

**Basic Details**

<b>Organisation Chain</b>	National Aluminium Company Limited,NALCO  NALCO-Corporate Office-Bhubaneswar  Materials,CO,Bhubhaneswar,NALCO		
<b>Tender Reference Number</b>	NBC/MM/510/8-566/FTA/2023		
<b>Tender ID</b>	2023_NALCO_747509_1		
<b>Tender Type</b>	Global Tenders	<b>Form of contract</b>	Turn-key
<b>Tender Category</b>	Goods	<b>No. of Covers</b>	2
<b>General Technical Evaluation Allowed</b>	No	<b>ItemWise Technical Evaluation Allowed</b>	No
<b>Payment Mode</b>	Offline	<b>Is Multi Currency Allowed For BOQ</b>	Yes
<b>Is Multi Currency Allowed For Fee</b>	No	<b>Allow Two Stage Bidding</b>	No

**Payment Instruments**

Offline	S.No	Instrument Type
	1	Direct Credit
	2	Bank Guarantee
	3	Demand Draft
	4	R-T-G-S
	5	ECS
	6	NEFT

**Cover Details, No. Of Covers - 2**

Cover No	Cover	Document Type	Description
1	Fee/PreQual/Technical	.pdf	NIT
2	Finance	.xls	BOQ

**Tender Fee Details, [Total Fee in ₹ \* - 0.00]**

<b>Tender Fee in ₹</b>	0.00		
<b>Fee Payable To</b>	Nil	<b>Fee Payable At</b>	Nil
<b>Tender Fee Exemption Allowed</b>	No		

**EMD Fee Details**

<b>EMD Amount in ₹</b>	25,00,000	<b>EMD through BG/ST or EMD Exemption Allowed</b>	Yes
<b>EMD Fee Type</b>	fixed	<b>EMD Percentage</b>	NA
<b>EMD Payable To</b>	SBI	<b>EMD Payable At</b>	Bhubaneswar

**Foreign Currency BOQ Details**

S.No	Currency	Conversion rate in ₹
1	US Dollar	NA
2	European Euro	NA
3	British Pound	NA
4	Australian Dollar	NA
5	Swiss Franc	NA
6	Japanese yen	NA
7	Canadian Dollar	NA
8	Norwegian Kroner	NA

**Work / Item(s)**

<b>Title</b>	Furnace Tending Assembly (FTA) for Anode Baking Furnace-I (ABF) in Smelter Plant, NALCO, Angul, Odisha				
<b>Work Description</b>	Furnace Tending Assembly (FTA) for Anode Baking Furnace-I (ABF) in Smelter Plant, NALCO, Angul, Odisha				
<b>Pre Qualification Details</b>	As per tender				
<b>Independent External Monitor/Remarks</b>	As per tender				
<b>Tender Value in ₹</b>	NA	<b>Product Category</b>	Miscellaneous Goods	<b>Sub category</b>	As per tender
<b>Contract Type</b>	Tender	<b>Bid Validity(Days)</b>	180	<b>Period Of Work(Days)</b>	7220

<b>Location</b>	NALCO Angul Odisha India	<b>Pincode</b>	759145	<b>Pre Bid Meeting Place</b>	Angul Odisha India
<b>Pre Bid Meeting Address</b>	NALCO Smelter Plant Angul Odisha India	<b>Pre Bid Meeting Date</b>	21-Apr-2023 10:00 AM	<b>Bid Opening Place</b>	Bhubaneswar
<b>Should Allow NDA Tender</b>	No	<b>Allow Preferential Bidder</b>	No		

**Critical Dates**

<b>Publish Date</b>	30-Mar-2023 01:00 PM	<b>Bid Opening Date</b>	12-May-2023 04:00 PM
<b>Document Download / Sale Start Date</b>	30-Mar-2023 01:00 PM	<b>Document Download / Sale End Date</b>	05-May-2023 01:00 PM
<b>Clarification Start Date</b>	NA	<b>Clarification End Date</b>	NA
<b>Bid Submission Start Date</b>	30-Mar-2023 01:00 PM	<b>Bid Submission End Date</b>	05-May-2023 01:00 PM

**Tender Documents**

NIT Document	S.No	Document Name	Description	Document Size (in KB)	
	1	Tendernotice_1.pdf	NIT	2505.57	
Work Item Documents	S.No	Document Type	Document Name	Description	Document Size (in KB)
	1	BOQ	BOQ_785954.xls	BOQ	308.00

**Tender Inviting Authority**

<b>Name</b>	GM Materials
<b>Address</b>	NALCO CO Bhubaneswar

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## NATIONAL ALUMINIUM COMPANY LIMITED

(A Govt. of India Enterprise)

P/1, Nalco Bhawan, Bhubaneswar - 751 013, India

CIN NO.# L27203OR1981 GOI000920

### NOTICE INVITING TENDER (NIT)

## GLOBAL OPEN e-TENDER NOTICE

No. - NBC/MM/510/8-566/FTA/2023

Date: 30/03/2023

National Aluminium Company invites competitive bids in CPPP Portal through e-tendering in two parts for **design, engineering, manufacture, supply, transport/shipment, storage, fabrication, assembly, installation, erection, testing, commissioning, performance & process guarantee, PG test, handing over of new Furnace Tending Assembly (FTA) for Anode Baking Furnace-I (ABF) in Smelter Plant, NALCO, Angul, Odisha, India including dismantling of existing FTA-1, adjoining Garlic Crane-261, old structure/equipment/system, if any, cutting to small sizes and shifting to designated location.** For further details and downloading Tender Documents please log on to [www.nalcoindia.com/](http://www.nalcoindia.com/) [www.eprocure.gov.in](http://www.eprocure.gov.in). Bidders are requested to visit the above websites regularly for any corrigendum/modification/addition/bid due date extension for this tender, as these information shall not be published in print media and bidders shall take into consideration the same while preparing and submitting their bids.

General Manager (Materials)

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## 1.0 CRITICAL DATES:

Online NIT downloading, bid preparation and submission date (both priced and un-priced) : 30/03/2023, 16:00 Hrs. IST to 05/05/2023, 13:00 Hrs. IST

Pre-bid meeting at Smelter Plant, Angul, Odisha : 21/04/2023, 10:00 Hrs. IST

Date and Time of opening of the tender (un-priced only) : 12/05/2023, 16:00 Hrs. IST

## 2.0 COMPLETION SCHEDULE:

The schedule for completion in all respect as per scope of this NIT document shall be **24 months** from the date of LOI/Brief Order/Purchase Orders. The offer submitted by the bidder shall be accompanied by a time schedule showing individual time period for each activity like submission of drawings, supply, erection, commissioning, dismantling, etc.

## 3.0 EARNEST MONEY DEPOSIT (EMD):

The bidders intending to participate in the tender should furnish Earnest Money Deposit (EMD) for **INR 25,00,000/-** (Rupees Twenty Five Lakh only) or **USD 30,355.00** or **EURO 28,036.00**. for details refer para 5.0 of Instruction to Bidders.

## 4.0 BIDDER'S QUALIFYING CRITERIA (BQC):

The bidder intending to participate in the Tender must fulfil the following bidder's qualifying Criteria:

### 4.1 TECHNICAL ELIGIBILITY CRITERIA:

CI No	Technical Criteria	Response of the bidder
1.0	<p>The bidder should have experience of having successfully completed "Similar Work" during the last 15 years as on date of issue of NIT.</p> <p>"Similar Work" means "The Bidder should have designed, engineered, manufactured, supplied &amp; commissioned at least one FTA (Furnace tending assembly) having minimum handling capacity of 48000 baked anodes (Anode weight minimum 1MT)/year, in Anode Baking Furnace of an Aluminum Smelter Plant". LSTK experience of supply, erection and commissioning of Anode Baking Furnace, in which FTA forms a part of it, shall also be acceptable.</p> <p>The supplied FTA should have minimum functions like sucking and filling of coke through telescopic pipe, storage hopper for coke &amp; coke dust along with appropriate filtration system, auxiliary hoists for miscellaneous jobs of Baking Furnace.</p>	
	AND	
2.0	The FTA as per above should have been in successful/ satisfactory operation for a minimum period of one year since commissioning.	

### Documentary Proof Required

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- a) The bidder should submit Work order copies showing Scope of Work & Bill of quantity for assessment of Technical Eligibility Criteria.
- b) Bidder has to furnish the Commissioning & Performance certificate from the client on the organization letter pad along with authorized signature to support this requirement along with the contact reference and contact details of the client for qualifying against BQC.
- c) Any other documents towards evidence for satisfactory Commissioning of the job.
- d) Bidder shall furnish Proven Track Record (PTR) in the enclosed format in support of their meeting the Technical Qualification Criteria.
- e) For Indian subsidiary company/Indian Associate/Partner/Consortium/JV/tied-up company of Original Equipment Supplier/Manufacturer: In case of use of credentials from OEM/OES/OPM to qualify against PQC, authorization from them who otherwise fulfils the Technical eligibility criteria shall be submitted.

If the Indian entity does not have any manufacturing facility in India, they may supply the FTA (Furnace Tending Assembly) after receiving from OEM/OES/OPM or receive the parts/accessories of the FTA in full/part, assemble in India by themselves/their authorized sub-vendors and supply. However, a certificate/agreement from OEM/OES/OPM for back to back guarantee/warranty support for the supplies, spares and after sales support shall be submitted.

**Note:**

1. Relaxation on 15 years time frame can be claimed by the vendor if they have executed similar job (mentioned in the technical eligibility criteria) in NALCO.
2. The documents submitted for qualifying against Technical criteria shall be certified by Notary Public.
3. NALCO may use internal documents for evaluation of bids.
4. The Experience/ Performance/ Completion/ Commissioning Certificates shall be considered only when it bears the Name and Designation of Issuing Authority. This is only applicable for Experience/ Performance/ Completion/ Commissioning Certificates issued after dated 30/06/2022.

## 4.2 COMMERCIAL ELIGIBILITY CRITERIA

- 4.2.1 Average annual financial turnover of the bidder during the last three Financial years ending with 31st March of previous Financial Year should be at least Rs.1461.30 Lakh (Rupees Fourteen crore Sixty one Lakh Thirty Thousand only) or equivalent foreign currency.

**ANNUAL TURNOVER OF LAST 3 YEARS**

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

Annual turnover/Cost of the completed works by the bidder shall be escalated @ 10% per annum (simple) to bring them at the current price level. The Turnover/ cost of work completed within one year prior to original date of bid opening shall not be considered for any weightage/escalation.

- 4.2.2 The bidder should have minimum positive working capital of 3 times the average monthly execution value as per estimate.

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Alternatively 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 documentary evidence. (Evaluated Working Capital: Rs.608.875 Lakh)

- 4.2.3 The bidder should have minimum positive Net Worth equivalent to 2 times of the minimum positive working capital requirement. (Evaluated minimum positive Net Worth: Rs. 1217.75 Lakh)

**FINANCIAL DATA FOR LATEST AUDITED FINANCIAL YEAR:**

Description	Year
	Amount (Currency)
Net Worth	

**Documentary Proof Required**

- a) The bidders have to submit the copies of audited financial statements/ profit & loss accounts of the relevant years duly certified by Notary Public/ Chartered Accountant/ Auditor in support of both the eligibility criteria along with the bid

**Note:** (i) For bids received prior to 30<sup>th</sup> June of any year, the financial figure for the previous to the previous year may also be considered for evaluation. Whereas bids submitted after 30<sup>th</sup> June, the bidder may also submit financial statement for the previous year certified by Chartered Accountant/ Auditor for consideration of their bid. For organizations, where accounting is done on calendar year basis, they are to submit the standalone Balance Sheet and Profit & Loss account for last three calendar year.

(ii) For foreign bidders, financial statements etc. will be converted into Indian Rupees at the Bill selling rates of State Bank of India (SBI) or reference rate of Financial Benchmarks India Pvt. Ltd. (FBIL) as set up by Reserve Bank of India (RBI) prevailing as on date of this NIT.

(iii) The "Start-ups" recognized by Department of Industrial Policy & Promotion (DIPP), Ministry of Commerce & Industry, Govt. of India; are required to submit the copy of "Certificate of Recognition" and "Certificate of Eligibility" along with the unpriced bid for availing exemption of turnover and prior experience.

**4.3 Joint venture/ Consortium Bidder Qualification Criteria**

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

- 4.3.1 Maximum 2 (two) partners/ members (one Leader and one Member) shall be allowed in case of Joint Venture/ Consortium bidding. Bid shall be accompanied by a copy of Joint Venture/ Agreement duly notarized so as to be legally valid and binding on the Members/ partners.
- 4.3.2 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 (i.e., Member of the Joint Venture/ Consortium shall give Power of Attorney (POA) to the Leader). The overall Project Management shall be performed by the Leader.
- 4.3.3 All the partners shall be liable or assume responsibility jointly and severally for the execution of the contract in accordance with the contract terms and a statement to this

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effect shall be included in the authorization through a Power of Attorney in favour of the Lead Member in the Bid as well as in the Agreement (in case of a successful bid).

- 4.3.4 The Joint Venture/Consortium shall submit a copy of valid collaboration agreement/ MOU identifying the scope division matrix of the complete work in all respects between the leader and member (i.e., clearly describe the scope of work of the partners and mention clearly the lead supplier). The Bidder shall also submit the Power of Attorney as mentioned in Clause No. 2 & 3 above. The MOU shall be converted into a definitive legally binding agreement within one month from the effective date of contract awarded by NALCO. This agreement should be irrevocable and valid till completion of LSTK package.
- 4.3.5 All the members shall meet the technical eligibility criteria jointly as stipulated above. The other member of the Joint Venture/ Consortium shall have experience such that the combined experience of both the members meets the complete requirement stated in the technical eligibility criteria of the PQC as mentioned above.
- 4.3.6 The bidder/ lead partner should meet financial eligibility criteria as mentioned above.
- 4.3.7 Net Worth of the Leader of the Joint Venture/ Consortium and the other Member of the Joint venture/ Consortium should be individually positive as per the audited financial results of the last financial year. It is clarified that the term "Last Financial Year" means the latest financial year out of the immediately preceding three financial years mentioned above.

**Note:**

- 1) If the Principal Bidder/ Lead Partner is an Overseas (Foreign) Bidder and proposes his Indian Vendor(s) for rendering site services, Indian Supplies, etc., then the financial Net Worth of each Bidder, i.e. Overseas (Foreign Bidder) and his Indian Vendor(s) should be individually positive.
- 2) Similarly if the Principal Bidder/ Lead Partner is an Indian Bidder and proposes his Overseas (Foreign Vendor) for Overseas Supplies, then the financial Net Worth of each Bidder, i.e. Indian Bidder(s) and his Overseas (Foreign) Vendor should be individually positive.
- 3) Annual Report (including the audited Balance Sheet and Profit & Loss Account) will be considered as follows:
  - a. If the bid due date happens to be more than six months from the end of the financial year of the bidder, then the Annual report of the latest financial year shall be considered.  
 For example –  
 If the latest financial year is 31st March, 2022 and the bid due date is within 30th September, 2022 then the Annual report including the audited balance sheet and profit & Loss account shall be submitted as under;  
 (i) 1st April, 2020 to 31st March, 2021; (ii) 1st April, 2019 to 31st March, 2020 & (iii) 1st April, 2018 to 31st March, 2019.
  - b. Similarly, if the bid due date happens to be less than six months from the end of the financial year of the bidder, then the Annual report previous to the latest financial year shall be considered.  
 For example –  
 If the latest financial year is 31st March, 2022, and the bid due date is after 30th September, 2022, then the Annual report including the audited balance sheet and profit & Loss account shall be submitted as under;

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(i) 1st April, 2021 to 31st March, 2022; (ii) 1st April, 2020 to 31st March, 2021 & (iii) 1st April, 2019 to 31st March 2020.

- 4) Net Worth = Equity share capital + Reserves excluding Revaluation reserves ( - ) Minus Intangible Assets ( - ) Minus Miscellaneous expenditure to the extent not written off and carried forward loss.
- 4.3.8 Precise indication of the responsibility of all Members of the Joint Venture/ Consortium in respect of planning, design, construction equipment, key personnel, work execution and financing of the project duly indicating the percentage in financing of JV by each Partner. The Lead partner shall be responsible for 100% (hundred percent) participation in financing of the Joint Venture/ Consortium.
- 4.3.9 The selected Leader of the Joint Venture/ Consortium shall be authorized to incur liabilities and receive instructions for and on behalf of any and all member(s) of the Joint Venture/ Consortium during the entire execution of the contract and receive payment on behalf of the Joint Venture/consortium
- 4.3.10 The overall Project Management shall be performed by the Leader. The members of Joint Venture/ Consortium shall assume responsibility jointly and severally and shall submit Agreement/ Memorandum of Understanding (MOU) duly notarized so as to be legally valid and binding on the members along with the bid clearly defining the scope and responsibility of each member including the Leader. The MOU shall be converted to a definitive Agreement between the parties after award of Contract and shall be done within three months from the effective date of award. The Agreement must be irrevocable and to remain in force at least till the pendency of the Contract.
- 4.3.11 Separate bid by any of the Joint Venture/ consortium members shall not be accepted. A bidder can be a member only in one Joint Venture/consortium. In case he participates in more than one Joint Venture/consortium for this Bidding Document, all the Joint Venture/consortium bids with his participation shall be rejected.
- 4.3.12 NALCO intends to enter into more than one contract for the LSTK package to rationalize tax liability as per legal provision of country and also for operational convenience in case, the offer of the bidder being accepted by NALCO. But, Leader of the Joint Venture/Consortium shall be ultimately responsible for the project. Performance Bank Guarantee (PBG) can be given separately or single PBG can be furnished by the Lead Partner.
- 4.3.13 The fee towards cost of EMD can be submitted by any of the member of the Joint Venture/Consortium subject to proper authorization from the leader of Joint Venture/Consortium.
- 4.3.14 OTHER POINTS:
- (i) Owner will examine the BQC Bids for completeness and authenticity including whether the documents have been signed, complete and the details furnished are in order.
  - (ii) Owner reserve the right not to seek any clarification on documents submitted in support of Pre-qualification requirements and to evaluate the BQC Bids on "As Received Basis" and/or in-house data, survey, or otherwise. However, in case of any ambiguity in the documents submitted by the Bidder or if the Bidder submits incomplete documents, pertaining to the BQC, NALCO may give an opportunity to the Bidder to submit the required documents in support of

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meeting the stipulated BQC for the jobs mentioned by the Bidder in their original offer, within the time period specified. In case, the Bidder fails to submit any document or submits incomplete/ ambiguous within the time period specified, the bid evaluation will be done as per the evaluated documents. The Bidder shall not be allowed to submit any new document pertaining to the BQC beyond the time period specified in this regard by NALCO.

- (iii) The failure to meet the BQC stipulated above will render the bid to be summarily rejected.
- (iv) Submission of authentic documents is the prime responsibility of the Bidder. However, NALCO reserves the right of getting the document cross verified, at their discretion, from the document issuing authority.
- (v) Canvassing in any other form by the Bidder or by any other agency on their behalf may lead to disqualification of their Bid.
- (vi) Bidders who are on Holiday list/ Banned List of NALCO on the due date of submission of BQC bid/ during the process of evaluation of the BQC bids, the offers of such Bidders shall not be considered for Bid Opening/ Evaluation/ Award. If the BQC document were issued inadvertently/downloaded from website, offers submitted by such Bidders shall also be not considered for bid opening/ evaluation/ Award.
- (vii) NALCO shall not be responsible for any expenses incurred by bidders in connection with the preparation & delivery of their bids, site visit and all other expenses incurred during bidding process regardless of the conduct or outcome of the bidding process.
- (viii) NALCO reserves the right to disqualify any bidder during the BQC process on account of their non-performance in the earlier jobs executed by them for NALCO.
- (ix) NALCO reserve the right to reject any or all the bids received or annul the Bidding process at any time without assigning any reason whatsoever, without assuming any liability or any obligation. The Owner reserves the right to accept or reject any BQC Bid and/or to annul the pre-qualification process and/or reject any and/or all BQC Bids at any time without thereby incurring any liability to the affected Bidder(s) or any obligation to inform the affected Bidder(s) of the grounds for such action.
- (x) 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.
- (xi) Bidders must make their own judgment on the adequacy of the documents/ information they provide. In case any information provided by Bidder is found to be incorrect, the bid will be rejected, and the Earnest Money Deposit of such Bidder will be liable for encashment/ forfeited as the case may be.

4.3.15 Even though the bidders meet the above pre - qualification criteria, they are subject to be disqualified if they have:

- Made misleading or false representation in the forms, statements and attachments in proof of the qualification requirement

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- Records of poor performance such as abandoning the work, not properly completing the contract, inordinate delays in completion, litigation history or financial failure etc.
- Their business banned by any central/ state government department/ PSUs or enterprises of Central/ State Govt.
- Not submitting all the supporting documents or not furnishing the relevant details as per the prescribed format

A declaration to the above effect in form of affidavit on stamp paper of Rs. 10/- duly attested by Notary/ Magistrate should be submitted. Bidders should upload the scanned copy of the affidavit and declaration with their On - line Part - I - Bid. The original copy of the affidavit and declaration should be submitted in cover - 1 of the hard copy offer.

4.3.16 Sub - contractor's experience and resources will not be taken into account in determining the bidder's compliances with qualifying criteria.

4.3.17 NALCO reserves the right to use in house information for assessment of Bidder's capability.

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### **CONSORTIUM AGREEMENT**

This Consortium Agreement is made on \_\_\_\_ date \_\_\_\_ at \_\_\_\_ place \_\_\_\_ BETWEEN:  
 (1) \_\_\_\_ Bidder-leader \_\_\_\_ (full address) (here in after 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) here in after called the 2<sup>nd</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 - 751 013, Odisha, India (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> party as the associate(s) for the said project as detailed in the bid documents No. \_\_\_\_ in order to meet the POC 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> party associate(s) have the required men, materials, and establishment with them and 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 here by 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.

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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 here by 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 here by 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 here by 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 -1st 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/do not 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 here by declare that so far as NALCO is concerned, the 2<sup>nd</sup> Party is 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 arose 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.

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### **WORK SCHEDULE**

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

17. The leader of Consortium /Joint venture is here by 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 in to by the associates with their Leader-Bidder, the leader bidder shall alone is 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 their respective 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 here by 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 shall provide adequate finances, tools and tackles, transportation equipments, other plant and equipments, 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 here by agree to submit themselves to the exclusive jurisdiction of Angul Courts with in whose jurisdiction they 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 what so ever 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

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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 nearby places of Angul in the District of Angul, Odisha. With the consent of the parties, the arbitrator may hold sittings at any other place other than the venue agreed for, for the convenience of the parties.

In witness where of, the parties here to have executed this Consortium Agreement in duplicate/triplicate, today the \_\_\_\_\_ day of \_\_\_\_\_ 2023 at \_\_\_\_\_.

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

2<sup>nd</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:

- (i) The agreement should be duly attested by Notary Public.
- (ii) 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 - 1 of the hard copy offer.

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**PROVEN TRACK RECORD  
FOR  
FURNACE TENDING ASSEMBLY (FTA) FOR SMELTER PLANT**

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 enclosed: Yes/ No			
Referred FTA as per BQC is supplied as a standalone equipment: Yes/ No			
If no, reference of LSTK package in which FTA as per BQC is a part			
Month & year of supply			
Bidder's Scope of supply FTA as per PQC:			
- Basic Design (Yes/ No)			
- Detailed Design and Engineering (Yes/ No)			
- Procurement and manufacture (Yes/ No)			
- Shop Assembly, Inspection & Testing (Yes/ No)			

Bidder's Seal:

Signature of Bidder with date:

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## INSTRUCTIONS TO BIDDERS

1.0 Bids are to be submitted/ uploaded in complete accordance with enclosed Tender Documents/ attachments.

### 2.0 TENDER DOCUMENTS:

2.1 The following documents are enclosed and form part of the tender documents:

- (i) Tender Notice
  - (ii) Instructions To Bidders
  - (iii) Annexure - I - Technical Specification and scope
  - (iv) Annexure - II - Special Instructions to Bidders (Commercial)
  - (v) Annexure - III - General Conditions of Contract (GCC)
  - (vi) Annexure - IV - Addendum to Tender Documents (Commercial)
  - (vii) Annexure - V - Terms and Conditions for Erection, Testing, Commissioning at Site
  - (viii) Annexure – VI(A) - Agreed Terms & Conditions (Indigenous)
  - (ix) Annexure – VI(B) - Agreed Terms & Conditions (Import)
  - (x) Annexure - VII - Item Rate Bill of Quantity (BOQ)
  - (xi) Annexure - VIII - Proforma for Contract-cum-Performance Bank Guarantee
  - (xii) Annexure - IX - Proforma for Bank Guarantee for Advance Payment
  - (xiii) Annexure - X - Proforma for Earnest Money Deposit
  - (xiv) Annexure - XI - List of NALCO approved Banks & Bank Mandate Form
  - (xv) Annexure - XII - SA 8000 Format for compliance
  - (xvi) Annexure - XIII - Proforma for Pre Contract Integrity Pact
  - (xvii) Annexure - XIV - Restriction for suppliers from a country which shares a land border with India
  - (xviii) Annexure – XV - Declaration by the bidder of percentage of local content
- 2.2 At any time prior to the bid due date and time, 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 Addendum.
- 2.3 Any addendum thus issued will become part of bidding document and bidder shall submit original addendum/ compliance letter duly signed and stamped in token of his acceptance.
- 2.4 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.
- 2.5 Bidders shall treat the tender documents and contents therein as strictly confidential.
- 2.6 The tender document is and shall remain the exclusive property of the OWNER without any right to bidder to use them for any purpose except for the purpose of bidding.
- 2.7 The Bidder is expected to examine all instructions, forms, terms and specifications in the Tender Document. The Tender Document together with all its attachments thereto, shall be considered to be read, understood and accepted by the Bidder, unless deviations are specifically stated in seriatim (giving reference sl. no. of Tender Document) by the Bidder. Failure to furnish all information required by the Tender Document or submission of a bid not substantially responsive to the Tender Document in every respect will be at Bidder's risk and may result in the rejection of his bid.

