	---	-----

**Note:** Names and short resume of their experiences may also be given for key personnel.

The tentative chart of your site organisation as above furnished by you shall be subject to variation to suit the construction programme/ requirement and as directed by Owner/ Engineer.





GENERAL CONDITIONS OF CONTRACT

**APPENDIX – V****LIST OF PROPOSED SUB CONTRACTORS**

Sl. No.	Name of sub-contractor	Description of work or trade	Amount (Rs.)
------------	---------------------------	---------------------------------	--------------

- 
- 1) Types of work executed by the sub-contractors.
  - 2) The particulars of clients where the sub-contractors did the works.
  - 3) Approximate value of the work carried by the sub-contractors in the last 3 years.

**( Signature of Bidder )**

**APPENDIX – VI****PPROGRESS BILLINGS**

(Bidder's anticipated progress billing month by month to be inserted here)

Tentative construction schedule indicating the expected dates of start of activity is to be given by the contractor. This schedule shall be updated within specified milestones from time to time depending upon the availability of fronts equipment and priorities fixed by Engineer. Contractor shall submit within 15 days of the date of letter of intent programme/ schedule for supply of items covering all phases of work including design, procurement, manufacture, assembly, fabrication, testing, transportation, erection, testing at site and commissioning matching the overall completion schedule.

The billing as well as all the connected documents shall be computerized.

***(Signature of Bidder)***

**APPENDIX – VII****NAME OF WORK:****NAME OF TENDERER:****INFORMATION ABOUT TENDERERS (FORM – H)**

- 1.0. In case of Individual:
  - 1.1. Name of Business:
  - 1.2. Whether his business is registered:
  - 1.3. Date of Commencement of Business:
  - 1.4. Whether he pays Income Tax over Rs. 10,000/- per year:
- 2.0. In case of Partnership:
  - 2.1. Name of Partnership with qualification:
  - 2.2. Whether the Partnership is Registered:
  - 2.3. Date of Establishment of firm:
  - 2.4. If each of the partners of the firm pays Income Tax over Rs. 10,000/- a year and if not, who of them pays the same.
- 3.0. In case of Limited Liability Company or Company Limited by Guarantees:
  - 3.1. Amount of paid of capital:
  - 3.2. Name of Directors:
  - 3.3. Date of Registration of Company:
  - 3.4. Copies of the Balance Sheet of the Company of the last two years :

Copies of audited Profit & Loss Account and the Balance sheet shall be enclosed in case of Individuals, partnerships as well as limited companies for the last 3 years.

**( Signature of Tenderer)**  
**Name & Address of the Tenderer**



GENERAL CONDITIONS OF CONTRACT

**APPENDIX – VIII****NAME OF WORK:****NAME OF TENDERER:****LIST OF ENCLOSURES (FORM – I)**

The tenderer is required to enclose the following documents as part of his tenderer.

1. Power of attorney of the signatory to the tender.
2. Income Tax/ Sales Tax Clearance Certificate in the proforma prescribed by the Govt. of India.
3. Documents showing annual turnover for similar works for the past two years such as annual report, profit and loss account etc.
4. Solvency Certificate by Nationalized Schedule Bank.

**Signature of Tenderer**

**\*\* In absence of Income Tax Clearance Certificate tenderer may not be awarded the work tendered for as per Central Govt. Directives.**



## APPENDIX – IX

NAME OF WORK:


NAME OF TENDERER:

### **EXCEPTION AND DEVIATION (FORM – J)**

As pointed out in the NIT/ LIT, tenderer may stipulate here exceptions and deviations to the tender conditions, if considered un-avoidable.


Sl. No.	Page No. of tenderer document	Sl. No. of tender document	Subject	Deviation
---------	-------------------------------	----------------------------	---------	-----------

***SIGNATURE OF TENDERER***

	GENERAL CONDITIONS OF CONTRACT
---	--------------------------------

**AMENDMENT TO GCC**

Sl No	Clause No	Brief Description of Clause	Modification
01	2.3  2.3.10	Power Supply	<p>i.) Clause No. 2.3 of General Condition of Contract stands modified to the following extent:</p> <p>The cost of construction power appearing in the 10<sup>th</sup> and 11<sup>th</sup> line as Rs 1/- per kwh shall be read as Rs.2.85 (Rupees two and eighty five paise only) per kwh</p> <p>The state Electricity Inspector appearing in the second line shall be read as ‘Central Electricity Authority at Chennai’.</p>
02	2.4	Land for Contractor’s Field office, Godown and Workshop	<p>Clause No. 2.4 of General Condition of Contract modified to the following extend:</p> <p>“The owner shall provide land to the Contractor for their offices, go-down and workshop “</p>
03	2.5	Land for Residential Accommodation	<p>Clause No. 2.5 of General Condition of Contract modified to the following extend:</p> <p>“The land for residential accommodation for staff and labour may be made available to Contractor outside plant boundary limit.”</p>
04	22	Extension of time	<p>The word “any one” appearing in the end of the second para of Clause No. 22.0 shall be read as “OWNER”.</p>
05	52.3.6	Return of unutilised materials and scrap/wastage	<p>i. The words “SAIL, Bhubaneswar stock yard rate” appearing in 3<sup>rd</sup> line of first para shall be replaced by “ Landed cost”</p> <p>ii. The words “Rs.7000/- per tonne” appearing in last para shall be replaced by “ twice the landed cost of materials”</p>
06	53 (xv)	Conditions for issue of materials	<p>The contents of the sub-clause No.53.(xv) shall stand deleted and replaced with the following:</p> <p>“For the free issue materials, the following norms shall be adopted:</p> <p>i. For issue of materials within plant boundary wall limit, the Contractor shall submit only indemnity bond for the entire value of the materials issued to them free of cost as Clause 53 (ix) of GCC.</p> <p>ii. For the materials which are issued to out</p>