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- 2.8 There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal. Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document. The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.
- 2.9 The National Aluminium Company Limited, Bhubaneswar hereinafter called 'NALCO/ OWNER' will receive bids in respect of the work, items and equipment to be furnished and erected as set forth in the accompanying documents. All bids shall be prepared and submitted in accordance with the instructions as per NIT.
- 2.10 Bids submitted after the time and date fixed for receipt of bids as set out in the Invitation to Bid are liable to be rejected.
- 2.11 The terms "Works" referred herein shall cover the entire scope of the proposal which includes supply and erection of items, equipments, labor and services including the successful completion of Performance and Guarantee Tests.
- 2.12 NALCO prefers to have maximum indigenous content in the supplies and services covered in the scope of this tender.
- 2.13 The breakup of the complete scope envisaged in this enquiry is attached at Annexure-I. All bidders are requested to indicate positively the division of work (a) to be directly undertaken by the Bidder, (b) envisaged to be undertaken by Bidder's Indian sub-contractor with Bidder's unit responsibility, and (c) to be excluded from Bidder's scope of responsibility.
- 2.14 **TIME SCHEDULE:** One of the main considerations for award of the Contract shall be demonstrated capability of the bidder to maintain the time schedule for performing the specified works at all stages of activities. Bidder who have not executed in time similar job in the past may not be considered.
- 2.15 **BRAND NAMES:** The specific reference in these specifications and documents to any material by trade name, make or catalogue number shall be construed to as establishing standards of quality and performance and not as limiting condition. However, bidders may offer other similar materials and equipments provided they meet the specified standards, design and performance requirements.
- 2.16 **GENERAL:** The clauses of this tender document shall be read along with General Conditions of Contract (GCC). Wherever there is a contradiction between clause of this tender document and GCC, the clause as mentioned in this tender document shall supersede the conditions of GCC to the extent applicable.

### 3.0 PREPARATION OF BID:

- 3.1 All direct and indirect costs associated with preparation and submission of bid (including clarification meetings and site visit, if any) shall be to bidder's account and NALCO will in

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no case, be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

- 3.2 The bid prepared by the Bidder and all correspondence/ drawings and documents relating to the bid exchanged by Bidder and NALCO shall be written in ENGLISH language. Any printed literature furnished by the Bidder written in another language should be accompanied by an ENGLISH translation. In case of any conflict, for the purpose of interpretation of the bid, the ENGLISH translation shall govern.
- 3.3 The bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person duly authorized to bind the Bidder to the Contract. The name and position held by each person signing must be typed or printed below the signature. The person or persons signing the bid shall initial all pages of the bid, except for unamended printed literature.
- 3.4 The complete bid shall be without alterations, interlineations or erasures, except as may be necessary to correct errors made by the Bidder, in which case such corrections shall be rewritten & initialed by the person or persons signing the bid.
- 3.5 The offer should be unambiguous and complete information should be furnished in the offer. Incomplete/ambiguous offers will be rejected outright.
- 3.6 Bidder is required to furnish the complete and correct information/documents required for evaluation of their bid. If the information/documents forming basis of evaluation is found to be false/forged, the same shall be considered adequate ground for rejection of bids and forfeiture of Earnest Money deposit.
- 3.7 submitting tender on behalf of foreign principals/ manufacturers must submit their tender along with authorisation from their respective principals/ manufacturers to represent them in India. Offers received without a proper authorisation will be rejected.

#### 4.0 SUBMISSION OF BID:

- 4.1 The bids are to be submitted **online before the bid due date and time** through Central Public Procurement Portal (CPP Portal), by logging into website [www.eprocure.gov.in](http://www.eprocure.gov.in). Bidder should take into account corrigendum published, if any, on the tender document before submitting their bids. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document/ schedule and generally, they can be in PDF/XLS/RAR/DWF/JPG formats.

- 4.2 The bids are to be submitted **in two parts** in the following manner:

##### 4.2.1 Part - I - Techno - commercial Bid:

The Part - I - Bid should contain the following:

- (i) Earnest Money Deposit
- (ii) Pre-Contract Integrity Pact
- (iii) All Technical details, Drawings, Data Sheets, Catalogues/ Literatures, etc.
- (iv) Proof of credentials, past experience, financial standing, and all documents to fulfil the Bidder's Qualifying Criteria as asked for in the tender documents, etc.
- (v) All form and format filled in as per tender document
- (vi) All certificates/ undertakings/ affidavits/ declaration required as per Tender Document
- (vii) Commercial details

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- (viii) The Bill of Quantity (without Price figures). The bidder shall indicate "Quoted/ Not Quoted" against each Sl. No. in the BOQ and submit the same duly stamped and signed in the un-priced bid. The priced part of this BOQ shall be submitted in the price bid only.
- (ix) Tender document including Corrigendum/Addendum, if any, and subsequent correspondences duly stamped and signed on each page as a token of acceptance
- (x) Certificate, if applicable, indicating that the bidder (indigenous) is Class-I local supplier with minimum percentage of local content in their product as per Public procurement (Preference to Make in India) (PPP-MII) order 2017 dated 16.09.2020 & subsequent revisions thereof. The certificate is to be issued by the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content. The Certificate issued by CA must contain UDIN No., Local content percentage (%) certificate issued from the statutory auditor or cost auditor of the company or from a practicing cost accountant or practicing chartered accountant may be submitted.
- (xi) Compliance certificate towards beneficiary relationship as per Order No. F.No. 6/18/2019-PPD, Dated 23.07.2020 & OM Dated 08.02.2021 issued by Ministry of Finance (Deptt. of Expenditure). Restriction for suppliers from a country which shares a land border with India. Declaration to be given.
- (xii) List of Partners/ Directors in the bidder company and a declaration that Partners/ Directors of the bidder company have no interest in any other bidders in respect of the same tender.
- (xiii) Affidavit & litigation history.
- (xiv) Any other information/details/documents/data required as per Bid Document.

#### 4.2.2 Part - II - Price Bid:

The Part - II - Price Bids should contain the prices strictly as per format attached with the tender documents. Prices shall not appear anywhere else in the offer, and if prices are mentioned anywhere else the same shall not be considered.

#### 4.3 On - line submission of bids:

- 4.3.1 For online submission of bids, the bidder should have a valid Indian Digital signature certificate (Class II / Class III) issued by any Certifying Authority recognized by CCA India (e.g. Sify/nCode/eMudhra, etc).

Bidders are required to register themselves using the link "Online Bidder Enrollment" on the home page and enroll the valid digital certificate (URL: <https://eprocure.gov.in/eprocure/app>).

For this purpose, vendors/Bidders are advised to read the instruction available in the homepage of the CPP portal (<https://eprocure.gov.in/eprocure/app>) under various links such as "Help for Contractor", "Information about DSC", "FAQ", "and Resources required", "Bidders Manual Kit" etc. Bidder are advised to download & utilize the available information/documents under these links for activities like Registration/Enrolment in CPPP, obtaining User ID & Password, uploading & submission of e-bids/online bids etc.

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

- (a) The offers should be unambiguous and complete information should be furnished in the offer. Incomplete / ambiguous offers will be rejected outright.

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(b) MSE bidders are requested to register their Udyog Aadhar Memorandum (UAM) issued by Ministry of Micro, Small and Medium Enterprises (MSME) on Central Public Procurement Portal. In this regards MSE bidders are required to give declaration of UAM number on CPPP, failing which such bidders will not be considered as MSE bidder.

(c) Bidders are advised to dial/contact the person mentioned below for detailed procedure to submit bid online in CPP portal well before the bid due date:

(i) Help Desk CPP portal, Contact Tel: +91 120 4200462, +91 120 4001002, +91 120 4001005

FMS CPP Portal (Nalco): e-mail: ccppp\_fms\_corp@nalcoindia.co.in

(ii) Mr. Mihir Behera, SM (Matls.), e-mail: mihir.behera@nalcoindia.co.in, Mob - +919437111103

(iii) Ms. Sumita Sahay, GM(Materials), e-mail: sumita.sahay@nalcoindia.co.in, Mob – +919937307790

#### 4.3.2 **On – line Offer:**

(i) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e., on or before the bid submission time. Bidder will be responsible for any delay due to other issues. The bidder must prepare all the required documents for Part – I – Un – priced Bids and then upload the soft copies of the documents under Cover – 1 i.e. “Fee/PreQual/Technical” of CPP portal. However, wherever in the tender documents the bidder has been asked to submit the scanned copies of documents, the bidder shall upload the scanned copies of the documents under Cover – 1 i.e. “Fee/PreQual/Technical” folder of CPP portal.

(ii) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Price Bid (BOQ) as given in the tender in .xls format must be downloaded and saved at bidders’ local PC / Laptop without any change. Bidders shall fill the required details/prices in BOQ, save it and upload the filled in BOQ in .xls format in the portal under Cover -2 i.e. “Finance” folder of CPP portal. No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.

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

(iv) Please note that only online bids will be considered for evaluation of offers.

4.4 Additionally the Bidders are required to submit hard copy of their bids in sealed cover separately within the due date and time of opening of bids, besides online bids submitted through CPP portal. The bidders are requested to give separately a declaration that the hard copy offer submitted is identical to online offer submitted by them in CPP portal.

#### 4.5 **Hard copy of Offer:**

##### (i) **Indigenous vendor**

Indigenous bidders are requested to submit the offer strictly in online mode through Central Public procurement Portal (CPPP). For online submission of offer through CPPP, Indigenous bidders are requested to upload all documents in the

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portal. However, original copies of only EMD, Integrity pact and other declaration/certificates, etc. are required to be submitted in original in hard copy form in sealed envelope (Cover-1). **These documents should reach NALCO on or before the date and time of opening of tender (Un-priced bid).**

**(ii) Foreign vendor**

(a) Foreign bidders are also requested to submit the online offer through Central Public procurement Portal (CPPP). For online submission of offer through CPPP, Foreign bidders are requested to upload all documents in the portal as deliberated at para 4.2. However, original copies of only EMD, Integrity pact and other declaration/ certificates, etc. are required to be submitted in original in hard copy form in sealed envelope (Cover-1). **These documents should reach NALCO on or before the date and time of opening of tender (Un-priced bid).**

(b) However, in case the foreign bidders do not possess Indian Digital Signature certificate (DSC), they are required to submit the hard copy of their to the address given at Para – 6.0. **The Hard Copy of offer shall be submitted so as to reach us on or before the date & time of submission of tender.** For consideration of hard copy offer for opening, the foreign bidders will be required to give a declaration to NALCO before the bid due date & time of tender submission that they do not possess requisite DSC and that their hard copy offer may be accepted.

(iii) However, the hard copy of the bids submitted by both Indigenous and Foreign vendor will be considered for opening under following circumstances;

(a) In case of technical difficulty at Central Public Procurement Portal for which online offer could not be submitted.

(b) In case of technical difficulty at Central Public Procurement Portal for which online bids could not be opened.

For consideration of hard copy offer for opening under situation (b) above, the bidders are requested to give separately a declaration that the hard copy offer submitted is identical to online offer submitted by them in CPP portal.

**4.5.1 Cover - 1:**

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

- (i) Original EMD BG/ DD
- (ii) Original Integrity Pact
- (iv) Original copy of certificates/ undertakings/ affidavits/ declaration asked for in the tender
- (v) Original copy of any other information/details/documents/data required as per Bid Document
- (iv) A certificate by the bidder stating that the hard copy of offer submitted is same as the on-line offer uploaded by them in CPP portal.
- (v) Local content percentage (%) certificate.
- (vi) Restriction for suppliers from a country which shares a land border with India. Declaration to be given.

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The Cover - 1 of the hard copy should be submitted in a sealed envelope clearly superscribed **"COVER - 1 BID FOR FTA FOR ABF-1 FOR SMELTER, NIT NO. – NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023"**.

#### 4.5.2 Cover - 2:

The Cover - 2 of the hard copy offer should contain TWO SETS (One Original + One Copy) of the following documents:

- (i) All Technical details, Drawings, Data Sheets, Catalogues / Literatures etc.
- (ii) Proof of credentials, past experience, financial standing, and all documents to fulfil the Bidder's Qualifying Criteria as asked for in the tender documents etc.
- (iii) All form and format duly filled in as per tender document
- (iv) Commercial details
- (v) The Bill of Quantity (without Price figures). The bidder shall indicate "Quoted/ Not Quoted" against each Sl. No. in the column 6 & 7 in the BOQ and submit the same duly stamped and signed in the un-priced bid. The priced part of this BOQ shall be submitted in the price bid only.
- (vi) Itemized list with item description, HSN code, quantity, UOM but without price of BOQ
- (vii) Tender document including Corrigendum, if any, and subsequent correspondences duly stamped and signed on each page as a token of acceptance
- (viii) Any other information/details/documents/data required as per Bid Document.

The cover - 2 of the hard copy should be submitted in duly sealed envelope clearly super scribed **"COVER – 2 BID FOR ABF-1 FOR SMELTER, NIT NO. – NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023"**.

#### 4.5.3 Cover - 3:

The Cover - 3 of the hard copy offer should contain TWO SETS (One Original + One Copy) of the **Price Bid only** containing the prices strictly as per format in BOQ attached with the tender documents in CPP Portal.

The cover - 3 of the hard copy should be submitted in duly sealed envelope clearly super scribed **"COVER – 3 BID FOR FTA FOR ABF-1 FOR SMELTER, NIT NO. – NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023"**

#### 4.5.4 Cover – 4:

- (a) Indigenous bidder is required to submit the item wise break up for entire scope of supply in HARD COPY FORM in SEALED ENVELOPE, Cover - 4 on or before the bid opening due date & time with item description, HSN code, quantity, UOM, FOT despatch point price, freight charges and applicable GST rate. Vendor to ensure that the sum of itemized price should match with the lump sum price quoted against the above sl no. of this BOQ.
- (b) Foreign bidder is required to submit the item wise break up for entire scope of supply of BOQ in HARD COPY FORM in SEALED ENVELOPE, Cover - 4 on or before the bid submission due date & time with item description, HSN code, quantity, UOM, FOB price per unit and Ocean freight charges. Vendor to ensure that the sum of itemized price should match with the lump sum price quoted against the above sl no. of this BOQ.

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*The cover - 4 of the hard copy should be submitted clearly super scribed "COVER – 4 BID FOR FTA FOR ABF-1 FOR SMELTER, NIT NO. – NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023"*

- 4.5.5 All the 04 (Four) covers of the hard copy duly sealed in separate envelopes should be enclosed in a large envelope duly sealed and super scribed **"BID FOR FTA FOR ABF-1 FOR SMELTER, NIT NO. – NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023"**.
- 4.5.6 NALCO shall not be responsible for any postal delay and/ or misplacement. Late and Delayed Tenders will not be entertained.
- 4.5.7 While mailing the hard copy of offer, Foreign Bidders are required to submit their bids through their courier/ freight forwarding agents on free domicile shipment basis (where all the charges including Customs Duty are to be borne by the bidder) on free delivery to NALCO.

**4.6 Bids/ Offers through E-mail or fax shall not be accepted.**

**5.0 EMD:**

- 5.1 The Part - I Bid must be accompanied by Earnest Money Deposit for **INR 25,00,000/-** (Rupees Twenty Five Lakh only) or **USD 30,355.00** or **EURO 28,036.00**.
- 5.2 The EMD should be submitted by way of Demand Draft/ Pay Order/ through e-payment (RTGS/NEFT mode INR currency) favoring "National Aluminium Company Limited" payable at Bhubaneswar, Odisha, India or by way of Bank Guarantee (BG) as per proforma enclosed with the Tender Documents. EMD (except for State/Central Government organizations, PSUs, start-ups and MSE Bidder)

Bidder(s) submitting the EMD amount through NEFT/RTGS/E-transfer mode shall fill up the details of Annexure – X after making the payment of EMD along with the scanned copy of Transaction Slip/ receipt of the Bank **on the same day of payment** by e-mail to [purna.gummadi@nalcoindia.co.in](mailto:purna.gummadi@nalcoindia.co.in) with copy marked to [mihir.behera@nalcoindia.co.in](mailto:mihir.behera@nalcoindia.co.in).

Details for RTGS Transaction/ E-Payment purpose are as below:

IFSC: SBIN0009817

Account No. : 10044880013

Banker: State Bank of India, NALCO Corp. Office Br., Bhubaneswar-751013.

- 5.3 The EMD BG should be furnished from any of NALCO approved Banks as per the list enclosed with the Tender Document. 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 BG. Alternatively, BG confirmation message may also be sent through SFMS message to our Banker State Bank of India, Commercial Branch, Bhubaneswar (IFSC Code: SBIN0006657, SWIFT CODE: SBININBB119) and beneficiary name as "NALCO, Corporate Office, Bhubaneswar". The BG for EMD 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 three 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.

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5.4 Bidders should upload a scanned copy of the BG/ DD along with their On - line Part - I - Bid. The original copy of the BG/ DD should be submitted in cover - I of the hard copy offer.

5.5 **Offer without EMD may be liable for rejection.**

5.6 If the tenderer, after submitting his tender, revokes the offer or modifies the terms & conditions thereof, in a manner not acceptable to NALCO, 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.

5.7 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 (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.

MSE bidders are required to submit "Udyam Registration No." as per the notification no. 2/1(5)/2019-P&G/Policy (pt. IV) dated 06.08.2020 issued by Ministry of MSME along with technical bid, failing which such bidders will not be considered as MSE bidder.

5.8 After finalization of the tender, the EMD BG of unsuccessful tenderers will be returned. In case the EMD was submitted in the form of Demand Draft/ Pay Order/ through e-payment, the EMD amount will be refunded through e-payment for which the bidders will have to submit the duly filled in Bank Mandate Form 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 will stand forfeited.

## 6.0 CONTACT PERSON AND ADDRESS OF NALCO:

The contact person and address of NALCO for submitting the hard copy of offer in sealed envelope is as follows:

GM (Materials)  
National Aluminium Company Limited,  
Nalco Bhawean, P/1,  
Nayapalli, Bhubaneswar,  
Odisha - 751 013

## 7.0 MODIFICATION & RE-SUBMISSION OF BIDS:

7.1 Modification of the submitted bid may be allowed online only before the deadline of submission of tender and the bidder may modify and resubmit the bid online as many times as he may wish till the closing date and time of the tender. Bidders may withdraw their bids online within the end date of bid submission.

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- 7.2 For hard copy of the offer, the bidder may modify or withdraw their bid after the bid's submission, provided that the modification/ withdrawal notice is received by the Owners prior to the bid due date & time.

The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and dispatched to the address mentioned at Sl. No. - 6.0 above. A withdrawal notice may also be sent by e-mail but must be followed by a signed confirmation copy dated not later than the deadline for submission of bids.

- 7.3 No bid (whether submitted online or offline) shall be modified subsequent to the due date & time or extension, if any, for submission of bids.
- 7.4 No bid (whether submitted online or offline) shall be allowed to be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder. Withdrawal of a bid during this interval shall result in the forfeiture of Bidder's Earnest Money Deposit.

## 8.0 OPENING OF BIDS:

- 8.1 The Part - I - Un - priced bid i.e. Techno - commercial Bid shall be opened on the date and time specified in the Notice Inviting Tender (NIT).
- 8.1.1 For Indigenous bidder, the On - line Part - I - Un - priced bid as well as the sealed Cover - 1 of hard copy offer shall be opened on the bid opening due date and time as mentioned above. Only online bids will be considered for evaluation of offers.
- 8.1.2 For Foreign bidder, the On - line Part - I - Un - priced bid as well as the sealed Cover - 1 of hard copy offer shall be opened on the bid opening due date and time as mentioned above. Also, the online bids will be considered for evaluation of offers. However, in case the foreign bidders submit the hard copy offer as deliberated at para 4.5 (ii), then the sealed Cover – 2 of hard copy offer as well as the sealed Cover - 1 of hard copy offer shall be opened on the bid opening due date and time and shall be considered for evaluation.
- 8.2 It is the duty of the bidder to ensure that all documents required as per the tender has been uploaded properly in CPP portal.
- 8.3 NALCO reserves the right to extend Bid Opening Date. In case of extension of Bid Opening Date, the same shall be hosted in NALCO Website and CPP Portal. Special intimation shall be given to vendors who have shown interest in the tender.
- 8.4 Authorized representative of firms who have submitted valid tenders will be permitted to attend tender opening. However, they must bring authorization letter along with identity card while participating in bid opening. The Bidder's representatives, who are present, shall sign a bid opening statement evidencing their attendance. Bidders whose bids are not opened for any reason, will not be allowed to be present during bid opening. The Bidder(s) names only will be announced and recorded at the time of opening of un-priced bids.
- 8.5 The Part - II Bid of only those tenderer whose Part - I Bid is found to be techno-commercially acceptable will be opened. Only online bids will be considered for evaluation of offers. However, **sealed Cover – 3 of hard copy offer** shall be considered for opening subject to conditions as mentioned at Para – 4.5 above.

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- 8.6 NALCO will intimate the date and time of the price bid opening to all techno - commercially acceptable bidders. The techno - commercially acceptable bidders may depute their representative to witness opening of the Part - II Bids. Bidder's representatives present for witnessing the opening of Part - II Bid should be duly authorized by a competent person and they must bring authorization letter along with identity card while participating in bid opening. The Bidder's representatives, who are present, shall sign a paper evidencing their attendance. The Bidder's names and bid prices will be read out at the time of opening of priced bids.
- 8.7 In the event of extension of the due date, if any tenderer requests in writing before the tender due date for withdrawing of their tender (in hard copy) which they have submitted, the request will be agreed to and their tender can be returned. In case of e-tender/ on-line bids the vendor may withdraw their offer from the system.
- 8.8 In case of withdrawal of deviations to NIT specification, if any, bidder insists for revision in price before opening of price bid and Nalco agrees for the same, the submission of price implication shall be in offline/ physical mode from the bidder in a sealed envelope by hand/ mail or password protected file through e-mail within a stipulated time. The submission of price implication will be intimated for information to all other techno-commercially acceptable bidders.
- 8.9 In case of necessity due to post tender minor changes in specifications/ scope of work/ terms & conditions of NIT, etc. before price bid opening, corrigendum shall be issued regarding the changes to all concerned techno-commercially qualified bidders and they shall be permitted to submit the additional or take-off price w.r.t. original offered price, if any, in offline mode in sealed envelope by hand/ mail or password protected file through e-mail within a stipulated time.
- 8.10 The additional or take-off price submitted in offline mode by the bidders shall be opened and uploaded in CPP portal (preferably as part of techno-commercial evaluation summary while configuring price bid opening) before opening of original price bids for information of all the participating bidders. The evaluation will be done taking into account the original on-line price bid along with offline price implications.

## 9.0 INTEGRITY PACT:

- 9.1 The accompanying '**Integrity Pact**' attached at **Annexure - XIII** of Tender documents is to be executed in two (02) originals.
- 9.2 The tenderer must sign the Pre-Contract Integrity Pact duly filled in, signed, and stamped (from their side) on Plain A-4 Size Paper & submit the same along with un-priced bid, failing which offer shall be liable for rejection.
- 9.3 All the pages of the Integrity pact are to be signed by the bidder.
- 9.4 Bidders are required to clearly indicate the name and designation of the signatory(ies) as well as the name and address of the witnesses.
- 9.5 The Bidders should not change the contents of the Integrity Pact.
- 9.6 The two (2) originals of Integrity Pact signed and stamped on each page by the bidder have to be submitted in **cover - 1 of the hard copy offer**. The scanned copy of the Integrity Pact is to be uploaded along with their On - line Part - I - Bid.

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- 9.7 The two originals of Integrity Pacts will be signed by the representative of NALCO. One original of the Integrity Pact will be retained by NALCO and the other original will be returned to the bidder through post/courier.

**Only those bidders, who commit themselves to such a Pact with NALCO, would be considered competent to participate in the bidding process. In other words, entering into this Pact would be a preliminary qualification for the tender.**

- 9.8 At present, there is a panel of three Independent External Monitors (IEM) in NALCO. Their contact details are given as below:

(i) Ms. Archana Ranjan IRS (Retd.)  
E-mail: [ranjan.archana@gmail.com](mailto:ranjan.archana@gmail.com),

(ii) Ms. Deepa Krishan IRS (Retd.)  
E-mail: [deepakrishan@gmail.com](mailto:deepakrishan@gmail.com),

(iii) Dr. Meeran C Borwankar, IPS (Retd.)  
E-mail: [mcborwankar@gmail.com](mailto:mcborwankar@gmail.com),

Bidder may write to either of the IEMs through e-mail 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.

**Note:**

1. Only representation in respect of Integrity Pact need to be addressed to the IEM and no query regarding tender terms and conditions should be address to the IEMs. Any clarification regarding the tender details and terms & conditions should be addressed to NALCO's officials.

2. For any tender related queries, bidder may write Mr. Mihir Behera, SM (Matls.), Mail ID: [mihir.behera@nalcoindia.co.in](mailto:mihir.behera@nalcoindia.co.in) or Ms. Sumita Sahay, GM(Materials), Mail ID: [sumita.sahay@nalcoindia.co.in](mailto:sumita.sahay@nalcoindia.co.in)

## 10.0 CONTACTING THE OWNER

- 10.1 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 /agents will be ignored.
- 10.2 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.

## 11.0 AWARD CRITERIA

- 11.1 The Owner will award the Contract to the successful Bidder whose bid has been determined to be the lowest evaluated, responsive bid, provided further that the Bidder is determined to be qualified to satisfactorily perform the Contract.
- 12.0 Prior to the expiration of bid validity, NALCO will issue a Letter of Intent or Purchase Order to the successful Bidder. The Notification of Award will constitute the formation of the Contract. Delivery Period/ Completion Period shall be counted from the date of Notification of Award/ Purchase Order.

## 13.0 OWNER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

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- 13.1 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.
- 13.2 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 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.

#### **14.0 INFORMATION REQUIRED WITH THE BIDS**

- 14.1 The bids must clearly indicate the name of the manufacturer, the type or model of each principal item of equipment proposed to be furnished and erected. The bid should also contain drawings and descriptive materials indicating general Dimensions, material from which the parts are manufactured, principles of operation, the extent of pre-assembly involved, major construction equipment proposed to be deployed, method of erection and the proposed erection organizational structure.
- 14.2 The above information shall be provided by the Bidder in the form of separate sheets, drawing, catalogues etc., in all copies of the bid.
- 14.3 Any bid not containing sufficient descriptive material to describe accurately the equipment proposed may be treated as incomplete and hence rejected. Such descriptive materials and drawings submitted by the Bidder will be retained by the Owner. Any major departure from these drawings and descriptive materials submitted will not be permitted during the execution of the Contract without specific written permission of the Owner.
- 14.4 Oral statements made by the Bidder at any time regarding quality, quantity or arrangement of the equipment or any other matter will not be considered.
- 14.5 Standard catalogue pages and other documents of the Bidder may be used in the bid to provide additional information and data as deemed necessary by the Bidder.

#### **15.0 UNDERSTANDING AND CLARIFICATION ON DOCUMENTS & SPECIFICATIONS**

- 15.1 The Bidder is required to carefully examine the specifications and documents and fully inform himself as to the conditions and matters, which may in any way affect the works or the cost thereof. If any Bidder finds discrepancies or omissions in the specifications and documents or is in doubt as to the true meaning of any part, he shall at once request in writing for an interpretation/ clarification to the Owner. The Owner, then will issue interpretations and clarifications as he may think fit in writing. After receipt of such interpretations and clarifications, the Bidder may submit his bid but within the time and date as specified in the invitation to Bid. All such interpretations and clarifications may accompany the Bidder's proposal.
- 15.2 Verbal clarifications and information given by the Owner or his employee(s) or his representative(s) shall not in any way be binding on the Owner.

#### **16.0 LOCAL CONDITIONS**

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- 16.1 It will be imperative on each Bidder to fully inform himself of all local conditions and factors which may have any effect on the execution of the Works covered under these documents and specifications. In their own interest, the Foreign Bidders are requested to familiarize themselves with the Income Tax Act, 1961; the Companies Act, 1956; Customs Act, 1962 and other related acts and laws prevalent in India. The Owner shall not entertain any request for clarifications from the Bidders regarding such local conditions.
- 16.2 It must be understood and agreed that such factors have properly been investigated and considered while submitting the bids. No claim for financial adjustment to the Contract awarded under these specifications and documents will be entertained by the Owner. Neither any change in the time schedule of the Contract nor any financial adjustments arising thereof shall be permitted by the Owner which are based on the lack of such clear information or its effect on the cost of Works to the Bids.

### **17.0 FIRM PRICE**

- 17.1 The price quoted for the entire scope of work shall remain firm and fixed till complete execution of work.

### **18.0 CUSTOMS DUTIES AND TAXES**

- 18.1 In case of domestic bids, all Custom Duties and levies payable on imported components, sub-assemblies and raw materials by the local Bidders shall be included in the their prices and no claim on this behalf will be entertained by the Owner.
- 18.2 The Contractor shall include all taxes, duties, royalty of whatever nature, other local taxes etc. if any, in the quoted price.
- 18.3 As regards the INCOME TAX, surcharge on Income Tax and other taxes, the bidder shall be responsible for such payment to the authorities concerned.

Bidder may note that if any tax is deductible at source as per Indian Income Tax Law, the same will be so deducted before releasing any payment to the bidder. Accordingly, bidder shall have the responsibility to check and include such provisions of taxes in their prices and shall clearly spell out inclusions of taxes, if any, in their quoted prices.

### **19.0 EFFECT AND VALIDITY OF BID**

- 19.1 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.
- 19.2 The bid should be kept valid for acceptance for a period of **6 (six) months** from the bid due date/ extended bid due date.
- 19.3 The Bidder shall not be entitled during the bid validity period as mentioned above, without the consent in writing of NALCO to revoke or cancel its bid or to vary the bid given or any term thereof. In case of Bidder revoking or cancelling its bid without the consent of NALCO in writing, NALCO shall forfeit the EMD furnished by Bidder and reject the offer of Bidder.
- 19.4 Notwithstanding above, NALCO may solicit the Bidder's consent to an extension of the period of bid validity. The request and the responses thereto shall be made in writing. The EMD shall also be accordingly extended.

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- 19.5 In case the validity of offers expires during the processing of the case, all the techno-commercially accepted bidders shall be requested to extend the offer validity with same price and terms & condition of the tender. The offers of such bidders shall be rejected if they do not extend the validity unconditionally.

## **20.0 AWARD OF CONTRACT**

- 20.1 Notification of Award of Contract will be made in writing to the successful Bidder by the Owner initially in the form of Letter of Intent/ Brief Order/ Purchase Order which will be formalized by a Contract to be signed by both Owner and Bidder. All contractual obligations including delivery shall commence from the date of Letter of Intent/ Brief Order/ Purchase Order.
- 20.2 Owner reserves the right to award one or more separate contracts in line with the terms & conditions specified in the accompanying technical specifications.
- 20.3 Within 07 (seven) days of receipt of the Brief Order / Purchase Order, the Bidder shall sign and return it to the Owner for their records as a token of their acknowledgement of acceptance of the Brief Order / Purchase Order, failing which it shall be deemed that the Brief Order / Purchase Order has been accepted by the bidder in toto.
- 20.4 The Effective Date of Order shall be considered as the date of Notification of Award/ Brief Order/ Purchase Order. All contractual obligations shall commence from the Effective Date of Order.

## **21.0 DEVIATION TO BID DOCUMENT**

The bidders are requested to carefully study all the contract documents like invitation to bid, instructions to bidders, special instructions to bidder, general terms & conditions of the contract and all other documents and they shall prepare a deviation statement, if any, clearly indicating the deviations sought for by the bidder.

Any deviation not mentioned in the statement and mentioned anywhere else in the bid will not be considered and if such items are not clearly explained in the deviation statement, it will mean that the contractor has agreed to all other terms & conditions mentioned in the above bid documents.

## **22.0 CHECK LIST**

The Bidders are requested to duly fill in the checklists as mentioned in Tender Documents.

## **23.0 SOCIAL ACCOUNTABILITY:**

We are Social Accountability SA 8000 Certified Company. It is expected that our Suppliers / Service providers confirm to the requirements of this International Standard SA 8000:2014. The bidder should ensure to follow the statutory social accountability norms of India also. The Survey Questionnaire (attached as at Annexure-XII) may please be filled up and sent along with the Bid.

## **24.0 CRIMINAL PROCEEDINGS/CASES:**

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**

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**effect.** The Affidavit must be affirmed before the competent judicial authority or duly notarized by the Public Notary.

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.**

## 25.0 **LITIGATION HISTORY:**

Bidder should furnish Litigation History of their firm or group firm. The litigation history shall include:

- (i) Arbitration cases pending
- (ii) Disputed incomplete works
- (iii) Pending civil cases against the firm or its Proprietor / Partner(s) / Director(s) involving moral turpitude in relation to business dealings.
- (iv) Pending criminal cases against the firm or its Proprietor / Partner(s) / Director(s) involving moral turpitude in relation to business dealings.
- (v) Punishments awarded under civil cases or criminal cases involving moral turpitude in relation to business dealings.

## 26.0 **LATE BIDS**

- (i) E-tendering portal shall close immediately after the deadline for submission of bid.
- (ii) The online bid must be submitted before the bid due date and time.
- (iii) The Hard Copy of offer should reach us on or before the bid due date and time.
- (iv) Late bids will not be entertained.

27.0 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/ undertaking should be in the bidder's official letterhead duly signed by the authorised signatory with official seal. **Offer without this declaration are liable for rejection.**

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.

28.0 The bidder shall furnish detailed information regarding the names of other firms/ agencies/ partnership firm/ wholly owned or partly owned/ subsidiary etc. where they are having financial/ professional stakes along with the Part - I - Bid. **The bidder should also give a declaration/ undertaking that any such firm/ agency are not participating in the same tender.** The declaration/ undertaking should be in the bidder's official letterhead duly signed by the authorised signatory with official seal. **Offer without this declaration are liable for rejection.**

Bidders should upload the scanned copy of the declaration/ undertaking with their On - line Part - I - Bid. The original copy of the declaration/ undertaking should be submitted in cover - 1 of the hard copy offer.

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### **INSTRUCTION FOR ONLINE BID SUBMISSION IN CPP PORTAL (as per CPP Portal):**

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app>.

### **REGISTRATION**

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

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

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

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

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

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

### **SEARCHING FOR TENDER DOCUMENTS**

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

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

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

### **PREPARATION OF BIDS**

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

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

3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

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

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

## SUBMISSION OF BIDS

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

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

3) Bidder has to select the payment option as "offline" to pay the tender fee / EMD as applicable and enter details of the instrument.

4) Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.

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

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

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7) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid opener's public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

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

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

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

#### **ASSISTANCE TO BIDDERS**

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

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

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**SPECIFICATION FOR DESIGN, SUPPLY, INSTALLATION OF NEW  
FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I  
(ABF) INCLUDING DISMANTLING OF EXISTING FURNACE TENDING  
ASSEMBLY (FTA)**

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## 1 INTRODUCTION& GENERAL INFORMATION:

National Aluminum Company Limited is one of the largest Aluminum 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, Aluminum 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. Then the baked anodes are fixed with aluminum stem & steel bracket assembly in Rodding shops, to enable the anode to be fitted in pot cells of pot lines.

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 10Kms 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.

#### 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 daN/M2
Design Intensity	100 mm / Hour
Rainy Season	Mid-June- Mid. Sept.

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#### 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 new Furnace Tending Assembly for Anode Baking Furnace-I**, 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, performance & process guarantee, PG test, handing over, drawings & documents of the new Furnace Tending Assembly for Anode Baking Furnace-I 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 Anode Baking Furnace-I. 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 Anode Baking Furnace-I. **The job includes dismantling of existing FTA-1, adjoining Garlic crane261, old structure/ equipment/ system, if any and cutting to small sizes and shifting to designated location as per the instruction of Manager-in-Charge or his authorized representative to accommodate the installation of the new system. Vendor has to categorically note that proposed work is purely brown field project.** It may kindly be noted that, the existing FTA-I will be dismantled only after successful erection and commissioning of the proposed new FTA. Dismantling cost has to be quoted separately, which will be considered during overall bid evaluation.
- 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 Furnace Tending Assembly with all accessories & devices required for the complete system. Bidder's supply shall be complete in all respects for safe and efficient operation and easy maintenance of the machine even though any item may not be specifically mentioned below:

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- i) Grab assembly complete with drive mechanism (preferably closing and opening of grab arms through ball pen mechanism) for handling of green or baked anodes in sets of 3 anodes.
  - ii) Packing coke restitution and suction system complete with
    - a) Storage hopper (Minimum 30 m<sup>3</sup> useful capacity)
    - b) Restitution system comprising a mechanized quick closing valve and de-dusted telescopic discharge tube.
    - c) Packing coke suction system complete with telescopic suction tube, a cyclone allowing separation of the 0-1mm and above 1mm fractions of coke, an air/air exchanger, a bag filter along with fines storage hopper (minimum 5m<sup>3</sup> useful capacity). Mesh to be provided in the gulper nozzle to prevent large pieces from entering into the gulper pipe.
  - iii) Coke fines unloading system to be compatible with our existing dust conveying system. The dust discharge valve should be motorized.
  - iv) 1 No. Hoist of minimum 250 kN capacity complete with drive mechanism. Working platform to replace rope, motor to be provided.
  - v) 1 No. auxiliary Hoist of minimum 60 kN capacity complete with drive mechanism. Working platform to replace rope, motor etc. to be provided.
  - vi) Air-conditioned cabin. FTA cabin shall be air-conditioned and suitable approach to the cabin shall be by fixed ladder with suitable locking system. The size and drawing of the cabin glass has to be provided by the vendor for reference and approval.
  - vii) Sufficient lighting arrangement in the FTA for illuminating the working area.
  - viii) Radio communication from FTA cabin to purchaser's anode handling PLC for calling anode trolleys from anode unloading/loading area, positioning the trolleys at desired location and dispatching the trolleys to anode unloading/loading area.
  - ix) The transmitter receiver system for operation of dedusting system of fine reception system (by others) from FTA cabin.
- 2.4.1 Anti-collision devices for new FTA and in-between new and existing FTA. Supervision of installation and hook up of anti-collision device in existing FTA is in Bidders scope of work.
- 2.4.2 End stoppers and Limit switches.
- 2.4.3 All piping, valves and fittings as required for the furnace tending assembly.
- 2.4.4 All electrical items as per the electrical Scope of Work, document no18.0
- 2.4.5 All instrumentation & controls as per the instrumentation Scope, document no 19.0
- 2.4.6 Supports For all equipment, piping etc.
- a) Platforms, access ladders etc. for operation and maintenance of gear boxes and all sub-assemblies including hoists, LT wheels, CT wheels, gulper and filling pipes and grab etc. **There shall not be any monkey ladder except the ladder to cabin.**

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Auxiliary arrangement to get down from cabin in case of breakdown above empty section.

- b) First fill and first change of all lubricating are to be provided by the vendor.
- c) Commissioning spares (Bidder to furnish a list with the Bid).
- d) Special tools and tackles, if required (List to be furnished with the Bid).
- e) Recommended spares for 2 years' normal operation (List with itemised price to be submitted with Bidder's offer). It will be ordered separately.
  - i) Mandatory spares as specified elsewhere of this requisition. This will be included during bid evaluation.
  - ii) Drawing and documents as per attached 'Vendor Data Requirement'
  - iii) All necessary systems like, pneumatic systems, air blower/cooler/air receiver, etc. including controls and items such as electric connections along with power cable and cable reel, pneumatic connections etc. required to perform intended operation of the **FTA**.

2.4.7 **Special information to the Bidder:** The replacement of the FTA will be done in the baking furnace which will be in running condition throughout. In order to facilitate operation and maintenance of the running system, the execution work under this tender will not be free of hindrance. The vendor is to follow necessary instructions of Engineer In-charge in order to manage the production requirement from the unit.

## 2.5 *Scope of services*

Bidder's scope of services shall include the following:

- i) Design, engineering and manufacturing. The vendor must study capacity and condition of existing girder prior to design.
- ii) Procurement of equipment and materials from sub vendors.
- iii) Fabrication, assembly and testing at works.
- iv) Surface preparation, protective coating and painting, including supply of paints (as per latest painting Standards).
- v) Packing and delivery.
- vi) Erection, commissioning and PG testing of complete Furnace Tending Assembly.
- vii) PG test shall be carried out at any time during the guarantee period of the machine at the option of owner.
- viii) Owner's personnel training at site.

### 2.5.1 **SPARE PARTS**

#### **Recommended Spares**

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Bidder shall furnish list of recommended spares for two (2) years normal operation & maintenance of the offered equipment (1 no. of FTA) with itemised price along with the Bid.

#### 2.5.2 Commissioning Spares

Bidder shall supply adequate quantity of commissioning spares, so as to ensure that commissioning of the system is not hampered for shortage of commissioning spares. Bidder shall submit the list of commissioning spares included by him along with the Bid. Any spares required during commissioning, over and above the quoted spares, shall be supplied by the Bidder without any price or time implication. The unused commissioning spares shall be handed over to NALCO.

#### 2.5.3 Mandatory Spares

All mandatory spares shall be supplied along with the main equipment.

All spares parts shall be wrapped and packaged so that they are preserved in original as-new condition, under normal conditions of storage to be anticipated in India, and shall be properly tagged and coded so that later identification for intended equipment usage will be facilitated. The two years' "recommended spares" if ordered separately, mandatory spares and "commissioning spares" shall be packaged separately and clearly marked for identification.

#### 2.5.4 SPECIAL TOOLS AND TACKLES

The Bidder shall provide a set of new and unused special tools and tackles required for operation and maintenance of the offered system and furnish the list of the same in his Bid. The price of the special tools and tackles shall be included in the basic price of main equipment.

#### 2.5.5 ON-SITE TRAINING

Bidder shall provide on-site training (shop floor and class room) to Owner's personnel for operation and maintenance of the equipment. The Bidder shall indicate duration of such training in his Bid and the cost for such training shall be included in the base price of the main equipment.

#### 2.5.6 Exclusions

The following are excluded from the Bidder's Scope of supply/services:

- i) All building, civil and structural works.
- ii) Support girders/beams (on which rails are installed).
- iii) Test load for testing of FTA at site.
- iv) Following attachments (Existing devices will be utilized)
  - Flue wall cleaning/brushing machine.
  - Flue wall straightening equipment.
  - Flue wall head block handling device.
  - One-anode unloading device.
  - Reclaiming bin for flue wall scrap.
  - 'L' device for demolishing worn out flue walls.



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2.5.7 All the electrical & instrumentations within battery limit required for supply, installation, testing & commissioning and handing over of the proposed Furnace Tending Assembly to Nalco, shall be in vendor's scope.

2.5.8 **Vendor may visit the site, if required before bidding to assess the project requirements**

### **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. Electricity for office cum store cum workshop may be free or on chargeable basis, that can be decided during placement of order.

### **4 FREE ISSUE OF MATERIALS:**

There will be no free issue of materials for the proposed "Furnace Tending Assembly for Anode Baking Furnace (ABF) -I". The vendor shall arrange all the materials required for the proposed system within the battery limit. However, free land & 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 will be made available for the vendor. Electricity for office cum store cum workshop may be free or on chargeable basis, that can be decided during placement of order.

### **5 SAFETY:**

5.1 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.

5.2 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.

5.3 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.

5.4 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.

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- 5.5 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/slings/tools and tackles/labour 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.
- 5.6 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.
- 5.7 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 schedule for completion including Erection, Testing, Commissioning, PG Testing and Hand over to NALCO for New Furnace Tending Assembly for Anode Baking Furnace-I of Smelter Plant complete in all respect shall be 24 Months from the date of LOI/Brief Order/Purchase Order. The offer submitted by the bidder shall be accompanied by a time schedule showing individual time period for each activity like submission of drawings, supply, erection and commissioning etc.

## 7 STABILIZATION PERIOD:

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 vender representative.

## 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 bidders are requested to furnish the documents like copies of LOI'S, Work Orders etc. pertaining to the experience indicated in qualifying requirements.
- 8.4 Major Mechanical/ Electrical /electronic drawings, schematics, control philosophy, PLC architecture, Field Instruments, Bill of materials etc. need approval of M/s Nalco before going ahead with procurement/ manufacturing

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- 8.5 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.
- 8.6 Inspection and Testing Procedure (ITP) for acceptance of supplied materials at site to be submitted to NALCO within four months of LOI/PO placed on the vendor.
- 8.7 Pre-dispatch Inspection (PDI) documents like FAT, packing list, photographs/ videos etc. to be submitted before final inspection of LOI/PO placed on the vendor. At least 15 days clear advance notice shall be given by the bidder to NALCO for carrying out the pre-dispatch inspection (PDI) at suppliers works.
- 8.8 Vendor shall ensure continued technical agreement and service and spare parts support for minimum period of ten years from the date of commissioning of the system
- 8.9 The bidder shall submit deviation to Technical Specification and Commercial terms of NIT, if any, separately in the specified format given the commercial document for faster bid analysis
- 8.10 All Tools & tackles required for the satisfactory execution of work shall be arranged by contractor at his cost.
- 8.11 All instruments, measuring tools etc. are to be calibrated periodically as per the requirement of NALCO and necessary calibration certificates are to be submitted to NALCO before use.
- 8.12 The vendor may visit the site for assessing exact site conditions before bidding.

## 9 DRAWING AND DATA REQUIREMENT:

- 9.1 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.	Control Schematic (Basic)	x	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		x		x

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Sl. No	Description	With Bid	After Job Award		
			For Review	For Information	Final in Book Form
	for items whose data sheets are not enclosed)				
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.	Lubricants list with specifications		x	x	x
14.	GA drawing with cross section for Furnace Tending Assembly and all components at the battery limit.		x	x	x
15.	Component cross sectional drawings with parts list			x	x
16.	Test Procedures		x		x
17.	Start-up and operating instruction			x	x
18.	Repair and maintenance instruction			x	x
19.	Maintenance manual, including assembly showing all critical clearances.			x	x
20.	Manufacturer's test certificate for sub vendor items.		x	x	x
21.	Stage inspection test reports		x	x	x
22.	Final acceptance testing and performance test records		x	x	x
23.	Detail list for recommended spare parts (preliminary/ final)				x
24.	Spare Parts Identification Drawings				x

## 9.2 Document distribution schedule:

9.2.1 Document listed under column 4 and 5 are to be submitted in 02 copies.

9.2.2 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.