	GENERAL CONDITIONS OF CONTRACT
---	--------------------------------

			<p>side plant boundary like township etc., the Contractor shall furnish Bank Guarantee equivalent to 20 % of value of materials and indemnity bond for the 80 % value of the materials.</p> <p>iii. For materials taken out side Damanjodi/Angul to the vendor's Shop, 100 % Bank Guarantee against value of the materials will be submitted by the vendor before taking of the materials. The Indemnity Bond and the Bank Guarantee shall remain valid till the material account is totally settled.</p>
7	60 ( c)	Alterations in Specifications and Design and Extra Works	The words "including equipment hire charges at Schedule hourly/ daily rates" appearing in 7 <sup>th</sup> line shall be replaced by the words " prevalent at site the time of execution".
8	60(d)	Alterations in Specifications and Design and Extra Works	Add new sub-Clause 60(d) as follows: "The quoted prices/rates indicated in Schedule of Rates shall remain firm for all variations in contract value within range of (+) 50 % and (-) 25 % for the entire duration of the contract. In case the actual contract value varies from the awarded contract value beyond the above mentioned limit than adjustment to contract value shall be made in accordance with procedure specified in proforma for adjustment for increase/ decrease in contract value enclosed as per Annexure in SCC".
9	76.3(ii)	Completion documents	Clause No. 76(ii) of General Condition of Contract shall be replaced by: "Six sets of construction drawings showing there in execution of the work duly approved by Engineer-in-charge and one set of reproducible on polyester film."
10	80.1	Employees State Insurance Act	Delete the word "whose aggregate remuneration is Rs.560.00 per month or less and" appearing in the 3 <sup>rd</sup> & 4 <sup>th</sup> line of the 2 <sup>nd</sup> para of this sub clause.
11	New Sub clause	-	Add a new clause designated as Sub clause 80.6 after existing Cl no. 80.5,  "80.6 – The contractor shall comply with all relevant and applicable statutory provisions in respect of the workers engaged by him at his cost and above stipulation are only indicative are not exhaustive."



12	83 (viii)	Labour Laws	<p>Clause 83 (viii) of GCC shall be modified to the following extent:</p> <p>Add the words “<i>all relevant statutes at their own costs including</i>” between the words “<i>provisions of</i>” and “<i>the payment of Wages Act 1936</i>” appearing in the first line of this sub-clause.</p> <p>Provided further that-</p> <p>a) The payment of minimum wages to the contract labourers shall be as per the rates notified by the Central Government, as per Minimum Wages Act-1948 and as adopted/ circulated by the NALCO Management from time to time <i>plus</i> additional element of Rs.12.00 (Rupees twelve only) and statutory dues thereon.</p> <p>b) The minimum wage as notified by the Chief Labour Commissioner (Central) has a variable component as Special Allowance which is linked to average AICPI for Industrial workers, which keeps on changing every six months. The contractor has to absorb all such variations due to increase in Minimum wage in their quoted price, and no claim whatsoever on this account shall be entertained.</p> <p>c) The classification of workers in different categories will be as per the notification issued by the Central Government fixing the minimum wages for the above scheduled appointment. Where the minimum wages notified by the concerned State Government are higher than the rates notified by Central Government, the State Government rates should apply in concerned <i>scheduled employment</i> as long as the same remains higher than the Central Government rates.</p>
13	New Clause	Jurisdiction/ Governing Law	<p>Add a new clause designated as Sub clause 88 (c) after existing Cl no. 88 (b)</p> <p>All the works that will be carried out inside the factory premises shall attract the provisions of</p>



## GENERAL CONDITIONS OF CONTRACT

			<p>factory act for the contract labourers engaged therein.</p> <p>The Contractor, before commencement of work will arrange medical examination at his cost and shall submit the certificate of fitness in respect of the workers in the prescribed form from the nearby District HQ hospital or any Govt. Hospital for his workers, who will be handling or working with hazardous substance.</p> <p>In respect of contracts having more than one year, the medical check up of such workers shall have to be repeated by the contractor on completion of every one year.</p>
14	79	Taxes & Duties	<p>The rates quoted by the tenderer will cover all the taxes, duties, and levies as applicable on the date of bid/ revised bid (if any).</p> <p>- In case of any imposition of <u>new taxes</u> by Govt notification at a later date, same shall be reimbursed to the contractor against submission of authentic document towards payment of such taxes by them.</p> <p>- In case of revision of rate of Works Contract Tax by Govt notification, same shall be reimbursed to the contractor against submission of documentary evidence towards payment of such extra amount by them.</p>

Signature Not Verified

Digitally signed by GYANENDRA KUMAR  
JHA  
Date: 2024.06.05 17:50:03 IST  
Location: eProcure-EPROC of 96