9.2.3 **The O&M Manual should be submitted as per the following details:**

a) **Process and Mechanical**-08 Hard copies and 08 Soft copies in USB drives

- 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 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

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- 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

b) **Electrical**-08 Hard copies and 08 Soft copies in USB drives

- 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. Switchboard, VFD, UPS, ACB, MOTPRO & Protective Relays, Maintenance Hoists, etc)
- Final Operational Settings (i.e. VFD parameters, UPS, 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
- Operating and maintenance instructions including lubrication schedule with requirement of first fills, flushing fluids, inhibitors, chemicals required for pre-commissioning
- Trouble shooting

c) **Instrumentation**-08 Hard copies and 08 Soft copies in USB drives

- 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
- **Following drawings and documents:**
  - Process & Instrumentation Diagram
  - Bill of Materials
  - Operation & Maintenance Manual
  - Spare parts List
  - Instruments Manual

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- Instrumentation As Built Drawing including loop details up to field and PLC termination
- Electrical As Built Drawing
- IO List
- Instrument data sheets
- Instrument calibration certificates

### 9.3 **Special Instruction for submission of Drawings:**

- 9.3.1 Fold all prints to 216 mm x 279 mm size.
- 9.3.2 Vendor to forward drawings and documentation to National Aluminium Company Limited clearly specifying the Order or tender number.
- 9.3.3 The drawing / Document no with revision number are essential. The number may be up to a maximum of 28 characters in length.
- 9.3.4 Each drawing submitted to Nalco must be checked and signed / stamped by the vendor's authorized representative.
- 9.3.5 Revision number must change during subsequent submission of vendor document.
- 9.3.6 Multi sheet documents other than drawings must be submitted in their entirety in the event of a resubmission even if only few sheets are revised.
- 9.3.7 All vendor drawings to be provided with a blank space measuring 75 mm W x 38 mm H for marking review codes.
- 9.3.8 Drawings shall also include preparation of interconnection diagrams and integration diagram with existing Anode Baking Furnace-I.
- 9.3.9 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.
- 9.3.10 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.
- 9.3.11 Hard copies of the Mechanical, 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.
- 9.3.12 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, system functional blocks etc of loop in simplified manner.
- 9.3.13 The electronic files of all As-Built drawings shall be submitted in USB drive (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

## 10 **INSPECTION AND TESTING:**

- 10.1 Each individual equipment shall be shop tested as per the applicable codes and standards for performance. Bidder shall perform the required tests necessary to fulfill the acceptable noise and vibration limits. Dynamic balancing tests for fans etc., shall be performed as required.
- 10.2 Depending upon the requirements, Nalco will have option to visit the vendors factory minimum once to inspect all the equipment in its progressing state of manufacturing to check equipment, materials procurement control, manufacture progress, follow-up

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schedule, raw material conformity on presentation of material certificate, quality control, conformance to drawing, specification requirement, function of operating parts, overall size, welds quality control of the points undergo maximum stress etc.

- 10.3 Provision may be kept for pre-dispatch inspection by NALCO. For inspection by NALCO representatives, inspector's to & fro charges, lodging, boarding, conveyance etc. will be borne by NALCO.
- 10.4 Performance testing of complete system shall be done at site by the vendor.
- 10.5 A functional test shall be performed for the instrument and control system for individual equipment and also the system as a whole. Bidder shall provide all the necessary interconnections for the purpose of shop tests.
- 10.6 Periodic inspection of the fabrication assembly and packaging of the system may at the owner's option be performed to assure conformance with the purchase order by the owner or its authorized representative and as per the inspection procedure mentioned in general purchase condition.
- 10.7 Any or the entire tests may at the owner's option, be witnessed by the owner or its representative. However, all such inspections shall be regarded as checkup and in no way absolve the contractor of his responsibility.
- 10.8 After installation and commissioning at site, the units shall be tested for overall performance as per procedures mutually agreed upon. All instruments and gadgets for testing at site shall be arranged by bidder at his own cost.
- 10.9 The sub-assemblies of the crane shall be assembled & tested at shop. The complete cranes shall be assembled at site. All load & deflection check of the fully assembled cranes shall be done at site
- 10.10 Unless otherwise prescribed, following load tests shall be applicable:
  - i) Dynamic Test: With 120% of the nominal load. All machine movements shall be made successfully without any interruption of the speeds and motor heating.
  - ii) Static Test: With 140% of the nominal load. The nominal load is left just up the floor and over load added. With the trolley at the mid span, the vertical deflection shall not exceed 1/800 of the span.

## **11 PAINTING AND SHIPMENT:**

- 11.1 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.
- 11.2 All the surfaces prior to painting shall be well prepared.
- 11.3 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.
- 11.4 Each equipment shall have an identification plate giving salient equipment data, make, year of manufacture, equipment number etc.

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- 11.5 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.
- 11.6 Non-ferrous materials, austenitic stainless steel, plastic or plastic coated materials, insulated surface of equipment and pre painted items shall not be painted.
- 11.7 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.

## 12 COMMISSIONING & TAKE OVER:

The Furnace Tending Assembly shall be taken over by the owner after completion of trial operation subject to the successful commissioning and achieving the guaranteed performance by the contractor. The owner shall provide green anodes, coke required for commissioning. Vendor to confirm that in case of the performance guarantee parameters are not achieved, 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 without any cost implication to owner failing which the acceptance of proposed "Furnace Tending Assembly" will be guided by the provisions mentioned under the chapter "**PERFORMANCE GUARANTEE AND TESTING**" of this document. Vendor will get maximum of three chances to comply with performance guarantee parameters.

## TECHNICAL TRAINING

At the final acceptance, the vendor shall conduct technical training on technical, operation and maintenance. Training shall be imparted to NALCO representatives for a minimum period one week. This includes separate module for operating and maintenance personnel.

Cost of training including training materials shall be borne by the vendor. NALCO shall only provide the location free of cost.

The content of technical training shall be mainly on equipment, working principle of electric control, pneumatic and lubrication systems, parameter setting and selection, operation, maintenance, troubleshooting knowledge. Training shall make the buyer's personnel master principle and proper use of equipment.

A training document (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 above shall be read in conjunction with relevant clauses in Commercial document titled Tender document commercial (Import) & Tender document commercial (Indigenous)

## 13 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 contract.

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## 14 DESIGN BASIS:

### 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) throughout the year.

### 14.2 Proposed System:

#### **FUNCTIONS:**

The anode baking furnace multipurpose machine (FTA) is designed to carry out the following operations:

Picking up of green anodes from the anode transportation trolley and placing them inside the pits in stacks.

Sucking up of fresh packing coke from storage bins to storage/transportation hopper on FTA

Filling of the furnace pit with packing material by means of a filling pipe and cover the green anodes.

Removal of the packing material, from the furnace pit, by means of the sucking pipe of a pneumatic conveyance equipment, after the anodes are baked.

Anode handling to unload the pit. Picking up of baked anodes from the pits and placing them on empty anode transport trolleys.

Separation and collection of coke fines (0-1mm) generated in the process and their discharge to the buffer hopper.

Handling by means of minimum 6Ton auxiliary hoist, such as:

- Handling of shifting furnace equipment (blowing ramp, burner ramps, thermocouple ramps, exhaust ramps, fume measurement ramps, cooling ramps). Provision of rotating the specific equipment by minimum 180 Degree
- Handling of brick pallets.
- Handling of bins.
- Handling of maintenance equipment/spare parts from ground floor

Handling, by means of minimum 25 Ton auxiliary hoist such as:

- Handling of flue walls, flue wall head blocks and flue wall scraps
- Handling of flue wall demolition grab.
- Handling of flue wall straightener.

Annex Handling by means of the grab:

- Handling of flue wall cleaning/brushing machine.
- Controlling anode transportation trolley movement from Anode baking furnace to Anode storage shop and vice versa from the FTA cabin through wireless communication.

Special tools in the machine, i.e. the anode grab, the filling pipe and the sucking pipe, must be hung in appropriate manner so as to prevent breaking in case of wrong movement at low speed.

Electrical equipment must be gathered on a panel located on the machine with ease

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of access to carry out maintenance.

PLC for full control of the machine.

Control of the machine through joysticks (Maintenance friendly, multi axis joystick controller with proper access and electrical connection must be plug-in type.) in instinctive way for any position of the seat in the cabin.

Ergonomic cabin, glazed on each face, giving good visibility of the tools. Cabin must be spacious enough to accommodate three maintenance personnel to work.

All these above operations will be performed from driver's cabin.

Recovering fines from anode baking furnace tending assemblies

The tending assembly emptying zone is located at north/south end of the anode baking furnace

When a crane operator wants to empty the fines carried by hopper, he stops the FTA in the emptying position. From his cabin, he activates the following:

Alignment of the FTA flange and the flange of the fines recovery station,

Activation of the filter,

Rotation of the rotary feeder equipping the hopper of the FTA.

Approximately 175 kg of fines are emptied per FTA, per shift (present condition).

The fines are emptied into a buffer hopper/ surge hopper of pneumatic dust conveying system.

An alarm (sound and/or visual) connected to a sensor indicates that the buffer hopper upper level has been reached, informing the crane operator that he should stop or not start the hopper filling operation.

Once the tending assembly emptying operation has been completed, the coke fines are sent by pneumatic conveyor to silo. The dust bottom hopper should be equipped with air canon fluidization system.

#### 14.2.1 Site general condition

The machine should be designed to work in the dusty atmosphere containing carbon dust, hydrocarbon, pitch fumes and sulphur dioxide.  
FTA should be designed to work in an ambient temperature between 10 °C and 70 °C.

Electrical supply: 3 Phase, 415 Volts  $\pm$  10 %, 50 Hz  $\pm$  3 %  
Detail as mentioned in this document

#### 14.2.2 General Data:

Number of baking furnaces: 3  
Number of working weeks / year: 52  
Routine maintenance shifts per FTA / week: 1  
Effective Number of working shifts / week: 20

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Effective working time / shift: 7Hrs (1 Hr for changeover of shifts)Appx

#### **Furnace Data (ABF-1)**

Furnace target production capacity, anodes / year: 133400  
Number of sections / furnace: 84  
Number of pits / section: 6  
Pit length: 4830 MM  
Pit width: 673 MM  
Pit depth: 4600 MM  
Number of anodes / layer: 3  
Number of layers / pit: 4

#### **Fire Data**

Number of fires: 4  
Normal indexing/permuting cycle: 24 (Sometimes 19 hrs as the requirement)  
Average number of sections per fire:  
Temperatures build up: 6 sections  
Cooling: 8-9 sections  
Work: 4-5 sections

#### **Anode Data (180 KA Size)**

Green Anode (Length X Width X Height): (1460 X 1010 X 560) all in MM appx  
Green Anode weight: 1235 Kgs appx  
Baked Anode (Length X Width X Height) : (1450 X 1000 X 550) all in MM appx  
Baked Anode weight: 1170 Kgs appx

#### **Anode Data (220 KA Size)**

Green Anode (Length X Width X Height): (1593 X 1023 X 605) all in MM appx  
Green Anode weight: 1480 Kgs appx  
Baked Anode (Length X Width X Height): (1580 X 1015 X 590) all in MM appx  
Baked Anode weight: 1401 Kgs appx

#### **Coke Data**

Average packing coke density: 975 Kg/m3 (950-1000)  
Packing coke size: Less than 6mm  
Average Suction temperature: 350 Deg Cg. (500 Deg Cg max)  
Coke layer height above pit: 200 MM  
Bottom layer per pit: 100 MM

### **14.2.3 Building specifications**

Crane span: 26000 MM  
Clearance between the top of furnace and bottom of machine: 2500 MM appx  
Furnace operating floor to highest point of multipurpose machine: 12965MM appx  
Rail type : A120

### **14.3 Technical Data :**

#### **Main structure**

The structure of the FTA is of twin girder type the trolley running on rails located on the top of the girders, and the auxiliary hoist running on the side of the main girder. The rolling frame is made of two parallel girders bolted on two end truck lines by means of high tensile bolts. Each end truck file is composed of two small end trucks linked by a linking rod; it is provided with one bumper at each end and jacking points.

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The electrical room and it's floor level having safe approach from both the main girder side with suitable foot hold/steps and walk way having hand rail support.

Girders and end trucks are of tubular section internally stiffened.

FTA Travel speed:

Long Travel: (2-60) m/min variable. In safety zone maximum speed of 8 m/min

Cross Travel: (1.6-40) m/min variable. In safety zone maximum speed of 5.2 m/min

Anode Grab:

The grab is mechanically operated with locking/unlocking by electric motor, to carry out functions of FTA as detailed above(preferably closing and opening of grab arms through ball pen mechanism). **The Anode grab should be capable of catering to anodes of present size (Anodes for 180 KA Pot ) and shall be compatible to handle future anode size (Anodes for 220KA Pot)**

Lifting capacity of grab: adequate to handle specified anodes mentioned elsewhere in document. **No hydraulic system is acceptable for grab operation.** The grab should be designed with additional braking system to cater the need during free fall of grab/emergency situation.

#### **Pneumatic conveyance equipment**

The pneumatic conveyance equipment to be fitted on the proper part which includes:

The sucking equipment.

The filling pipe equipment.

The fine dust discharge equipment.

The cleaning service.

#### **Sucking equipment**

The sucking equipment includes:

One telescopic sucking pipe assembly ended by a nozzle.

One storage hopper.

One cyclone of high efficiency, made of non-abrasive steel.

One air cooler.

One filter of high efficiency with automatic declogging.

One dust hopper collecting the fine dust from the main filter and the cyclone.

One vacuum unit calculated according to the site altitude.

One low pressure blower unit to declog the filter.

Packing coke suction rate: 88 m<sup>3</sup>/hr minimum. (The sucking pipe system should be fitted with some safety devices including lower travel limit switch. Mechanism must be there against detachment of inner pipe from fixed outer pipe specifically during movement at lowest point. Upper travel limit switch, over upper travel limit switch, overload device, slack rope)

#### **Filling pipe equipment**

The filling pipe equipment includes:

One telescopic filling pipe.

One dedusting device

Discharge rate..... 88 m<sup>3</sup> per hour minimum

Vacuum unit/air compressor suitable to accomplish above requisite functions efficiently.

Packing coke suction and restitution

Packing coke suction rate..... minimum 88m<sup>3</sup>/hr

Packing coke restitution flow rate: 88 m<sup>3</sup>/h minimum

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Suction tube and restitution tube vertical travel speed should be variable depending upon operating condition

250KN and 60KN Minimum ancillary handling hoist (rotating hook)  
Cross travel and hoist speed: variable to meet operational requirement:

*60 KN: Cross travel speed (variable): 5-20m/min*  
*60KN: Hoisting speed(variable): 1.7-10m/min*  
*250KN: Hoisting speed (variable): 1-6 m/min*  
*(Present speed conditions for indicative purpose only)*

Type of hook: Ramshorn type **(25T)**  
Cabin, seat & controls arrangement

All machine duties are controlled from ergonomically designed air conditioned cabin  
The cabin design and seat rotation should enable the operator to have a clear and permanent sight on the tool for all the operation.

#### 14.4 Plant & Equipment:

- 14.4.1 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.
- 14.4.2 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.
- 14.4.3 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.
- 14.4.4 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.
- 14.4.5 Noise level of any equipment shall not exceed 85 dBA measured at a distance of one meter from the equipment.
- 14.4.6 All out door located motor / valves/ instruments and electrical equipment shall be protected by rain protection hood.

#### 14.5 OBJECTIVE:

The objective of the project is to outline the requirements of NALCO for the design, engineering, procurement, fabrication, assembly, testing at shop, painting, shop inspection, supply, packing & forwarding of Furnace Tending Assembly, carrying out erection, commissioning and PG test of the unit including all sub - assemblies in accordance to the specifications laid down here and enclosed annexures

#### 14.6 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

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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)/ International Electro Technical Commission (IEC)
15. IEC 61511-Functional safety - Safety instrumented systems for the process industry sector
16. IEC 61131-standard for programmable controllers
17. IS: 14254 or IEC 61131-standard for programmable controllers
18. VFD: as per standard mentioned in the attached 'Standard Specification of VFD'
19. Motors: As per the standards mentioned in the attached 'Standard specifications of Motors'
20. MCC: As per the standards mentioned in the attached 'Standard Specification of M.V. Board'
21. LBS: IS/IEC 60947
22. Cables: IS 1554
23. IS:14817 – Vibration limits for all rotating equipment

## **15 BATTERY LIMIT**

### **15.1 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).

### **15.2 Electrical:**

Battery limit of the vendor for electrical portion starts from PMCC no. 411 switchboard of Substation-710.17 in Anode Baking Furnace-I.

### **15.3 Instrumentation:**

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, separate laying of power cables, control cables, communication cables & signal cables from field instruments and operator control panel to the PLC panel located at the crane itself and integration of automation system with existing Anode baking furnace 1 and anode handling system.

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15.4 **Civil:** All the civil works required for completion of the project are to be in the scope of the bidder.

## 16 JOB SPECIFICATION – PROCESS

### DESCRIPTION OF SYSTEM AND AUXILIARIES:

#### 16.1 *Process description:*

The proposal is for installation of one **Furnace Tending Assembly** in Anode Baking Furnace-I of Carbon Area, Smelter Division, Angul. This machine specification is as given below.

The anode baking furnace multipurpose machine (FTA) is designed to carry out the following operations:

Anode handling to load the furnace pit by means of anode grab.

Anode handling to unload the pit.

Removal of packing material from furnace pit by means of sucking pipe of pneumatic conveyance equipment

Filling of furnace pit by packing material by means of filling pipe.

Annex handling by means of minimum 25 Ton aux hoist such as:

Handling of flue wall

Handling of flue wall demolition grab

Handling of flue wall straightener

Annex handling by means of minimum 6 Ton aux hoist such as:

Handling/shifting of furnace equipment (Blowing ramps, burner ramps, thermocouple ramps, exhaust ramps, fume exhaust ramps, cooling ramps)

Handling of brick pallets

Handling of bins

All the operations mentioned above are carried out from the control cabin (by Joystick, push buttons, selector switches, panel view touch screen operator interface)

FTA shall be equipped with tools with variable speeds on the following motions:

Grab hoisting

Long travel

Trolley cross travel

Sucking pipe hoist

Filling pipe hoist

The operator interface (HMI) should be colour touchscreen and will be used for following functions:

Starting of the machine (Line contactor vacuum unit, lighting, cleaning systems, test of lamps etc.)

Display of state of pneumatic conveyance circuit components (hoppers, dust bin level, valve motors, sucking/filling pipe, dust discharge etc.)

Operator assistance for all functions of machine.

Choice of joystick sensibility.

Displaying of faults and alarms with description on operator assistance screen.

Faults and alarm history

State of Motors and detectors

## 17 JOB SPECIFICATION – MECHANICAL

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

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### 17.1 *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 "Furnace Tending Assembly for Anode Baking Furnace-I" with auxiliary equipment shall be minimum as per the specifications laid down, drawings enclosed, which are 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.

The FTAs shall fulfil the following requirements

- 1) All hoppers equipped with inspection door site should be such that possible entry of a person is possible and door shall be fitted with locking handles or fly nuts.
- 2) Cyclone should be made from non-abrasive steel.
- 3) Gulper bends are to be protected with wear resistance lining in all sides for better life.
- 4) Gulper mouth shall have a mesh so that only coke can be sucked not big pieces like refractory bridles, peep-hole cover plug etc.
- 5) Gulper & filling pipe mouth shall have 60mm clearance on both sides inside the pit width.
- 6) Grab opening should not take place unless anodes rest on the solid surface.
- 7) No hydraulic system is acceptable for any operation in FTA. All valves should be motorized
- 8) Monkey ladders are not acceptable in FTA, staircases may be provided with hand railings.
- 9) LT wheels are to be designed keeping in mind the available rails in ABF#1. Width of the CT wheels shall be adequate enough to take care of any misalignment between the rails during LT movement.
- 10) Gulper pipe and grab rope slackness provision shall be provided.
- 11) Centralised greasing & lubrication system should be provided
- 12) FTA should be designed such that the existing equipment like exhaust ramps, temp. & pressure ramp, blowing ramps, cooling ramps, burner ramps, Flue wall, Flue wall head block, Flue wall cleaning & brushing machine, Flue wall straightening machine, etc. may be adaptable with the existing attachments.
- 13) Minimum clearance of 80 mm to be ensured between grab external face & head wall.
- 14) The atmosphere temperature inside the baking furnace may reach approximately 70°C during summer days. Accordingly, all mechanical, electrical, instrumentation and control equipment shall be designed suitably to operate at the temp.
- 15) Coke is highly abrasive. Thickness of the equipment and piping thickness shall be judicially related to take care of abrasive mattl. Replaceable wear bend cover and liners shall be provided.
- 16) The quality of fabric, shape and number of filter bags shall be suitable to obtain a service life of minimum 48 months, whatever maybe the working condition of the filter. Pressure of pulse air jet for unclogging the bags shall not be more than 2.5 bar.
- 17) The purging blower shall be of heavy duty type with adequate capacity with ample bearing and wearing type surfaces for continuous operation without vibration. The blower shall be complete with electric motor, common base frame with vibration isolators, v-belt with drive & driven pulleys etc. The blower assembly should be enclosed inside a chamber.

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- 18) Exhauster shall be heavy duty type with adequate capacity with bearing & wearing type surfaces for continuous operation without vibration. The vacuum pump/ exhauster shall come with electric motor, base frame, vibration isolation with adequate coupling arrangement etc. The exhauster assembly should be enclosed inside a chamber.
- 19) Painting of equipment & material as per painting standards.
- 20) All machined bearing surfaces shall be protected against rust with coat of grease.
- 21) Filling pipe & sucking pipe should be telescopic in nature.
- 22) Various Gearboxes designed for the Equipment should be energy efficient.

All equipment and structures shall be designed for environment and seismic conditions as stated under clause 1.3

Bearings shall be designed for a minimum life of 40,000 working hours of the whole machine. Width of LT wheels shall be adequate enough to take care of any misalignment between the rails during LT movements.

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 of dismantling. The specifications indicate a minimum standard of quality for the materials, fabrication and construction of the proposed plants.

All equipment shall be of proven design. Prototypes or extensive modifications of basic designs are unacceptable.

Noise level of any equipment shall not exceed 85 dBA measured at a distance of 1m from the equipment.

**The dust emission at filter outlet shall not be more than 10 mg/Nm<sup>3</sup>.**

The equipment shall be supplied in modular construction, which can be fully assembled at site without requiring any site welding. In other words, sub-assemblies such as cabin, trolley assembly, anode handling grab, packing coke suction and restitution system, pendant, hoist and other auxiliaries and attachment shall be supplied in fully assembled and wired. It is expected/desired that at site during erection, work shall be limited to jobs like bolting and interconnecting the wiring between various modules only.

Following attachments working with existing baking furnace tending assemblies shall be utilised for respective function of the new FTA. The new FTA shall be completely compatible with existing operating/ maintenance attachments.

- Flue wall cleaning/brushing device.
- Flue wall straightening device.
- Flue wall handling device.
- Flue wall head block handling device.
- One anode handling device.
- Reclaiming bin for flue wall scrap.

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- 'L' device for demolishing worn out flue walls.

## 17.2 Codes and Standards

The design, manufacture, testing, and supply shall conform to relevant international codes and standards. Indian codes and specifications, wherever applicable, shall take precedence over those of other nationalities. Only latest editions including addendum shall be referred to.

## 17.3 Technical data

The FTAs shall be designed for the functional/performance requirements as specified in detail elsewhere in the document.

## 17.4 CONSTRUCTION DATA

The FTAs shall be designed for the functional/performance requirements as specified in detail elsewhere in the document.

a) All hoppers shall be equipped with inspection doors and doors shall be fitted with locking handles or fly nuts. The hoppers provided with level transmitters and level switches must have an inspection opening at the top to check the level. Inspection opening cover shall be suitable for IP 55.

b) The cyclone shall be made of non-abrasive steel.

### c) Bag Filter

i) Maximum allowable fluid velocity across filter fabric shall be 2cm/sec. The quality of fabric, shape and number of filter bag shall be suitable to obtain a service life of minimum 48 months, whatever may be the working conditions of filter. Detail design calculation with cloth to air ratio are to be furnished. Air required for the purging should be filtered to less than 3-micron particles. Pressure of pulsed air jet for back washing/unclogging the filter bags shall not be more than 2.5 bar (G).

ii) The centrifugal fans / blowers shall be of heavy-duty type with ample bearing and wearing surfaces for continuous operation without vibration. The fans shall have adequate capacity against required static pressure. The fans shall be complete with electric motor, common base frame with vibration isolators, V-belts with drive and driven pulleys, flexible connections etc.

i) The fan casing shall be heavy gauge steel volute chamber rigidly reinforced.

ii) The fan selection shall be based on sea level conditions after applying necessary temperature and altitude correction.

iii) The impeller and shaft assembly shall be statically and dynamically balanced.

iv) Bearings shall be preferably grease lubricated and air cooled.

v) The material for various components shall be selected by the Bidder based on mechanical strength, erosion and corrosion.

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- 17.4.1 Supporting structures for all equipment etc.
- 17.4.2 Operating and maintenance platforms, staircase, access ladder etc. for the complete system.
- 17.4.3 Complete tools and tackles required for the system.
- 17.4.4 All bolts, nuts and rivets used shall be of high finish, good quality, High Tensile (H.T.) Steel.
- 17.4.5 Mandatory spares and special tools mentioned in the chapter "Mandatory Spares" of this document.
- 17.4.6 Energy efficient components/ equipment mentioned in the chapter "GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING" of this document.
- 17.4.7 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.
- 17.4.8 Other scope of supply mentioned in description of system & auxiliaries and battery limit.

#### Scope of Services:

- 17.4.9 Site assessment including study of existing Anode Baking Furnace-I, collection of required data for the design of proposed Furnace Tending Assembly by the vendor
- 17.4.10 Basic engineering, detail engineering, designing, approval from Nalco, kick off meeting, manufacturing, dispatch, transport both sea & air, inland transport, follow-ups, receipt, storage & warehouse management, site work shop, erection,
- 17.4.11 Testing, trial run, commissioning, performance guarantee and handing over the system to client on turnkey basis.
- 17.4.12 Designing of Furnace Tending Assembly, presentation to Nalco and seeking approval from Nalco for further manufacturing
- 17.4.13 Supply of Furnace Tending Assembly including its auxiliaries so as to make a complete unit suitable Anode Baking Furnace-I.
- 17.4.14 **Dismantling of existing Furnace Tending Assembly-I & adjoining Garlic 261crane in Anode Baking Furnace-I.**
- 17.4.15 Shifting of the dismantled items to the designated place as decided by NALCO within the plant premises.
- 17.4.16 Design and engineering for structural modification to accommodate the new Furnace Tending Assembly.
- 17.4.17 Fabrication assembly at works and site fabrication if required.
- 17.4.18 Dispatch of the complete consignment up to NALCO Angul Site.
- 17.4.19 Transportation to site, receipt at site, storage and warehouse management,
- 17.4.20 Strengthening of structures for Anode Baking Furnace-I area as per requirement.
- 17.4.21 Equipment shop testing, performance guarantee test of the system at site and checking compatibility with operation requirement etc.
- 17.4.22 Surface preparation, sand blasting, protective coatings and painting including supply of paints.
- 17.4.23 Modification of existing reinforcement, platforms, stairs, allied structure, all field sensors, related cables, other fabrication etc. required exclusively to make space

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for the installation of proposed "Furnace Tending Assembly" or its auxiliaries within battery limit.

- 17.4.24 Fabrication and erection of the "Furnace Tending Assembly".
- 17.4.25 Installation of "Furnace Tending Assembly" including all accessories.
- 17.4.26 Integration of the proposed system with existing Anode Baking Furnace-I.
- 17.4.27 Installation and commissioning of the entire system.
- 17.4.28 The supply shall include erection & commissioning consumables etc. The bidder shall arrange the commissioning accessories like flanges, fasteners, gaskets etc.
- 17.4.29 The main frame shall be fabricated from Carbon Steel & bars and may be of welded/ bolted construction.
- 17.4.30 Other scope of service mentioned in description of system & auxiliaries and battery limit.

## 18 JOB SPECIFICATION – ELECTRICAL

### 18.1 INTRODUCTION:

- 18.1.1 This specification defines the minimum basic requirement for electrical system design, engineering, equipment selection, sizing, procurement, supply, installation, testing and commissioning for New Furnace Tending Assembly (FTA) in Anode Baking Furnace-1 for M/s Nalco's Aluminium Smelter Plant at Angul, Odisha.

### 18.2 BRIEF DESCRIPTION OF ELECTRICAL SYSTEM:

- 18.2.1 The Current Collectors of new Furnace Tending Assembly (FTA) shall be amalgamated with existing baking furnace power rails for free movement of crane in existing baking furnace area.
- 18.2.2 Existing baking furnace power rails are being fed from local power isolation cabinet (LPIC) located at section no 58 inside the baking shop which receives power from Owner's 415V Extension Switchboard no. PMCC-411, feeder type ACB (1000A), feeder no. 2.1E located in S/S 710.17(approx distance 300m).  
The Feeder rails and the associated cables are sized to limit the voltage drop to 5% of the nominal voltage, in the normal operating condition at the farthest point.
- 18.2.3 The existing power rails comprise of 813 series power rail system of make Condufix-Wampfler. The ratings & catalog nos. of Conductor Rails & current collectors are as mentioned below:

SI no	Item Description	Current rating	Catalog no.
1	Conductor Rail	800A	081314-5X11
2	Current Collector	500A	081302-2X01

- 18.2.4 Since the power supply system of existing power rails are designed for three FTAs and the new Furnace Tending Assembly shall replace FTA-1, no new power supply feeder or conductor rails are envisaged for the new FTA.

The installed capacity of incoming power supply feeder, LPIC and associated cables up to LPIC for existing conductor rails are as mentioned in below table:

SI no.	Item description	Location	Existing Capacity/ Size
1	Air Circuit Breaker(ACB) Feeder no. 2.1E	PMCC-411 of S/S 710.17	1000A

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2	Local power isolation cabinet (LPIC)	Furnace Section no. 58 of Baking Furnace-I	1000A
3	Associated Power Cables (from PMCC to LPIC)	From: Sl. no.1 To: Sl. no. 2	3 runs of 3.5X240 sq.mm. Al.

- 18.2.5 The details of existing electrical power rail, LPIC, PMCC Switchboard feeder shall be collected by the bidder from Nalco site, Angul before quoting for the job.

As the new FTA shall be amalgamated to existing Baking Furnace power rails, the capacity of existing power rail system to cater the loads of new FTA shall be analyzed by the Vendor before quoting for the job. Accordingly, all the supply & service requirements for augmentation of capacity of the existing Baking Furnace power rail system, including PMCC Incoming source feeder, LPIC, Power cables, etc., up to new FTA shall be included in the scope of Vendor.

- 18.2.6 Bidder shall assess the size and type of power rail and associated interconnecting cables (power rail onwards) based on the voltage drop of 5% in the feeder rails and cables, considering FTA to be operating at the farthest point of Baking furnace from the substation.
- 18.2.7 All supply & services for augmentation/ modification of existing power rails shall be in the scope of vendor.
- 18.2.8 The new Furnace Tending Assembly shall have its own Electrical room which shall be in Bidder's scope and located on the FTA itself.
- 18.2.9 The Electrical room, mentioned above, shall house all motor starters, VFDs, UPS, PLCs, relays, timers, start-stop push buttons, etc. required for the system/ package. All interlocking for the desired sequence of operation, selections, indications etc. shall be carried out by the bidder inside the Electrical room. All power terminal blocks shall be arranged horizontally, whereas all control terminal blocks shall be arranged vertically.

### 18.3 SCOPE OF WORK:

- 18.3.1 Bidder's scope includes detail engineering, equipment sizing, selection, procurement, supply, supervision of installation, testing, commissioning, performance guarantee and handing over to M/s NALCO the complete electrical system of the Furnace Tending Assemblies (FTAs).

### 18.4 SCOPE OF SUPPLY (ELECTRICAL):

- 18.4.1 The scope of supply shall include but not limited to all equipment, materials mentioned in the tender documents. Supply for the proposed "Furnace Tending Assembly for Anode Baking Furnace-I" with auxiliary equipment as per the specifications and drawings enclosed and forming 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.
- 18.4.2 Supply of all the electrical equipment for the new FTA including but not limited to the following:

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- Power Rails, Current collectors, associated accessories, cables etc.
- Energy Efficient Squirrel Cage Induction Motors
- Jack screw, Linear & Rotary Actuators,
- Service & Emergency Brakes, Fail safe Electromagnetic (EM) Brakes, Mechanical EM Disk brakes, etc. including their power supply & controllers
- Rotary Motor Encoders including their connectors & cables
- Variable Frequency Drives (VFD),
- Accessories for VFD like VFD Control & Communication Cards/ modules, Input & Output Line Reactors, Braking Chopper, Braking Resistor, etc.
- Soft Starters including their communication modules & cables
- Motor Starters
- Uninterrupted Power Supply (UPS) of Non-Redundant type with By-pass provision, VRLA batteries, etc.
- Electrical room housing all the electrical equipment like Motor Starters, VFDs, UPS, UPS Battery Bank, PLC, Panel View, etc.
- Electrical Panels, Junction Boxes, Enclosures, Emergency Stop Push Button Cabinets, etc.
- Operator Control Desk,
- Switchgears & control gears (Load Break Switches, Isolators, SFU, Contactors, Control Relays, Push Buttons, Indication Lamps, ACB, MCB, MCCB, ELCB, RCCB, RCD, O/L relays, Motor Protection Relays, etc.)
- Insulated Bus bars for Electrical panel
- Controllers like Joystick, Dead man switch, Position Switch, etc.
- Field Devices like Limit Switches, Proximity Sensors, Zero Speed Detectors, Cam Switches, etc.
- Solenoid Valves
- Power & Control wires & Cables, Special cables like Crane Duty Festoon & Drag Chain duty cables, Motor Encoder cables, etc
- Cable Trays & Cable Management Accessories
- Cable Carrier systems should be Festoon type only with I-beam and should be approachable on main girder for easy maintenance.
- Power, Instrument & Control Transformers like CT, PT, Control Transformers, Lighting Transformers etc.
- Digital Meters, Multifunction meters
- Transducers for Power, Voltage, Current, Frequency etc.
- Air Conditioners for Electrical room & Operator cabin, etc.
- Accessories for Air Conditioner like Electrical Panel, Starters, Temperature Controllers, Thermostats, sensors, etc.
- Warning Siren, Horn, Annunciators, etc.
- Beacon Lights with sound, Traffic Lights, etc.
- Lighting fixtures of LED type like LED Tube lights for Electrical room, LED fixtures with dimmer for Operator cabin, LED Flood Lights for platforms & tools Illumination, etc.
- Lighting panels like PDB, MLDB, LDB etc.
- Accessories for Lighting fixtures like vibration dampers, safety chains, dimmers, controllers, switches etc.
- Industrial Switches, Plugs & Sockets, Utility switches, plugs & sockets, etc.
- Earthing with all accessories

18.4.3 Supply of all electrical equipment like Power Rails, Current collectors, associated accessories including cables for power supply to the new FTA.

18.4.4 Supply of all MV and LV motors including protection devices, RTD, PTC, encoders, cooling fans for the new FTA.

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- 18.4.5 Supply of all the Service & Emergency brakes, Fail safe Electromagnetic (EM) Brakes, Mechanical EM Disc brakes including their power supply & controllers for the new FTA. Supply of all the VFDs including their accessories like VFD Control & Communication cards/ modules, Input & Output Line Reactors, Braking Chopper, Braking Resistor for the new FTA.

Supply of VFDs for new FTA include but not limited to the following motions:

- Grab Hoisting
- Long Travel
- Trolley Cross Travel
- Sucking Pipe Hoist
- Filling pipe hoist

- 18.4.6 Supply of all the Motor starters for the new FTA.
- 18.4.7 Supply of Soft starters including their accessories like communication modules, cables etc. for the new FTA. Supply of Soft starter for new FTA include but not limited to Exhauster motor.
- 18.4.8 Supply of UPS of 240V AC single phase non-redundant type with bypass battery bank of VRLA type having back-up time of minimum 30minute for the new FTA.
- 18.4.9 Supply of Electrical room with incoming load break switch and outgoing feeders for feeding all MV/LV loads and other electrical devices, housing all motor starters, VFDs, UPS, UPS Battery Bank, PLC, Panel View etc. for the new FTA.
- 18.4.10 Supply of Operator Control Desk complete with all control gears, controllers, sensors, control & communication modules, cables & connectors, air conditioning, ventilation louvers, illumination, utility sockets, etc. inside the Operator cabin for the new FTA.
- 18.4.11 Supply of all electrical panels, Junction boxes, Enclosures, Emergency Stop Push Button Cabinets etc for the new FTA.
- 18.4.12 Supply of all electrical switch gears& control gears required for the new FTA. The electrical switchgears must be suitable for fault level of 50KA (for 1 sec).
- 18.4.13 Supply of all field devices & sensors like Limit Switches, Proximity sensors, Zero Speed Detectors, Cam Switches, etc for the new FTA.
- 18.4.14 Supply of all the solenoid valves for the new FTA.  
Supply of all single & multi-core power and control cables, all Special Cables (i.e. Festoon Trolley Cables, Drag Chain Duty Cables, Motor Encoder Cables, etc.) and communication/instrument cables including Cable management accessories required for Inter connecting equipment supplied by the vendor and for interconnecting vendor's equipment to purchaser's equipment of existing plant.
- 18.4.15 Supply of all single core power & control wires for wiring of Electrical switchboard & panel in the new FTA.
- 18.4.16 Supply of GI 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 new FTA.
- 18.4.17 Supply of Festoon Trolley Systems and Cable Reeling Drums required for interconnecting equipment supplied by the vendor and for interconnecting vendor's equipment to purchaser's equipment of existing plant.
- 18.4.18 Supply of load break switch near the power rail Current Collector for the new FTA.
- 18.4.19 Supply of all Local power isolation cabinet with load break switch for the proposed new FTA.
- 18.4.20 Supply of all the Power & Control Transformers like CT, PT, Control, Lighting etc for the new FTA.
- 18.4.21 Supply of all the Transducers for Power, Voltage, Current, Frequency for the new FTA.
- 18.4.22 Supply of all the Digital, Multifunction& PLC communicable Meters for monitoring & measurement in the new FTA.
- 18.4.23 Supply of suitable air conditioners of appropriate capacity for the Electrical room & Operator Cabin in new FTA, considering maximum outside ambient temperature of 70

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degree C. On failure of air conditioned and before high temperature fault at PLC, operator must be alarmed so that the crane can be moved to a safe and non-active zone.

- 18.4.24 Supply of all the accessories required for air conditioning like Electrical panel, starters, temperature controllers, Thermostats, sensors, etc for the new FTA.
- 18.4.25 Supply of all the Warning Sirens, Horns, Calling Bells, Annunciators, Beacon Lights with sound, Traffic lights, etc for the new FTA.
- 18.4.26 Supply of all the Lighting fixtures, lighting panels and associated accessories for the new FTA.
- 18.4.27 Supply of all the Industrial duty switches, plugs & sockets, utility switches, plugs & sockets with associated accessories for the new FTA.
- 18.4.28 Supply of earthing materials for equipment safe earthing, earthing grid for the complete proposed new FTA and its connection to purchaser's earthing grid, located inside/outside the shop.
- 18.4.29 Supply of complete tools and tackles required for the system.
- 18.4.30 In this project, if any software required for any Relay, Energy meter, Soft starter, VFD, Circuit Breaker etc, Vendor has to provide original licensed software in CD/USB Drive. The vendor has to provide required connecting hardwares i.e. connecting communication cable, connector etc. for uploading, downloading, programming & accessing data files.  
One Laptop preloaded with above required software and user license should be provided to Electrical Maintenance for the above purpose.
- 18.4.31 All the electrical supplies shall be in accordance with relevant clauses of this doc. NAL-SMLT-CRG-PROJ.
- 18.4.32 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.
- 18.4.33 Other scope of supply mentioned in description of system & auxiliaries, battery limit, specification of electrical.
- 18.4.34 Energy efficient components/equipment mentioned in the chapter "GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING" of this document.
- 18.4.35 **ELECTRICAL SPARES:**  
The Commissioning spares, as required during commissioning of the plant are included in the scope of Vendor.  
Recommended mandatory spares for one (1) year of normal operation of the complete electrical system and special tools are included in clause '**Mandatory Spares**'. Itemised list of spares along with unit rates and recommended quantity shall be furnished with offer.

#### 18.5 SCOPE OF SERVICES (ELECTRICAL):

Bidder shall perform the designing, detail engineering, equipment sizing, selection, and preparation of schematic drawings for Electrical Panel, Cable Schedule/route, BOM, BOQ for the proposed revamping & addition compatible with the existing system.

##### 18.5.1 SYSTEM DESIGN AND DETAIL ENGINEERING:

Bidder shall perform the design and detail engineering activities including but not limited to following:

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- 18.5.1.1 Preparation of overall power feeding arrangement from existing Baking Furnace power rails to new FTA showing cable sizes and Power Rails & Current collector sizes for the complete system.
- 18.5.1.2 Power rail sizing and all associated cables sizing (new incoming cables to the power rails & all interconnecting cables from power rail onwards) calculation in view of the existing and new furnace tending assembly loads. Also Bidder shall ensure suitability of existing cable sizes. If existing cable sizes are inadequate Bidder shall provide appropriate size cables for upgrading those cable sizes.
- 18.5.1.3 Preparation of electrical load data, its analysis and equipment sizing.
- 18.5.1.4 Preparation of electrical equipment and motors list.
- 18.5.1.5 Preparation of Single line diagram.
- 18.5.1.6 Preparation of Electrical Power, Control and Protection schematics.
- 18.5.1.7 Preparation of sizing calculation for all electrical equipment viz. Motors, Mechanical Electromagnetic Disc Brakes, VFDs, VFD Line Reactors, VFD Braking Chopper, VFD Braking Resistors, UPS, UPS Battery Bank, Soft starters, Switchgears, Contactors, Protection Relays, Circuit Breakers, Isolators, Insulated Busbars, Transformers, Power & Control cables& wires, Power Rail components, Cable carrier systems, Illumination, Electrical Panels & Switchboards, Lighting panels, Air Conditioners, Earthing etc.
- 18.5.1.8 Preparation of Lighting system design calculations.
- 18.5.1.9 Preparation of Electrical panel layout drawing.
- 18.5.1.10 Preparation of equipment wise cabling, lighting, earthing layout drawings including associated documents such as cable schedule, lighting/power panel schedules etc.
- 18.5.1.11 Preparation of interconnection diagrams.
- 18.5.1.12 Preparation of Bill of material & Bill of Quantities for all equipment of new FTA and associated items.
- 18.5.1.13 Preparation of as built drawings.
- 18.5.1.14 Presentation of the designed scheme to NALCO for approval before manufacturing and supply.
- 18.5.2 Manufacturing, purchasing & fabrication of electrical system required for the new FTA.
- 18.5.3 Installation of all electrical equipment required for the new FTA.
- 18.5.4 Installation of all motors required for the new FTA.
- 18.5.5 Installation of Electrical room& Operator Cabin required for the new FTA.
- 18.5.6 Installation of all the electrical equipment like Variable Frequency Drives, Soft Starters, UPS, associated components inside Electrical room of the new FTA.
- 18.5.7 Installation of Air Conditioning system for Electrical room& Operator Cabin etc. required for the new FTA.
- 18.5.8 Installation of electrical equipment shall be carried out without interrupting the normal operation of Anode Baking Furnace-I.
- 18.5.9 Installation of all cable trays and laying of all cables on cable trays required for the new FTA.
- 18.5.10 Installation of all electrical switchgears & control gears required for the new FTA.
- 18.5.11 Installation of Traffic Lights, Beacon Lights, Horns, Sirens and Annunciator required for the new FTA.
- 18.5.12 Installation of all the LED Lighting fixtures, Lighting Switchboards (i.e. PDB, MLDB, LDB, etc.), Vibration Dampers, Controllers, Dimmers, Switches of Lighting Fixtures required for the new FTA.
- 18.5.13 Installation of all electrical required for electrification of the new FTA including installation of LED lighting fixtures, provision of utility sockets, Air Conditioner Controllers/Starters, switchboards, PDB, MLDB, LDB etc.
- 18.5.14 Installation of Earthing system for equipment safe earthing, earthing grid for the complete proposed revamping and addition and its connection to Owner's earthing grid, located inside/outside the shop.

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- 18.5.15 All the civil work for installation of electrical equipment shall be in vendor's scope.
- 18.5.16 Vendor's scope includes transportation to site, receipt at site, storage and warehouse management of electrical items required for the new FTA.
- 18.5.17 Vendor shall apply & receive work permit & shut down as per the Nalco's laid down procedure to commence the work.
- 18.5.18 Vendor's scope includes provision of ready access & working platforms for electrical equipment of new FTA.
- 18.5.19 Vendor's scope includes all the Site fabrications required for the new FTA.
- 18.5.20 Vendor's scope includes all the electrical works required for new FTA. All the electrical works shall be in accordance with relevant clauses of this document.
- 18.5.21 Vendor's scope includes integration of Furnace Tending Assembly control & operation with the existing Anode Baking Furnace-I mechanically, electrically, structurally and automation wise. Since this is a running plant, hooking up with the existing system mechanically, electrically, structurally & automation wise preferably be done during normal working hours.
- 18.5.22 Installation of emergency push button cabinets. 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
- 18.5.23 Installation of all the field devices required for Vendor's FTA shall be in the scope of Vendor. The positioning of all motors and field devices including Limit switches and Proxy switches, Solenoid valves etc. should be such that these are accessible from outside for easy maintenance.
- 18.5.24 Vendor's scope includes provision of protective shed for Motors, Transformers, Resistance Box, etc.
- 18.5.25 Other scope of service mentioned in description of system & auxiliaries, battery limit, specification of electrical.
- 18.5.26 Certification of electrical installation from statutory & regulatory bodies if required during construction and prior operation if any shall be organized by the vendor.
- 18.5.27 Shifting of all electrical items dismantled from old installation to scrap yard or any designated place as per the instruction of the engineer-in-charge.
- 18.5.28 Please note that scope of work mentioned above is indicative only and it is vendor's responsibility to assess and supply the Furnace Tending Assembly as a complete package within battery limit
- 18.5.29 **INSTALLATION, TESTING, COMMISSIONING:**  
Bidder's scope shall include installation, testing and commissioning of all electrical equipment/material covered in relevant clause of this document.
- 18.5.30 **MISCELLANEOUS ACTIVITIES:**  
Bidder's scope of work shall also include
- Obtaining approval from Electrical inspector for installation and energisation of complete electrical facilities.
  - Any modification or additional requirements suggested by Electrical inspector shall be carried out by contractor at his own cost without affecting Project time schedule.
  - Obtaining any other statutory approvals if required.

#### 18.6 EXCLUSIONS FROM VENDOR'S SCOPE:

- General illumination inside plant/building of Anode Baking Furnace-I.

#### 18.7 TECHNICAL SPECIFICATION FOR ELECTRICAL SYSTEM

##### 18.7.1 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 Furnace Tending Assembly

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complete in all respect for Anode Baking Furnace-I, Smelter Division, M/s Nalco's, at Angul, Odisha.

#### 18.7.2 TECHNICAL SPECIFICATION:

##### 18.7.2.1 SYSTEM VOLTAGE AND FREQUENCY:

###### 18.7.2.1.1 Principle voltage levels for power distribution and utilization:

- 415V (nominal) 3 phase 3/4 wire, 50Hz, solidly earthed neutral: This voltage shall be used for all motors of rating 0.22kw up to 220kw and all other three phase loads e.g. power sockets etc.
- 240V (nominal) 1-phase 3 wire, 50Hz earthed: This voltage shall be used for low power single phase loads such as control, lighting, small power receptacles, motors rated below 0.22kW, etc.

###### 18.7.2.1.2 Voltage and frequency variation:

The following maximum variation shall be considered for equipment design

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

###### 18.7.2.1.3 Voltage Drop:

The following maximum permissible voltage drop shall be considered for equipment design

Supply to Motors

- During normal operation of motors - Voltage drop 3 % at full load
- During starting of motors - Voltage drop of 15%

The above voltage drop limits include the voltage drop in incoming feeder cables, power rails and electrical system on the crane up to motor terminals. The voltage drop in incoming cables shall be indicated by the purchaser during detail engineering. The Voltage available at motor terminals during start-up must be sufficient to ensure positive starting or acceleration of motors without causing any damage to the motor.

###### 18.7.2.2 DESIGN AMBIENT TEMPERATURE:

The design ambient temperature for electrical equipment shall be 50° C. However, it may be noted that that temperature inside the baking furnace building shall be 65 to 70 degree C. All electrical equipment shall be designed accordingly.

###### 18.7.2.3 DESIGN ALTITUDE:

The design altitude not exceeding 1000 meter above mean sea level shall be taken into consideration for electrical equipment/system.

###### 18.7.2.4 FAULT LEVEL:

All electrical equipment shall be designed for a fault level of 50kA for 1 second.

###### 18.7.2.5 VOLTAGE GRADE:

All electrical equipment shall be insulated for a service voltage of 1100V.

###### 18.7.2.6 DUTY:

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

###### 18.7.2.7 RATING:

All electrical equipment shall be rated at least 25% higher than its design rating.

###### 18.7.2.8 CODE AND STANDARDS:

All electrical equipment shall confirm to relevant IS/IEC/NEMA standards. The electrical equipment shall comply with the requirements of latest revision of following standards issued by BIS, unless otherwise specified.

IS – 5	Colours for ready mixed paints and enamels Performance
IS – 325	Three Phase Induction Motors
IS – 694	PVC Insulated Cables for Working Voltages upto & including 1100V
IS – 900	Code for installation and maintenance of Induction Motors

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IS – 1231	Dimensions of three-phase foot-mounted induction motors
IS - 1554	PVC Insulated (Heavy Duty) Cables
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 - 3043	Code of Practice for Earthing
IS – 3177	Code of Practice for Electric Overhead Travelling Cranes & Gantry Cranes other than Steel Works Cranes
IS – 4137	Code of Practice for Heavy Duty Electric Overhead Travelling Cranes & Gantry Cranes including Special Service Steel Work Cranes
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 – 4794 Part-I	Push Button Switches: General Requirements and Tests
IS - 5578	Marking of Insulated Conductors
IS – 6362	Designation of methods of cooling of rotating electrical machines
IS – 8223	Dimensions and output series for rotating electrical machines
IS - 8623	Factory built assemblies of Switchgear and control gear for Voltages upto 1000V AC and 1200V DC
IS – 9968	Elastomer insulated cables
IS - 11353	Guide for uniform system marking and identification of conductors and apparatus terminals.
IS - 12021	Specifications for Control Transformers for Switchgear and Control gear for Voltages not exceeding 1000V AC
IS - 12824	Types of duty and classes of rating assigned to rotating electrical machines
IS – 13408	Code of practice for selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres.
IS – 13703 / IEC – 60269	Low voltage fuses for voltages not exceeding 1000V AC or 1500V DC
IS/IEC–60947	Low-Voltage Switchgear and Control gear
IS - 14568	Dimensions and output series for rotating electrical machines, frame numbers 355 to 1000 and flange numbers 1180 to 2360

**18.7.2.9 ELECTRICAL DESIGN CONSIDERATIONS FOR PLC CONTROL:**

- 18.7.2.9.1 The Electrical design shall be done so as not to cause erratic and dangerous crane operation, when power is lost or when a processor fault occurs. (At processor fault, crane LT & CT should be able to run in slow speed for emergency evacuation purposes.)
- 18.7.2.9.2 The high-level security interlocks shall be hard-wired and shall not be handled by the PLC program.
- 18.7.2.9.3 The control devices in operator cabin (i.e. joysticks, Push Buttons, Selection switches, Sensors, Lights etc.) shall be controlled through PLC located in the Electrical room.
- 18.7.2.9.4 The controls between VFD and PLC shall be done through universal communication interface like Device Net, Profibus, Ethernet only. (The controls between PLC &VFD shall be done through universal communication interface, preferably Ethernet.)

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18.7.2.9.5 UPS shall be provided in the electrical room for uninterrupted power supply to PLC, Radio modem and Panel views.

**18.7.2.10 POWER CIRCUITS:**

18.7.2.10.1 The electrical power shall be obtained from collector rails system (3 Phases).

18.7.2.10.2 The current collectors and associated power rail components for new FTA shall be suitable for the power rails in Anode Baking Furnace-1.

18.7.2.10.3 The incoming power supply to new FTA shall be protected by the Main Circuit Breaker (lockable type), fitted out with visible blades and padlock, which shall be located close to the collector shoes.

18.7.2.10.4 Insulated Copper conductor Bus bars shall be used for the power circuits (3 phases). The Bus bars shall be rated for a voltage grade of 1100V and insulated using PVC sleeves. The bus bars of motor starters shall be protected by individual Circuit Breaker (lockable type), fitted out with visible blades and padlock

18.7.2.10.5 Miniature Circuit Breakers shall be used for control circuit and Circuit Breakers for power circuits instead of fuses.

18.7.2.10.6 The circuit breakers shall have both magnetical and thermal capabilities. They shall have three power poles and a control auxiliary contact. They shall be provided with "ON-OFF" indicator and shall be pad-lockable in "OFF" position by three padlocks, inside the electrical panel.

18.7.2.10.7 A Main Line Contactor shall trip from an emergency stop push button located in the cabin as the first item past the disconnect switch.

18.7.2.10.8 Dedicated transformers shall be provided for lighting and general purpose outlets.

18.7.2.10.9 Bidder's scope shall include cable sizing calculations for incoming feeder cables from Baking Furnace-1 sub-station-710.17 upto the power rails (considering existing and new loads of FTA). Bidder's scope shall also include preparation of cable schedule connection details, etc.

18.7.2.10.10 Power rails shall be complete in all respects with all accessories, including but not limited to, power rail clamps, insulators, connectors, expansion joints, feeding clamps, pick up guides, current collectors etc. required for the new FTA. Power rails ambient temperature rating should be 85 deg Cg.

18.7.2.10.11 The current collector for the FTA shall be suitable for power rails in the Anode Baking Furnace-I.

**18.7.2.11 POWER SUPPLY:**

18.7.2.11.1 Power supply: 415V +/- 10%, 50 Hz, 3 Phases

18.7.2.11.2 Power supply shall be obtained from the collector rails system (3 Phases). All further distribution as required for the crane shall be in the scope of the Vendor. Vendor shall design his equipment so as to be suitable for satisfactory operation considering voltage supply conditions specified elsewhere in the document.

**18.7.2.12 CONTROL SUPPLY:**

18.7.2.12.1 Control supply: 240V AC, 50 Hz, 1 Phase

18.7.2.12.2 The voltage level for control and other applications shall be as specified elsewhere in the document. The control voltage and any other voltage, as required, other than the specified power supply voltage shall be obtained by Vendor.

18.7.2.12.3 The Control transformer shall be double wound air-cooled control type of suitable rating and shall be located either in the Electrical room or separately housed in a suitable enclosure. The control transformer shall be provided with an earthed screen between primary and secondary winding.

18.7.2.12.4 One pole of control transformer secondary/ control supply shall be earthed. The transformer will be provided with circuit breakers both on primary and secondary side. One end of the coil of all the relays and contactors shall be connected to the earth side of the control circuit supply and this connection shall not be interrupted by any contact.

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#### 18.7.2.13 MOTORS:

- 18.7.2.13.1 All motors shall be adapted to their function, suitable for requisite no. of Start/Stop operations per hour and prevailing conditions of operation. They shall be totally enclosed of squirrel cage types. Most of them shall be flange mounted.
- 18.7.2.13.2 Motors shall be wound for 415 voltage, three phase, 50Hz with a 10% tolerance at the crane power collecting shoes.
- 18.7.2.13.3 Motor controlling vertical movement of the suction system tube shall be designed to withstand minimum 300 start-up/hour.
- 18.7.2.13.4 The exhaustor motor shall be provided with stall protection and discrimination in order to ensure that the exhaustor motor trips before the crane power system trips on under voltage due to voltage drop caused by exhaustor motor drawing stall current.
- 18.7.2.13.5 The motors shall be designed for an ambient temperature of 70 degree C, with temperature rise limited to insulation class B limits.
- 18.7.2.13.6 The motors shall be standard ratings/frame sizes as per IEC and shall be replaceable by motors of other makes of same size & rating.
- 18.7.2.13.7 All motors shall be earthed by two different connections using flexible braided GI wires with proper lugging.
- 18.7.2.13.8 The motors for intermittent duty shall be designed with duty factor, no. of starts/hr suitable for the proposed operation.
- 18.7.2.13.9 Motors of ratings 7.5 KW & above shall be provided with PTC probes.
- 18.7.2.13.10 Exhaustor unit and air compressor motors shall be provided composite electronic motor protection relays (with overload, phase failure/ single phasing, negative sequence, locked rotor, permissible no. of starts per hour, winding thermal overload protection etc.). For motors driven by VFD these functions shall be managed by the VFD itself.
- 18.7.2.13.11 All motors driven by VFD required to operate at speed less than 50% rated rpm shall have external forced cooling fan motor.
- 18.7.2.13.12 VFD motors shall be sized for to take care of reduced cooling at the minimum operating speed.
- 18.7.2.13.13 For VFD fed motors, insulation system shall be higher to take care of voltage reflection due to PWM voltage. All motors shall be Premium energy efficient type confirming to latest BIS/IEC/NEMA standards.
- 18.7.2.13.14 The rating of all motors shall be selected to take care of loading conditions, cyclic duration factor, service factor and derating factor for ambient temperature as per relevant IS/IEC standards. Unless specified otherwise, the motors shall have Cyclic Duration Factor (CDF) and starting class (No. of starts per hour) as per relevant IS/IEC standards. Wherever, crane has to operate in higher ambient temperatures, suitable derating factor shall be considered.
- 18.7.2.13.15 All the motors shall be of crane duty, reversible type.
- 18.7.2.13.16 The motors selected shall be squirrel cage type according to load torque and duty requirement of long travel, cross travel, hoist drive, etc. so as to ensure smooth movement of load. The electronic soft starter/ variable frequency drive/ other such system with squirrel cage motor can be provided to meet operational requirements in respect of soft start-up/ soft stoppage/ speed control & high starting torque.
- 18.7.2.13.17 All motors shall have class F insulation and temperature rise limited to class B limits. Squirrel cage motors shall have TEFC enclosure with IP 55 degree of ingress protection.
- 18.7.2.13.18 The motor frame sizes shall be selected out of the standard frame sizes as per IS/IEC standards, to facilitate future replacement.
- 18.7.2.13.19 The motors for Long Travel & Cross Travel mechanisms shall be brake motor which shall be coupled to the gearbox through flexible coupling.
- 18.7.2.13.20 Electrical induction motor shall be as per the "Standard specifications for squirrel cage Induction Motor" enclosed elsewhere in the tender documents.

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18.7.2.13.21 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.

18.7.2.13.22 Suitable canopy shall be provided for all motors.

**18.7.2.14 BRAKES:**

18.7.2.14.1 The Brake motor shall have electrically operated brakes to be operated by AC or DC power.

18.7.2.14.2 The Brake motor shall have integrated DC electro-magnetic disk brake for long travel/ cross travel movements.

18.7.2.14.3 The Grab Hoist mechanism shall have external failsafe self-adjusting electromagnetic brake fitted to brake disc on gearbox shaft.

18.7.2.14.4 The power to brake terminals shall be supplied through separate contractors provided with motor starters in the electrical room.

18.7.2.14.5 In case of electro-dynamic braking, where energy is either returned to the mains or dissipated in resistors, design shall ensure that the current on reversal is limited to a safe value. Effective means shall be provided for stopping the motion in the event of a power failure and in case of an emergency.

18.7.2.14.6 Shunt brakes shall be so connected that it will be applied when the main circuit breaking device is open irrespective of the position of the controller.

18.7.2.14.7 Each control circuit shall be electrically interlocked with shunt brakes to prevent power being applied to the motion when the brakes are not energized.

18.7.2.14.8 Rating of brake electro-magnets shall be as per relevant IS/IEC standards. Emergency brake on gearbox output is required for grab hoist to address any event of free fall.

**18.7.2.15 RESISTORS:**

18.7.2.15.1 Dynamic braking resistors shall be used for VFD controlled motors.

**18.7.2.16 CABLES:**

18.7.2.16.1 Flexible copper cables type H07RN-F conforming to IEC-228 Class 5 shall be used. The electrical connection between the bridge and the trolley shall be loops of flexible multi-conductor cables. These shall be neoprene sheathed. Other connections shall be made with semi-flexible cables butyl insulated and neoprene sheathed. Any cable containing wires smaller than 22 square millimeters shall be flexible type.

18.7.2.16.2 All cables& wires shall be insulated for service voltage of 1100V.

18.7.2.16.3 The size of their wires shall be sufficient to avoid heating exceeding 20 degree C over the ambient temperature of 70 degree C and a voltage drop not exceeding 3% of the nominal value.

18.7.2.16.4 Vendor shall check adequacy of the cable sizes based on actual cable lengths, during detailed engineering and provide cables of higher sizes. Power cables related to various mechanisms shall be sized higher in accordance with relevant IS/IEC standards.

18.7.2.16.5 The cable shall be sized with due consideration to ambient temperature, type & duration of load, fault level/ back-up protection, grouping and disposition of cables and permissible voltage drop.

18.7.2.16.6 The minimum size of conductor for power cables shall be 4 sq. mm. copper for connections to motors and 2.5 sq. mm. for other power connections.

18.7.2.16.7 The minimum size of conductor for control wiring shall be 2.5 sq. mm. copper.

18.7.2.16.8 The motor power cables shall have one extra core for earthing connection.

18.7.2.16.9 10% spare wires shall be available in all control cables which shall be connected to spare terminals.

**18.7.2.17 WIRING & CABLE TERMINATIONS:**

18.7.2.17.1 Cables used for crane wiring shall comply with relevant IS/IEC standards. All Power & control cables shall be of multi-strand copper conductor only.

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- 18.7.2.17.2 The cable and wiring system for each motion shall be independent. Main cables and control wiring shall be effectively separated. Separate control cables shall be used for AC circuits and DC circuits.
- 18.7.2.17.3 10% spare terminals shall be available on each terminal block.
- 18.7.2.17.4 All cables shall be as per relevant IS/IEC standards.
- 18.7.2.17.5 Cables on all electrical equipments shall be terminated using double compression type gland.
- 18.7.2.17.6 The cableways, their supports and terminal block shall be adequately sized.
- 18.7.2.17.7 Cable routing shall be such that cables are not damaged during crane movement.
- 18.7.2.17.8 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 300 mm. Cable trays laid horizontally shall have covering to prevent damage to the cables by falling objects/debris or human weight.
- 18.7.2.18 **DRAG CHAIN & FLEXIBLE TRAILING CABLES:**
- 18.7.2.18.1 Unless otherwise specified, the power supply for various crane movements shall be provided by flexible cables having drag chain duty & festoon type cable management as per crane system requirements. The flexible trailing cable shall have metallic braiding and shall be supported on hangers having rollers moving on I beam.
- 18.7.2.19 **EARTHING:**
- 18.7.2.19.1 GI strips shall be used for earthing system.
- 18.7.2.19.2 The size of earthing conductor to be used for main earth grid shall be 50X6 mm.
- 18.7.2.19.3 The metal enclosures of all the electrical equipment on the crane shall have effective earthing connection with bridge. All equipment shall be connected to earth terminal through external GI earthing strip or through extra earthing core in the supply cable.
- 18.7.2.19.4 The crane shall be effectively connected to earth. The crane shall not be used as means of earthing.
- 18.7.2.19.5 In case of cranes having supply through festooned cable system, the crane shall be connected to earth by means of a separate earthing conductor, enclosed with the current carrying conductor.
- 18.7.2.19.6 Travelling cranes connected to the supply through collectors shall be effectively earthed through a set of collectors sliding on the gantry rails complying with relevant IS/IEC standards.
- 18.7.2.19.7 All electrical equipment shall have two nos. earthing terminals.
- 18.7.2.19.8 The runway rails shall be electrically connected to earth. The crane structure shall be made continuous by providing jumpers over riveted structures.
- 18.7.2.20 **CONTROL SYSTEM:**
- 18.7.2.20.1 All hardware necessary for interfacing control system signals with motor starters shall be in Vendor's scope.
- 18.7.2.20.2 Separate control cables shall be used for AC and DC circuits for interfacing signals between 415V switchboards and microprocessor based control system, wherever applicable.
- 18.7.2.20.3 Emergency Stop Push buttons shall be located in the FTA 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.
- 18.7.2.20.4 Start/ Stop push buttons shall contain ammeters for all motors rated 5.5KA and above. It shall also contain other devices like selector switches, as per process requirement.
- 18.7.2.20.5 The control system for all motions of the cabin operated crane shall be designed to ensure smooth speed control. In all motion, except long travel, the brakes will de-energise when master controller is brought to 'OFF' position.
- 18.7.2.20.6 The power 'ON' indication light and emergency off push button of mushroom head shall be provided in the driver's cabin. The dead man's on pedal or joystick shall be

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provided in the cabin to trip the main incoming contactor in case operator releases his foot from the pedal or hand from joystick.

18.7.2.20.7 The speed control system of various drives shall be designed to meet the operational requirements. The requisite speed control may be obtained by following methods:

- a. Two speed motors (as per crane system requirement), but VFD driven motors preferred.
- b. Variable Frequency Drives using AC Squirrel Cage Induction Motors

18.7.2.20.8 The rate of acceleration on start-up and rate of stopping of various motions of the crane shall be limited to meet the operational requirements of the crane motions, as specified elsewhere in the document. Vendor shall provide suitable soft starter / soft stoppage as required for all applicable motions of the crane.

18.7.2.20.9 Motion Limiting Devices

The control scheme shall include travel limiting devices for hoisting, cross travel and long travel.

For hoists, positively operated hoisting motion limiting devices shall be provided to stop the upward & downward movement when pre-determined level is reached. The limiting devices shall be regarded as safety feature and not as a routine operational means of stopping. When normal operation of the crane necessitates frequent approach to the upward limit, an additional motion-limiting device shall be provided that operates independently. The over travel/ over traversing/ over hoisting limiting devices shall be provided with manual resetting feature.

The cross traverse and long travel, limiting devices shall be provided to prevent the following:

- a) Over traversing & over travelling
- b) Collision where two or more crane/ trolleys operate on the same track

Back-up switches will cut-off the incoming power supply in the control panel. The main limit switches shall be reset type and the back-up limit switches shall be manual reset type. Contact rating of the limit switches shall be minimum 5A, 240V AC.

18.7.2.21 **CONTROL EQUIPMENT FOR AC MOTORS:**

18.7.2.21.1 The selection of contactors for AC motors shall be made on the basis of S3-40% rating arrived after applying appropriate service factor to the computed power of the motor. The rating of control gears such as switches, overload relays, etc. shall be selected according to the computed motor power without service factor of the motion served and not on the motor power computed by the thermal requirements.

18.7.2.21.2 The minimum rating of the contactor shall be 2 times the full load current of the motor. The rated utilization category for the contactors shall be AC-4 as per IS/IEC 60947.

18.7.2.21.3 Reversible motion contactors shall be interlocked mechanically and electrically.

18.7.2.22 **POWER RAIL:**

18.7.2.22.1 Power rail shall be of high conductivity aluminium conductor with wear resistant contact material (for collector shoe contact) and having insulated covering all along the length. The power isolation cabinets for feeding the main power rail sections and interconnecting the maintenance sections shall be in the scope of the Vendor.

18.7.2.22.2 Vendor's scope shall include cable sizing calculations for incoming feeder cables from Purchaser's sub-station up to the power rails (considering existing and new loads of FTA). Vendor's scope shall also include preparation of cable schedule connection details etc.

18.7.2.22.3 Power rails shall be complete in all respects with all accessories, including but not limited to, power rail clamps, insulators, connectors, expansion joints, feeding clamps, pick up guides, current collectors etc.

18.7.2.22.4 The current collector for the FTA shall be suitable for power rails in Baking Furnace-I.

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- 18.7.2.22.5 The power supply to main bridge shall be through power rails supported by brackets at the building columns. The power rails shall be shrouded type. The material of power rails shall be of high conductivity Aluminium conductor. The power connections of collector shoes assembly to power rails shall be from under side.
- 18.7.2.22.6 Double collectors shall be provided for all the three phases. The collectors shall be mounted on insulated shaft and collector current rating shall be adequate for the specified site conditions.
- 18.7.2.22.7 Collector shall be provided with self-cleaning type brushes.
- 18.7.2.23 **VARIABLE FREQUENCY DRIVES:**
- 18.7.2.23.1 Long travel and cross travel drive shall be fed through separate VFDs located in electrical room.
- 18.7.2.23.2 Variable Frequency Drives for Long Travel and Cross Travel shall be Sensor-less Vector Control type. VFD for hoisting application of gulper and coke discharge piping operation.
- 18.7.2.23.3 Variable speed drive shall be provided for grab hoist motion control meeting all operational and safety requirements. Control scheme shall ensure that motor operates at reduced speed in safety zone irrespective of the operator control.
- 18.7.2.23.4 Grab hoist VFD shall be provided with separately driven cooling fan.
- 18.7.2.23.5 Variable frequency drive shall be as per "Standard specifications of AC variable frequency drive" enclosed in the tender document.
- 18.7.2.24 **SOFT STARTER:**
- 18.7.2.24.1 Exhauster motor shall be fed through Soft starter located in electrical room.
- 18.7.2.25 **AIR CONDITIONING OF ELECTRICAL ROOM:**
- 18.7.2.25.1 The electrical room shall be air conditioned. The room shall have automatic door closure mechanism.
- 18.7.2.25.2 The temperature inside the air-conditioned electrical room shall be 40 degree C max for an ambient temperature of 70 degree C. In case of Air-conditioner failure when temperature exceeds 50 degree C alarm shall be provided to bring Crane to safe position.
- 18.7.2.26 **EMERGENCY STOP PUSH BUTTONS / SAFETY REQUIREMENTS:**
- 18.7.2.26.1 Crane shall be provided with fail safe emergency stop system conforming to latest Standards.
- 18.7.2.26.2 Emergency stops shall be provided at all points where there is a possibility of maintenance person being stuck up and crushed by the trolley.
- 18.7.2.26.3 Emergency Stop Push Button shall be provided on the crane bridge and in Operator's cabin for cabin operated cranes. These shall be located so as to be visible and readily accessible. Emergency push buttons shall be of mushroom head type (latchable in off position).
- 18.7.2.26.4 Emergency push buttons shall also be located at entry to Crane Bridge to cut-off incoming power, by acting to trip the main contactor/ circuit breaker.
- 18.7.2.26.5 When two or more cranes are operating on the same runway, collision prevention system shall be provided to stop crane movement when both cranes are 15 meter apart.
- 18.7.2.26.6 Emergency Stop push buttons shall be suitably distributed throughout the installation and positioned so as to be clearly visible and readily accessible.
- 18.7.2.26.7 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 control power shall be switched off. This ensures that the PLC control power will not be switched off by the above process.
- 18.7.2.27 **AIR COMPRESSOR:**
- 18.7.2.27.1 Air compressor motor electrical controls shall be integrated with the main electrical control panel.

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#### 18.7.2.28 **CIRCUIT BREAKERS:**

18.7.2.28.1 Circuit Breakers of adequate rating shall be used in power and control circuits in place of fuses.

18.7.2.28.2 Appropriate rating Residual Current Device / Earth Leakage Circuit Breaker shall be provided in the switching box & switchboards for protection of respective Air-conditioner & utility units.

#### 18.7.2.29 **ELECTRICAL PANEL:**

18.7.2.29.1 All electrical panels & cabinets shall be provided with minimum IP55 degree of protection.

18.7.2.29.2 The electrical panel 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.

18.7.2.29.3 Vendor has to consider bottom entry of cables and suitably design the Electrical panels. Vendor has to install suitable mounting frames for fixing the Electrical panels and care must be taken to ensure minimum bending radius of the cable to prevent premature failure of cable due to defective termination.

18.7.2.29.4 The electrical panel shall be designed to ensure maximum safety during operation, inspection, connection of cables, relocation of outgoing circuits and maintenance, with the bus bar system energized and without taking any special precautions. Means shall be provided to prevent shorting of power and/ or control terminals due to accidental dropping of maintenance tools etc. inside the panel. Checking and removal of components shall be possible without disturbing adjacent equipment. All auxiliary equipment should be easily accessible.

18.7.2.29.5 All hardware shall be corrosion resistant. All joints and connections of the panel members shall be made by cadmium plated high quality steel bolts, nuts and washers secured against loosening. Star washers shall be used to ensure effective continuity.

#### 18.7.2.30 **ELECTRICAL ROOM:**

18.7.2.30.1 The Electrical room shall be located on the FTA itself.

18.7.2.30.2 The Electrical room shall be made out of sheet steel of thickness  $\geq 2\text{mm}$  and inner walls shall be covered with thermal insulation sheets.

18.7.2.30.3 Ingress protection class of the Electrical room shall be IP55 or higher.

18.7.2.30.4 It shall have dedicated sections for motor starters and control.

18.7.2.30.5 It shall comprise of two doors with free workspace in the middle as walkway between the doors. These doors inner walls shall be covered with thermal insulation sheets. Protective sliding grill barriers shall be provided on both sides along the full length of the walkway inside Electrical room.

18.7.2.30.6 The Electrical room shall comprise of a Main Isolator switch which shall enable isolation of all the power circuits in the electrical panel. The operating handle of this Main Isolator switch shall be located outside of the electrical panel.

18.7.2.30.7 The Electrical room shall be illuminated using LED tube light fixtures. Its lighting circuit shall be interlocked with door closure sensors/ switches fixed on both doors to switch off the lights during normal crane operation (when doors remain closed). However, bypass provision for switching on the electrical room lights shall be facilitated through selector switch provided near each door on outside of the room, to switch 'ON' illumination during maintenance.

18.7.2.30.8 It shall be air conditioned to maintain the temperature inside the Electrical room at about  $40^{\circ}\text{C}$ .

18.7.2.30.9 It shall be earthed using GI strip.

#### 18.7.2.31 **CONTROL PANEL:**

18.7.2.31.1 All the components forming part of power and control circuit required for start/ stop and control of various movements shall be housed in control panel made out of sheet steel of minimum 2 mm thickness. The doors shall be of removable type. The degree of protection shall be minimum IP55. Panel shall be securely fastened on the platform. At least 300mm height shall be maintained between the bottom most row of component and of bottom of the panel. The panel door shall be mechanically

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interlocked so that door cannot be opened when incoming supply is ON. However, for testing purpose interlock defeat feature also shall be provided. Terminal strip shall be provided in the panel with sufficient space underneath for easy termination of cables. Terminal strips shall be arranged horizontally and vertically for power and control circuits respectively. All components shall be marked according to circuit diagram. All control circuit wiring shall be done with minimum 2.5 sq.mm copper conductor. The panel shall be mounted on rubber pads. The cable entry shall be from bottom only. Requisite cable glands & lugs shall be included in Vendors scope.

18.7.2.31.2 The panel shall include a TPN load break switch fuse and contactor on the incoming line. Alternatively, an air circuit breaker of manually operated type fitted with protective releases and no volt coil shall be provided for large current ratings.

18.7.2.31.3 The EOT crane shall be provided with protective equipment as defined in IS/IEC standards, in which each motion shall have separate protection. Unless operational requirements demand otherwise, the scheme shall be designed to ensure that overload in any one motion does not trip the complete circuit but only the individual circuit.

18.7.2.31.4 Unless specified otherwise, motor feeders shall be provided with suitably rated heavy duty / motor duty switches Circuit Breaker and Contactors. Thermal overload relays shall be provided for drive motors up to 55 KW. For motors above 55 KW electronic motor protection relays of approved make shall be provided.

18.7.2.31.5 . The control system for all motions of the cabin operated crane shall be designed to ensure smooth speed control. In all motion, except long travel, the brakes will de-energise when master controller is brought to 'OFF' position.

**18.7.2.32 OPERATOR CONTROL DESK:**

18.7.2.32.1 The Operator control desk in Operator's cabin shall be suitably air conditioned.

18.7.2.32.2 Control of the machine shall be by two multiplexed joysticks in instinctive way for any position of the seat in the cabin.

**18.7.2.33 UNINTERRUPTED POWER SUPPLY:**

18.7.2.33.1 240V AC, single phase UPS required for FTA system shall be of non-redundant type with by-pass battery of VRLA type having back-up time 30 minutes.

**18.7.2.34 LOCAL POWER ISOLATION CABINET WITH LOAD BREAK SWITCH:**

18.7.2.34.1 Local power isolation cabinet shall contain a load break switch of sufficient rating for motor duty to cut off power 'on load' with visible open contacts, which shall be provided for each power rail zone and shall be suitably located considering operation and maintenance requirements. In addition, suitable load break isolator shall be provided in the FTA carriage at incoming power supply to ensure positive isolation of power supply to all Furnace Tending Machine motors/loads.

18.7.2.34.2 Load break switch shall be housed in cast aluminium or sheet steel cabinet having enclosure protection of IP-55 class and with suitable gasketing by providing neoprene gaskets, etc.

18.7.2.34.3 Load break switch shall be housed in cast aluminium or sheet steel cabinet having enclosure protection of IP-55 class and with suitable gasketing by providing neoprene gaskets, etc.

18.7.2.34.4 Load break switch shall be heavy duty air break and shall have quick make/break manual operating mechanism. The switch shall be of motor duty AC23 type only. The operating handle shall be mounted on the door of the cabinet.

18.7.2.34.5 It shall be possible to padlock the switch in OFF position. 3 padlocks with duplicate keys shall be provided along with the local power isolation cabinets. Door interlock shall be provided so that it shall not be possible to open the door with switch in 'closed' position. Normally it shall not be possible to close the switch with door open, but for testing purposes it shall be provided to prevent inter-phase arcing. The live terminals shall be shrouded to avoid accidental contact.

18.7.2.34.6 The load break switch shall be provided with an auxiliary pre-break contact (micro-switch for using to open the corresponding contactor control circuit before opening the switch.

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- 18.7.2.34.7 The push button cabinet and the load break switch cabinet can be combined into one cabinet as and when it is so desired.
- 18.7.2.34.8 Local power isolators and load break isolator at incoming to FTA carriage shall be suitable for fault level of 50kA for 1 sec.
- 18.7.2.34.9 All 415 V AC Motors shall be provided with local power isolation cabinets or load break switch Isolator with visible power isolation.
- 18.7.2.35 **LIGHTING:**
- 18.7.2.35.1 Lighting shall be provided in the Operator's cabin (for Cabin Operated cranes), staircases and areas where control panels, resistors, transformers are installed. Bulkhead type of fittings with dustproof enclosures shall be used for above areas. Unless specified otherwise four numbers under slung lights with 250 W LED lamps mounted on shock absorbers shall be provided for floor illumination. The nominal voltage of lighting circuit shall not exceed 250V. The lights shall be fed through lighting transformer with a double pole MCB on the primary & secondary side.
- 18.7.2.35.2 Lighting distribution boards containing metal clad switches and cartridge fuse shall be located both in Operator's cabin and on the platform for controlling all lights and fan in Operator's cabin.
- 18.7.2.35.3 Socket outlets for hand lamps shall be provided at least one each on long travel side bridge and near electrical panels/ other equipments. Hand lamps shall be operated at 24V AC supply through a separate double wound isolating 415/245 V transformer. The isolating transformer shall have a double pole switch with fuse in each pole on the primary and fuse in one pole of each of the secondary circuits. The sockets outlets shall be metal clad industrial type.
- 18.7.2.35.4 Suitably rated electric bell shall be provided which shall be operated from Operator's cabin push button. Walkie talky set to communicate between E-room and operator cabin for better clarity in communication.
- 18.7.2.35.5 Lighting shall additionally be provided, if required for specific equipment area, walkways, and platforms in the FTA. Suitable outdoor duty industrial grade LED light fittings shall be used for illumination.
- 18.7.2.35.6 Suitable type of LED lighting fixtures of protection class minimum IP65 shall be used for illumination of the new FTA. Vendor shall furnish the type and details of lighting fixtures used for various crane applications.
- 18.7.2.36 **ELECTRICAL SWITCHGEARS& CONTROL GEARS:**
- 18.7.2.36.1 Electrical switchgears & control gears shall be selected in accordance with relevant IS/IEC standards.
- 18.7.2.36.2 The motor circuit components shall be selected considering type-2 coordination in accordance with relevant IS/IEC 60947 standards.
- 18.7.2.36.3 The utilization category of contactors shall be AC 3 or higher as per relevant IS/IEC 60947 standards.
- 18.7.2.36.4 Refer specifications in 'Data sheet for switchgear components'.
- 18.7.2.37 **MAKES OF ELECTRICAL EQUIPMENT:**
- 18.7.2.37.1 Makes of the electrical equipment shall be as per NALCO approved vendor list. Electrical equipment of foreign origin shall be subject to NALCO approval.
- 18.7.2.38 **DATASHEET FOR SQUIRREL CAGE INDUCTION MOTOR**

1	Motor tag no.				
2	Voltage (V)	415V $\pm$ 10%	Phase	3	
	Frequency(Hz.)	50Hz $\pm$ 3%			
3	System Fault level (KA)	50kA for 1 sec.			
4	Method of starting	DOL			
5	Phase of terminals	Three	Connection	Delta	No.
6	Design Ambient temp@ operation	70 ° C	Max. Cond. Temp. for continuous		
		90 ° C			

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7	Cable size (mm <sup>2</sup> ) sheet	As per data sheet	Type	As per data
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 Specs. for MV Motor	Applicable Standards: Nalco's Stand.		
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 (kg m <sup>2</sup> )			
17	Thrust up/down (kg)			
18	Equipment/ coupling type			
19	Starting Condition- On no load/Under loaded Condition			
Technical particulars from motor manufacturer				
20	Manufacturer			
21	KW Rating			No .of poles
22	Frame designation			Mounting
23	Full load speed (rpm) (mkg)			Full load Torque
24	Starting torque as % of full load torque			
25	Full load current (A)			
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.)	(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 75% load			Power Factor at
34	Efficiency at 100 % load load			Efficiency AT 75%
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 Not required			Required/

**18.7.2.39 DATA SHEET FOR SWITCHGEAR COMPONENTS  
PART –I (FURNISHED BY PURCHASER)**

**OPERATING CONDITIONS :**

Voltage : 415 V +/- 10%  
 Frequency : 50Hz +/- 3%  
 No of phases : Three  
 System fault level : 50 kA for 1 sec  
 System earthing : Solidly earthed

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NOTE: Above particulars are required for each rating of switch offered.

### **THERMAL OVERLOAD RELAY**

Make/type :  
Setting range :  
Single phasing preventor : Provided/Not provided  
In –built/ Separate  
Temp compensation feature : Provided/Not provided  
Type of operation : Direct/ CT operated  
Type of Mounting : Independent / Contactor

#### **18.7.2.40 CABLE DATA SHEET**

##### **Part-1 (Data by Purchaser)**

###### **PROJECT DATA**

A. Project Title / Ref. No. : Furnace Tending Assembly inBaking Furnace-I  
B. Location /Client : Angul, Orissa/ Smelter Division, M/s Nalco  
C. Ambient Temperature : Max = 70.0 ° C Min = 5.5 ° C  
D. Design Ambient Temperature : 70 ° C  
E. Nominal Voltage of the System : 415 V AC  
F. Highest System Voltage/ System Fault Level : 415 VAC±10 % /50 kA for 1 Sec  
G. Frequency : 50 Hz ± 3 %  
H. Voltage Grade  
Earthed System : 1100 VAC  
Unearthed System : NA  
I. Single Phase to Ground : NA  
Fault Current / duration (applicable to high voltage cables)  
J. Max. Temp. of conductor for continuous operation : 90 degree C  
K. Whether tinning required for copper cables : as applicable  
L. Whether heat resistant required for power & control cables : YES  
M. Whether Flame retardant required for power & control cables : YES  
N. Whether copper flexible power cables will be used : YES  
O. Whether make of cables is specified : YES, LAPP//Silec/Helukabel  
P. Flexibility class : Class 5 or higher  
Q. Conductor material : Copper  
R. Whether resistant to Oil, Grease, Chemicals etc : YES  
S. Duty : Crane Duty  
T. Environment : Harsh & Humid

##### **Part-2 (Data by Vendor)**

###### **GENERAL**

A. Name of Manufacturer :  
B. Cable type/ Code :  
C. AC & DC Current rating :  
D. Resistance, Inductance & Capacitance :  
E. No. of Conductor strands :  
F. De-rating Factor :  
G. Thickness of insulation :  
H. Thickness of inner sheath :  
I. Calculated diameter of cable :

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- J. Nominal diameter of cable under outer sheath :
- K. Calculated diameter of the cable under outer sheath :
- L.Thickness of outer sheath :
- M.Nominal outer diameter of cable. :
- N.Tolerance on outer diameter :
- O.Type of Compound for Conductor insulation, Inner sheath and outer sheath. :
- P.Length of cable :
- Q. Confirming standards :

#### 18.7.2.41 SPECIFICATION OF MEDIUM VOLTAGE SQUIRREL CAGE INDUCTION MOTORS

##### SCOPE:

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

##### **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 - 9628 Specification for three phase induction motors with type of protection 'n'
  - 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

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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

- 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

#### **OPERATING CONDITIONS:**

- **Ambient Conditions:**  
Motors shall be suitable for operating satisfactorily in humid and corrosive atmosphere found in metallurgical plants. Service condition shall be specified in motor data sheet. If not specifically mentioned therein, a design ambient temperature of 50°C and an altitude not exceeding 1000 meters above sea level shall be taken into consideration.
- **Frequency and Voltage variations:**  
Unless otherwise agreed, motors shall be designed for continuous, satisfactory operation at rated output under the following conditions:
  - A) The terminal voltage differing from rated value by not more than  $\pm 10\%$
  - B) The frequency differing from its rated value by not more than  $\pm 3\%$
- **Starting:**
  - a) Unless otherwise agreed. Motors shall be designed for direct-on-line starting.
  - b) Motors shall be designed for re-acceleration under full load after a momentary loss of voltage with residual voltage being 100% and is in phase opposition to the applied voltage.
  - c) Minimum locked motor thermal withstand time at rated voltage shall be 10 seconds under cold conditions and 8 seconds under hot conditions. The starting time of the motor shall be less than the hot thermal withstand time (time  $t_E$  in case of increased

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safety motors) to permit application of conventional bimetal relays or thermal release against locked motor and overload conditions.

- d) Unless otherwise specified, all motors shall be suitable for starting under specified load conditions with 75% of the rated voltage at the motor terminals.
- e) Motors shall be designed to allow the minimum number of consecutive starts indicated in Table-1 below:

TABLE-1	
<u>Starts</u>	<u>Min. no. of consecutive starts</u>
No. of consecutive start-ups with initial temp. of the motor at ambient level (cold)	3
No. of consecutive start-ups with initial temp. of the motor in full load operating level(hot).	2

▪ **Direction of Rotation:**

Motors shall be suitable for either direction of rotation. In case unidirectional fan is provided for motors, direction of rotation for which the motor is designed shall be permanently indicated by means of an arrow. Direction arrow should be manufactured from corrosion resistant material. When a motor is provided with bi-directional fans, a double headed arrow should be provided.

Normally, clockwise rotation is desired as observed from the driving (coupling) end, when the terminals ABC are connected to a power supply giving a terminal phase sequence in the order ABC. Counter-clockwise rotation of the motor shall be obtained by connecting the power supply to terminals so that the phase sequence corresponds to the reversed alphabetical sequence of the terminal letters. Ample space shall be provided at the terminal box for interchanging any two external leads for obtaining the reverse phase sequence.

▪ **Performance:**

- 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.
- In particular cases, when the starting current is to be limited, care shall be taken such that the design value of torque meets the load requirement while at the same time complying to clause 24.4.3 above of this specification.
- In particular cases, when the starting with reduced voltage is specified, care shall be taken such that the design values of torque meets the load requirement while at the same time complying to clause 24.4.3 above of this specification.
- 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 upto 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.

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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.

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.

- **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.

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.

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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 as 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:

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.

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.

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▪ **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.

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.

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- **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.

For motors operating in hazardous area, the fans shall be of an anti-static non-sparking 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 per IS/IEC standard.

Necessary nuts and spring washers shall be provided for earth connection.

An additional earth terminal shall be provided inside the terminal box.

- **Miscellaneous Accessories:**

- **Anti-Condensation Heaters:**

All motors rated above 22 KW shall be provided with 240 V anti-condensation heaters, to prevent condensation of moisture during shut-down periods. Motors rated 22 KW and below shall be provided with anti-condensation heaters only if specified in the motor data sheet/ requisition. The heaters shall permanently remain 'ON' when the motor is not in service and as such shall not cause damage to the windings.

For motors installed in hazardous atmospheres (zone-1 or zone-2), such heaters shall confirm to the provisions of applicable Indian standards and temperature classification specified in the motor data sheet.

The heater leads shall be brought out to a separate terminal box of the same specification for 2 x 4 sq. mm conductor, armoured cable, unless otherwise specified.

A warning label with indelible red inscription shall be provided on the motor to indicate that the power line and the heater supply shall be isolated before carrying out any work on the motor.

- **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.

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- **Noise Level:**  
The permissible noise level shall not exceed the stipulations laid down in IS: 12065, unless otherwise specified in the motor data sheet.
- **Motor Vibrations:**  
Motor vibrations shall be within the limits of IS:12075 unless otherwise specified for the driven equipment.
- **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.
- **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.

- **RATINGS:**  
Motors shall be rated for continuous duty at an ambient of 50°C and site altitudes of up to 1000 M above mean sea level.
- **WINDING PROTECTION:**  
Embedding of PTC thermistors in the stator winding shall be provided.
- **EFFICIENCY:**  
Efficiency values of motors remain unchanged from 100% to 60% of rated output utilizations.  
All Motors shall be an energy efficient and compliant to IE-3.
- **NOISE LEVEL:**  
Motors shall be designed for low noise levels in accordance with IS: 12065.
- **COOLING AND VENTILATION:**  
Type of cooling shall be IC 0141 as per IS: 6362. All motors have an external, bi-directional centrifugal fan. The external cooling fan is of plastic for motors up to 2.2 KW and cast aluminium for motor above 2.2 KW.
- **CONSTRUCTION:**  
Standard motors with single shaft extension shall be horizontal foot mounted (IMB3 as per IS: 2253 and IEC 34, Part 7). Frame sizes 160M-315L (except 2 pole motors of frame size 315) in IMB3 construction, can be mounted in IMB6, IMB7, IMB8, IMV5 and IMV6 construction.
- **EARTHING TERMINALS :**  
All motors shall be provided with 2 earthing terminals, two in the terminal box and one on each foot. Vendor to submit the earthing lay out of their system for review of NALCO.
- **CONVERTER OPERATION:**  
Motors shall be suitably designed for use with converters (variable voltage, variable frequency drives).
- **VOLTAGE & FREQUENCY:**  
Motors shall be suitable for 415 V  $\pm 10\%$ , 50 Hz  $\pm 5\%$ , 3 phase A.C. supply.
- **AMBIENT TEMPERATURE :**  
All motors in normal design shall be suitable for an ambient temperature range between (-) 20°C to (+) 50°C.
- **OUTPUT:**  
The rated output is for continuous duty as per DIN EN 60034-1 at 50 Hz frequency, ambient temperature 50°C and altitude 1000 M. Rated output can be increased by 15% at 60 Hz.
- **INSULATION :**  
The motors shall be with class 'F' insulation utilized to class 'B' limits at rated output and rated voltage. By utilizing to class 'F' limits and at rated voltage, the ambient temperature can go upto 70°C or the output can be increased by approximately 10%.

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▪ **STANDARDS:**

The motors comply with all the relevant standards and specifications, in particular the following.

Title	DIN	IEC	Equivalent IS
General requirements for rotating electrical machines	DIN EN 60034-1	IEC 34-1 IEC 85	IS 4722
Fixing dimensions and assignment of rated outputs with IMB3 construction (Foot Mounted)	DIN 42673	IEC 72 (dimensions only)	IS 1231
Fixing dimensions and assignment of rated outputs with IMV1, IMB5, IMB10 and IMB14 construction (Flange Mounted)	DIN 42677	IEC 72 (dimensions only)	IS 2223 (dimensions only)
Types of construction of rotating electrical machines	DIN EN 60034-7	IEC 34-7	IS 2253
Degree of protection by enclosures for rotating electrical machinery IEC standard voltages	DIN EN 60034-5 DIN IEC 38	IEC 34-5 IEC 38	IS 4691

▪ **DEGREE OF PROTECTION:**

The motors shall be designed for IP55 protection according to DIN EN 60034-5 (complete protection against contact, protection against harmful dust, so also, protection against water directed through a hose in any direction). This degree of protection conforms to IS: 4691 and IEC 34, Part 5.

▪ **FRAME DESIGN:**

The motors shall be in Aluminium alloy housing. Terminal box for all the frames is of Aluminium. All foot mounted motors in frames 63 to 100 shall be with integral mounting feet. Foot mounted motors in frames 112 and 132 have bolted feet. The motors shall be suitable for horizontal as well as vertical mounting - universal type of construction.

▪ **PAINT:**

The normal paint is in shade RAL 7030 (grey). This paint is suitable for climate group worldwide as per DIN IEC 721, Part 2-1 and also for aggressive atmospheres up to 1% acid and alkali concentration or permanent dampness in sheltered rooms.

▪ **RATING PLATE AND CE MARKING:**

The motors have international rating plate. The 50/60 Hz data, the service factor and CE marking shall be provided on the rating plate of all motors.

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**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.

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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. Ingress protection class for VFD casing: IP 20 or higher
3. Each VFD shall be installed in air conditioned Electrical panel room of ingress protection class IP55 or higher. 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 flexible copper wire of size minimum 2.5 sq. mm.
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 depending on application.
8. Each VFD shall have one MCCB of appropriate rating as incomers.
9. Each VFD circuit shall comprise of associated switchgears & components like Mains Input Power Contactor, Input & Output choke, Braking Chopper, Braking Resistor, Circuit breakers, Overload relay, Control relays, etc.
10. The VFD, control transformer, input choke, output choke and all electrical like MCCB, MCB, contactor, etc, shall be mounted on a mounting plate / din rail and then in the panel for ease of maintenance.
11. Erection supervision & commissioning shall be in the scope of Vendor.
12. All the electrical equipment shall be of NALCO approved brand and make only.
13. Each VFD shall be supplied with braking chopper & resistor of suitable rating
14. Vendor 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.
15. Party must submit their complete technical literature along with the offer for our technical scrutiny.
16. It is mandatory for the bidder to confirm each and every technical data mentioned in the NIT for technical scrutiny purpose.
17. 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:

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#### 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.
- 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.

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#### 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
  - 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:

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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.) output 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 or Ethernet interface modules.

#### 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.

- Open Loop.
- Slip Compensation with 0.5 % speed regulation.
- Droop-Negative Slip Compensation with 0.5 % speed regulation.
- Traverse Function.
- Closed Loop encoder feedback with 0.1 % speed regulation.
- Process PI Control.
- Speed range should be 120:1 or better to get good Torque at low speed.

##### Speed Profiles:

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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.

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.

## 19 JOB SPECIFICATION – INSTRUMENTATION

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

#### 19.1 *Scope of Supply:*

Complete instrumentation package required for automation of the proposed Furnace Tending Assembly shall comprise of:

The PLC (Programmable Logic Controller) shall be of hot redundant type having CPU level and communication level hot redundancy. PLC program shall preferably be in Ladder logic format. 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. HMI shall be provided in operator cabin as

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well as in electrical cum PLC panel with proper fault & alarm configuration and status indications. Sufficient animated screens with proper feedback from the field devices shall be incorporated in the HMI. Historical trending and real time monitoring of important parameters should be included in the HMI.

All device network networks preferably of Ethernet network.

Wireless communication system to be designed between the FTA and ground PLC /control system for calling winch trolley system (for Anode handling).

Power supply to the PLC system shall be through a true online UPS with at least 30 minutes backup.

Pressure, DP, Temperature & Level switches are to be provided as per requirement for safe operation of various subsystems of the FTA

The PLC system shall be installed in Proper Panels having adequate PROTECTION FOR HIGH TEMPERATURE AND DUST conditions prevailing at our shop floor.

Portable programming device/engineering station of industrial grade with all required software (including development/programming) shall be supplied along with the system. All software used in the project/system shall be licensed in the name of Smelter Plant, Nalco.

Any other special tools and tackles used for configuration or installation shall be included in the supply.

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

- 19.1.1 Supply, installation & commissioning of field sensors/instruments, PLC, HMI, PLCI/O as per operational/control philosophy as well as standard of process industry automation. All I/Os are to be installed inside dedicated air conditioned PLC room/cabinet on the Crane itself with easy access for maintenance.
- 19.1.2 Latest series PLC with HOT Redundancy system i.e., redundancies in CPU systems, communication network and PLC power supply system. Point I/Os and I/Os at field are not acceptable.
- 19.1.3 PLC programming language preferably in Ladder format.
- 19.1.4 IOs & Field device (Encoder & Telemeter) communication preferably over Ethernet.
- 19.1.5 Interposing relays are to be provided for all PLC inputs & outputs.
- 19.1.6 One HMI in operator cabin for crane operation & one in PLC cabin for troubleshooting. HMI may essentially include the Mimic General View of crane system, Individual pages for all the main Equipment or sub systems with conditions for healthiness and Fault & Alarm page (Current & Historical with proper Date & Time stamp).
- 19.1.7 For crane Cross travel auto positioning, Encoder or Telemeter may be used. For crane Long travel auto positioning, Telemeter may be used. For positioning and speed control of Grab Hoisting, Sucking pipe Hoisting & Filling pipe Hoisting, encoder may be used. For calibration or initialization for different Encoders & Telemeters, provision to be made in HMI itself.
- 19.1.8 Wireless communication system for Winch Trolley system. For Winch trolley system, Crane PLC will exchange data with Anode Handling PLC (GE PLC system). So necessary design or modification, if required, shall be done in both sides PLC system by the Crane vendor. Different winch trolley controls to be designed in the HMI itself. However a hardwired Emergency PB to be provided for emergency stopping of Winch Trolley system.
- 19.1.9 Following minimum instrumentation has to be there along with all other items:
  - a) Level transmitter & level switch (High) for Coke bin.
  - b) Indicative type Level switches (High & Low) for Dust bin and Cyclone bin.
  - c) Differential pressure transmitter for Dust bin Main Filter.
  - d) Temperature transmitter for Exhauster system.

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- e) Load cell & load cell controller for Grab Hoisting, Filling pipe Hoisting & Sucking pipe Hoisting.
  - f) Purging air pressure transmitter for main filter purging system with required interlocks and alarms.
  - g) Anti-collision device to avoid crane collision. Grab hoisting design shall be in such a way that the logic and the automation related to grab hoisting shall be free from "grab free fall" in any circumstance.
  - h) Exhauster vacuum high alarm indication and interlocking.
  - i) Suction vacuum, Purging pressure readings to be displayed in HMI
  - j) Gulper encoder value should be displayed in HMI to enable proper bottom padding for packing of green anodes.
- 19.1.10 A portable programming device (Industrial grade service laptop 15" of configuration latest generation Intel i5 (or later) processor, minimum 8GB RAM, 1TB HDD, DVD-RW or latest configuration) along with licensed programming software and SCADA/HMI software (Run plus Development) shall be exclusively supplied along with the PLC system.
- 19.1.11 The PLC Panel shall be supplied with IP54 degree of protection. The paint shade shall be powder coated textured RAL 7035.
- 19.1.12 HMI panels at field shall be supplied with IP65 degree of protection and they must be with panel mounted air conditioned system.
- 19.1.13 The size of the operator control panel/HMI shall be minimum 10" colour. The licensed software required to configure the operator control panel/HMI shall be provided-
- 19.1.14 Supply of all system & application software cum license as well all tools used during installation and commissioning of any instruments/PC/PLC/HMI etc.
- 19.1.15 Supply of separate & standalone communication network for HMI to PLC preferably by Ethernet.
- 19.1.16 Supply of all required signal & network cables, connectors & other accessories like separate cable trays for signal and network cables.
- 19.1.17 The de-dusting unit air purging system, if any, shall be controlled by PLC Output.
- 19.1.18 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.
- 19.1.19 A redundant communication network (Ethernet) between CPU, I/O racks and HMI/Engineering station shall be included in the PLC system.
- 19.1.20 Historical trending of important parameters should be included in SCADA.
- 19.1.21 The New 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 of machine operation and easy trouble shooting. Vendor shall send the snap shots for review of NALCO before finalization of HMI screens.
- 19.1.22 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.
- 19.1.23 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



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‘NATIONAL ALUMINIUM COMPANY LIMITED’ and handed over to NALCO after execution of job.

- 19.1.24 The Alarm messages shall be properly classified/configured in order to avoid confusions to the users.
- 19.1.25 True Online UPS for PLC & IO control supply with minimum 30 minutes backup shall be provided.
- 19.1.26 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. No underground sensor to be installed for process detection.
- 19.1.27 Proper protection of remote panels from heat and dust shall be ensured if the proposed system is using any remote panels outside the control room.
- 19.1.28 Mandatory spares and special tools mentioned in the chapter “Mandatory Spares” of this document.
- 19.1.29 Energy efficient components/equipment mentioned in the chapter “GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING” of this document.
- 19.1.30 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.

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## 19.2 **Scope of Services:**

- 19.2.1 Transportation to site. Receipt at site, storage and Warehouse management,
- 19.2.2 Erection of new PLC Panel of the proposed machine in the PLC ROOM of FTA and operator control panel (HMI) in operator cabin.
- 19.2.3 Development of PLC program for automation and incorporation of various faults for trouble free operation of the crane.
- 19.2.4 Integration of Furnace Tending Assembly control & operation with the existing Anode baking furnace and anode handling area for automation. This shall include integration of PLCs, Logics and SCADA with existing system.
- 19.2.5 Wireless Communication system between the ground PLCs and /control systems for winch trolley system (for Anode handling).
- 19.2.6 Design & development of PLC programme & HMI programme as per process requirement and in simplified manner following the standard procedure of PLC/HMI programming.
- 19.2.7 Calibration, testing of instruments and programs.
- 19.2.8 Equipment shop testing, performance guarantee test of the system at site and check compatible with operation requirement etc.
- 19.2.9 Mechanical, Electrical & Instrumentation completion and commissioning.
- 19.2.10 PLC communication with its associated I/Os, VFDs and HMI will be preferably through Ethernet network (open protocol).
- 19.2.11 Optical fiber communication to be used wherever the distance between the two nodes is more than 100 meters.
- 19.2.12 Laying of optical fiber cables, splicing, termination and other communication cables shall be in the scope of the vendor.
- 19.2.13 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.
- 19.2.14 Tagging of the control/signal cables and ferruling of each core for easy identification shall be in the scope of the vendor.
- 19.2.15 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.
- 19.2.16 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.
- 19.2.17 The positioning of all field devices including pressure and proxy switches should be such that these are accessible from outside for easy maintenance.
- 19.2.18 Other scope of service mentioned in description of system & auxiliaries, battery limit, specification of instrumentation

## 20 JOB SPECIFICATION – CIVIL

Vendor has to suitably design the new FTA to run on the existing structure. For this load assessment may be done by vendor at NALCO site. For any other civil work if required for erection activities of new FTA and dismantling of old FTA, then the same may be done by vendor at site.

## 21 MANDATORY SPARES

### 21.1 Mandatory spares

Along with the bid for main equipment, Vendor shall submit mandatory spares list with price.

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From experience with existing FTAs in NALCO, few items listed here are suggested as mandatory spares. This is for indicative purpose only. However, vendor has to submit a consolidated list of mandatory spares with price.

### **Electrical**

- a) Power Contactors - 01 no. minimum of each type
- b) Control Relays - 01 no. minimum of each type
- c) LPIC & SFU with Operating handle – 01 set minimum of each type.
- d) Circuit breakers MCCB, MPCB, MCB, ELCB – 1 no. minimum of each type
- e) Relays (Protective relays, MOTPRO, Overload relays etc) – 01 no. minimum of each type
- f) Cable Carrier system(Drag Chain & Festoon Trolley) with associated electrical cables – 01 set minimum of each type
- g) VFD & Softstarters with all cards/modules– 01 no. minimum of each type
- h) VFD Input & Output Choke – 01 no. minimum of each type
- i) VFD Braking chopper & resistor – 01 no. minimum of each type
- j) Motors and Geared Motors – 01 no. minimum of each type
- k) Motor external cooling fans – 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/Accessing software & kit for VFD, ACB, MOTPRO – 01 set each
- p) Position, Proximity Sensors, Limit Switches – 01 no. minimum of each type
- q) Cam switches – 01 no. minimum of each type
- r) Power rails current collectors & associated accessories – 01 set minimum of each type
- s) Joysticks – 01 no. minimum of each type

### **Instrumentation**

- a) Pressure Switches , if any: Minimum 1 no each type.
- b) Level Switches, if any : Minimum 1 no each type.
- c) Temperature Switches, if any : Minimum 1 no each type.
- d) Temperature Transmitters, if any : Minimum 1 no each type.
- e) Level Transmitters, if any : Minimum 1 no each type.
- f) DP Transmitters, if any : Minimum 1 no each type.
- g) Pressure Transmitters, if any : Minimum 1 no each type.
- h) Load cells, if any : Minimum 1 no each type.
- i) Load cell Controllers, if any : Minimum 1 no each type.
- j) Anti-collisionSystem, if any : Minimum 1 no each type.
- k) Security Relays, if any : Minimum 1 no each type.
- l) CPU and PLC Cards of each type : Minimum 1 no each type.
- m) HMI : Minimum 1 no each type.
- n) Telemeter& its cooling system,ifany: Minimum 1 no each type.
- o) Encoders& it's coupling, if any: Minimum 1 no each type.
- p) Wireless Comm. System, if any : Minimum 1 no each type.
- q) Ethernet switches/hubs : Minimum 1 no each type

### **Mechanical :**

- a) Exhauster : 1 no
- b) Low pressure blower for purging : 1 no
- c) Filter bags : 1 Set
- d) Right Cable/Wire rope guide for filling pipe,  
Sucking pipe, 6 MT hoist : 1 no each
- e) Left Cable/ Wire rope guide for filling pipe,

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- Sucking pipe, 6 MT hoist : 1 no each
- f) Brake Liners for each drive (where ever applicable) : 1 set each
- g) V-belt, Pulley, Adaptor : 1 set each
- h) Filters for low pressure blower. : 1 set
- i) Filters for exhausters : 1 set

### **21.2 Special tools :**

Following Electrical instruments are to be supplied by the vendor.

- a) Digital Megger : 01 no  
Digital Insulation Tester, 1Tohm, Test range:500V, 1000V, 2500V & 5000V, Selectable AC & DC, Insulation & PI tester, Confirming to relevant IS/IEC standard  
Make: Megger UK /Fluke/Yokogawa
- b) Digital earth tester: 01no  
Digital Earth Tester, 1Mohm, Earth Electrode & Soil resistivity testing, Rechargeable battery, 2P,3P&4P measurement with measurement kit, Confirming to relevant IS/IEC standard  
Make: Megger UK /Fluke/Yokogawa
- c) Digital multimeter-01 no  
1000V AC & DC Voltage, 10A AC & DC Current, 0.1 to 40Mohm Resistance, Continuity Buzzer, Auto ranging, Auto Power Off, Accuracy 1%, Confirming to relevant IS/IEC Standard(IEC 61010-1)  
Make: Megger UK /Fluke/Yokogawa

## **22 PERFORMANCE GUARANTEE AND TESTING:**

### **22.1 Test Procedure:**

The performance guarantee tests shall be jointly carried out by the representative of the bidder and Nalco or his nominee with all the test equipment arranged by the bidder within **three months** of commissioning of furnace tending assembly.

**The vendor has to successfully demonstrate the intended parameters/functions of supplied crane to the buyer prior to PG test.**

Vendor shall indicate the number of manpower required for normal operation and for PG test and same no of persons shall be provided to the vendor to conduct the PG test.

### **22.2 Parameters:**

Handling Capacity : FTA shall be capable of handling 45 sets of 3 anodes per shift including coke suction, coke filling, shifting of items/lining work etc.as described in the function of system.

Baking coke suction: 88 m3/hr minimum

Restitution capacity: 88 m3/hr minimum

Noise level of any equipment shall not exceed 85 dBA measured at a distance of 1m from the equipment.

The dust emission at filter outlet shall not be more than 10 mg/Nm3.

22.2.1 The Performance Guarantee Tests shall continue continuously for a period of 72 hours at a stretch all the three shifts. The necessary instrument for measuring the parameters is to be organized by the bidder.

22.2.2 All equipment and components shall be guaranteed as per the clause mentioned elsewhere under commercial terms and conditions.

22.2.3 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

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furnished by him and the performance of the said system in accordance with this specification.

Note: Bidder should ensure 95% machine availability i.e. breakdown time up to 3.6 hrs shall be absorbed by the bidder. In case, the breakdown time is more than 3.6 hrs, the test shall be considered invalid and needs to be repeated. In case of non-achievement of the above testing parameters even after three attempts of PG test as described in clause "Commissioning and Take over", the machine will be rejected. However, in case of rejection, the same will be governed by the relevant commercial documents of NIT along with encashment of CPBG.

## 23 GENERAL GUIDELINE TO VENDOR/ CONSULTANTS FOR ENERGY EFFICIENCY IN DESIGN/ENGINEERING

### 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.

### 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

### 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
- 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

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### **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

### **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

## **24 PREFERRED VENDOR LIST**

### **24.1 CIVIL&STRUCTURAL**

Item Name	List Of Make/Brand/Suppliers
Aluminium doors/Partition doors/Windows/ Louvers	Alum-lite, Beco, Hindalco, INDAL
Aluminium Sheet	Balco, Hindalco
Bathtub attachments/fittings(Wall mixer. Telephone shower)	Jaquar
Bituminous felt	Nerolac, Shalimar
Bituminous paint	AsianPaints, Berger Paints, ICI, Jenson and Nicholson
Cement	ACC Limited, Jaypee, Konark, L&T, Lafarge, Ultratech
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

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Item Name	List Of Make/Brand/Suppliers
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, Indo Ashahi, Modi
Glazed Ceramic tiles	Johnson, Kajaria, Nitco, Rak, Regency, Somana
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
MS Angle/Channel/Beams	IISCO, Jindal, RINL, SAIL, TISCO
Non-shrink & free flow cementitious grout	Anckor-NSG of Sika Qualcrete
Plywood	Bhutan Board, Century Ply, Greenply, Kitply, National, Novopan
PVC pipes & fittings	EMCO General Plastics, Hariplast, Oriplast, Poly olefins Industries Ltd
Steel Rod	Jindal, RINL, SAIL, TISCO
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
<b>24.2 ELECTRICAL</b>	

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Item Name	List Of Make/Brand/Suppliers
Item Name	List Of Make/Brand/Suppliers
Switchgears	ABB, L&T, Schneider, Siemens, Rockwell
Auxiliary Relays	ABB, L&T, Schneider, Siemens, Rockwell
Control relays	ABB, L&T, Schneider, Siemens , Rockwell
Bimetallic Overload relays	ABB, L&T, Schneider, Siemens, Rockwell
Motor protection relays	ABB, L&T, Schneider, Siemens, Rockwell
Protection Relays	ABB, L&T, Schneider, Siemens, Rockwell
Power Contactors	ABB, L&T, Siemens, Schneider, Rockwell
Control Switches	ABB, L&T, Schneider, Siemens , Rockwell
Timers	ABB, L&T, Schneider, Siemens, Rockwell
Emergency Stops	ABB, L&T, Schneider, Siemens, Rockwell
Emergency Stop Box, Push Button Station, Pendant Box	ABB, L&T, Schneider, Siemens, Rockwell
Pushbuttons	ABB, L&T, Schneider, Siemens, Rockwell
Indication lamps	ABB, L&T, Schneider, Siemens, Rockwell
Selector switches	ABB, L&T, Schneider, Siemens, Rockwell
ELCB, RCCB& RCD	ABB, L&T, Schneider, Siemens, Rockwell
MCB	ABB, L&T, Schneider, Siemens, Rockwell
MCCB	ABB, L&T, Schneider, Siemens, Rockwell
ACB	ABB, L&T, Schneider, Siemens
SwitchFuse Unit	ABB, L&T, Schneider, Siemens
Fuses	Bussmann, Ferraz Mersen, Indo Asian Fuse Gear, L&T, Siemens
Meters	AE, Rishabh, Schneider, L&T
Current Transformers & Potential Transformers	ABB, Siemens, AE, Jyoti, L&T, Newtek Electricals, Precise
Control Transformers	ABB, Siemens, AE, Jyoti, L&T, Newtek Electricals, Precise
Current/Voltage/Power/Frequency Transducers	Minilec, Masibus, ABB
Electrical Panel	Rittal , Hoffman
Control panels, Junction Boxes & Enclosures	Rittal, EL Steel, Hoffman
Power cables	Lapp, Helukabel, Igus

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Item Name	List Of Make/Brand/Suppliers
Control cables	Lapp, Helukable, Igus
Power & Control Wires	Lapp, Helukabel
Cable Termination & Jointing Kit	Raychem RPG,3M, Multi Shrink
Glands above M32x1.5(Ni plated brass)	Lapp, Dowell's, Controlwell, Phoenix
Glands upto M32x1.5(Polyamide)	Lapp, Hensel, Controlwell, Phoenix
Linear& Rotary actuators	AUMA, Bernard, Prepec
Motor with Integral brake	Sew Eurodrive, DEMAG, Leroy Somer, Stahl
Motors with Non-integral brake	Sew Eurodrive, DEMAG, Leroy Somer, Stahl, Siemens
General Purpose Motors	SEW Eurodrive, Leroy Somer, Siemens, Bauer, Nord, ABB, CG, KEC
Electromagnetic brakes	Sime Stromag
Load Break Switches&Local Power Isolation Cabinets	Cefem (France), Socomec(France)
Change-over Switches	Cefem (France), Socomec(France)
Switchboards	ABB, L&T, Schneider, Siemens, Rockwell
Soft starters	ABB, Danfoss, Rockwell, Schneider, Siemens
Variable Frequency Drives (VFD)	ABB, Danfoss, Rockwell, Schneider, Siemens
Line Reactors - Input & Output chokes for VFD	ABB, Danfoss, Rockwell, Schneider, Siemens
Braking Choppers for VFD	ABB, Danfoss, Rockwell, Schneider, Siemens
Braking Resistors for VFD	ABB, Danfoss, Rockwell, Schneider, Siemens
Laptop for VFD Programming	Dell, HP, Lenovo
UPS	Emerson, Fuji, Hitachi-HiRel, Schneider APC
Battery Bank for UPS	Amar Raja, Exide, Rocket
LED Light fittings	Bajaj, Crompton Greaves, Philips, Osram, Wipro
Lighting Power Panel	Havells India, Indo Asian Fuse Gear, Legrand(India), Standard Electricals
Selector switches	Schneider

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Item Name	List Of Make/Brand/Suppliers
Rotary Position Switches	Schneider
Rotary Cam Switches	Schneider
Joysticks	Schneider, Gessmann
Limit Switches	Schneider
Proximity detectors	P&F, Schneider , Rockwell
Zero Speed Detectors	P&F, Schneider , Rockwell
Rotary Encoder for motor	Heidenhain, BEI, Siemens, Sick
Terminal blocks	Connectwell, Elmex, Phoenix, Weidmuller, Wago
Connectors	Harting, Lapp, Phoenix, Weidmuller
Plugs & Sockets	Marechal, BCH, Schneider
Electric Hoist	Demag, Stahl

#### 24.3 INSTRUMENTATION

Item Name	List Of Make/Brand/Suppliers
Air Flow transmitters	E&H, Emerson, ABB, Forbes Marshall
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, Meggar
Flow switch	E&H, Honeywell, PEPPERELFUCH
HART Configurator	E&H, Emerson, Yokogawa
Instrument tubing, fittings & needle valves	Parker, Swagelok
Jamming detector	E&H, Kobold, Siemens, Vega
Junction box	Kindle, Rittal , Hensel , Cape Electric
Level switch	E&H, Kobold, Siemens,Vega, PEPPERELFUCH,
Level transmitter	E&H, Emerson, Vega
Load cell	Avery, Sartorius, PreciaMolen, HBM

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Item Name	List Of Make/Brand/Suppliers
Manometer	Asian Industrial Valves, Bliss AnandPvt Ltd, Phoenix, Sigma Industries
Mass flow meter	E&H, Emerson, Honeywell, Siemens
Orifice plates & Flanges	BaligaLighting,Eureka Industrial Equipments, Guru Nanak Engineering works, Micro Precision Products Pvt Ltd, StartMech Controls
PC & Laptop	Dell, HP, Lenovo
Photo Cell	PEPPERELFUCH , Schneider ,Sick
Pile detector (Diffuse reflection type)	IFM, LEUZE Electronics, Omron, PEPPERELFUCH, Schneider, Sick
PLC I/O cards	Rockwell, Siemens, GE
PLCs	Rockwell, Siemens, GE
Pressure gauge	Ashcroft, Baumer, Kobold, Wika, Waree
Pressure Relief Valves	Alstom, Anderson Greenwood Crosby, BHEL, Safety Systems UK Ltd,Weir
Pressure switch	Danfoss, Indfoss, Schneider, IFM
Pressure/Flow/Differential pressure transmitter	E&H, Emerson, ABB, Siemens , Yokogawa
Printer(Laser /Inkjet)	Cannon, Epson, HP
Proximity switch	PEPPERELFUCH, Telemecanique
Reflector	Swareflex , PEPPERELFUCH
RTD	Jumo, Kobold, Sandvik, Tempcon, Tempsens, Toshniwal
Signal cables	KEI, Lapp, Polycab, RPG
Temperature gauges	Waaree, Wika, General Instruments , Kobold
Temperature transmitter	E&H, Emerson, Honeywell, ABB
Thermocouples	Jumo, Kobold, Sandvik, Tempcon, Tempsens, Toshniwal
Thermo wells	Altop Industries, BourdenHaennt,Elind, RKEngg, Thermo Electra BV, Thermo Electric Co, Thermo couple products
Universal digital indicator and controller	Honeywell, Masibus, Yokogawa, ABB, Eurotherm,
Universal Temperature indicator/ controller	Eurotherm, Honeywell, Omron, Yokogawa

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Item Name	List Of Make/Brand/Suppliers
Sequencer Timer Card	EAPL, SEFRAM ,DELTA NEU
Weighing system	Avery, Philips, Schenck , PreciaMolen
Zero speed switch	Jayshree, Schneider
<b>24.4 MECHANICAL</b>	
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	BMHConcare, 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, Ingressol 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
Electric crane	Anupam, Armsel, DEMAG, Mukand, WMIKone Cranes
Elevator/lift	ECE, Kone, Omega, OTIS, Thyssen Krupp
Explosion vents	Rembe
Fans	Andrew Yule, Flaktwoods, Reitz

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Item Name	List Of Make/Brand/Suppliers
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	Alstom, Batliboi, Dustven, Rieco, Thermax, VAI
Filter cloth for bags	Albany, Andrew Textile, BFW, 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
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, WMIK one
Needle valves	Parker, Rexroth

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Item Name	List Of Make/Brand/Suppliers
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
Pneumatic check valves	Festo, Parker , ASCO
Pneumatic Conveying	Claudius Peter, Coperion, DUCON, GerickeGmbh, MacawberBeekay, 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 EPPSurlon
Polyurethane hoses	Festo, , ASCO, Legris
Polyurethane liner	Kaveri, Tega, Quadrant EPPSurlon
Pulsejet valves	ASCO
Quick couplers	Aeroquip, Legris
Rope & Winch system	Hell & Patterson, Metso, Windhoff
Rotary Air Lock Feeder	Air Lanco, Delta-Ducon, DMNWesting 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

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Item Name	List Of Make/Brand/Suppliers
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 PvtLtd.,Usha Martin

**Note:**

Any material required to complete the project but not included in the vendor list must be procured after taking prior approval from the purchaser/Nalco on submission of proven track record documents.

## 25 SPECIAL CONDITIONS OF CONTRACT

- 25.1 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.
- 25.2 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.
- 25.3 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.
- 25.4 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.
- 25.5 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 in anyway.
- 25.6 The contractor shall carry out the work in accordance with instructions/ drawings/ specification/ standard practices/ national and international norms.
- 25.7 Good quality and accurate workmanship for proper performance of equipment / systems shall be guaranteed by the contractor on every stage of supplies and works.
- 25.8 Preservation of all components at all stages of pre-assembly/ erection/testing and commissioning till completion of trial run of unit.
- 25.9 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

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- instruction of Nalco. In the event of his failure to do so, the expenditure towards clearance of the same will be recovered from the contractor.
- 25.10 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.
- 25.11 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. Only fully trained and competent men with previous experience of the job shall be employed. They shall hold valid certificates wherever necessary.
- 25.12 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.
- 25.13 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., then the contractor has to reinstate the same at his own expense.
- 25.14 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.
- 25.15 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.
- 25.16 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 during the construction and leaving the site safe at all times. When the work is temporarily suspended he shall protect all construction materials, equipments 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.
- 25.17 All electrical installation covered in contractors scopes 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 equipments like DC systems, UPS etc if addressed in the scope of work shall be supplied by the contractor and shall be arranged by him.
- 25.18 It shall be the responsibility of the contractor to apply touch up painting on all 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

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various clauses of tender specification for handling transportation, erection, testing and commissioning.

- 25.19 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.
- 25.20 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.
- 25.21 The materials, design and workmanship shall satisfy the applicable standards, specifications contained herein and codes referred to. Where the Technical Specifications stipulate requirements in addition to those contained in the Standard Codes and Specifications, those additional requirements shall also be satisfied.
- 25.22 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 own cost and the Contract Price shall be deemed to have included cost of such performances and provisions, so mentioned.
- 25.23 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, commissioning, PG Test and Hand Over.
- 25.24 After issue of LOI/brief order/PO & SPO, the contractor shall visit the site within 15 days of acceptance of the order for kick-off meeting. The modality of execution of the project shall be deliberated by the contractor with Nalco project team.
- 25.25 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.
- 25.26 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.
- 25.27 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.
- 25.28 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.
- 25.29 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.
- 25.30 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

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instruction given to such a person by the Manager-in-charge or his/her authorised representative shall be construed as having been given to the Contractor.

- 25.31 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.
- 25.32 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.
- 25.33 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 as decided by Manager-in-charge or his/her authorized representative 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 being enforced from time to time.
- 25.34 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 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:
- 25.35 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.
- 25.36 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

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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.

- 25.37 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.
- 25.38 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 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.
- 25.39 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.
- 25.40 All inspection and test on supply items if any shall be made as required by specifications forming part of this contract. Various stages of inspection and testing shall be identified after receipt of Quality Assurance Plan (QAP) from the Contractor / manufacturer. Inspection calls shall be given 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

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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 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.

- 25.41 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 document which defines the basis of despatch is known as "Inspection Categorization plan"(ICP). This document shall contain description of the equipment, the place of inspection, 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 contractor/seller, the report to be submitted to Nalco. Based on this inspection report, despatch clearance shall be given by Nalco.

- 25.42 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.

- 25.43 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.

- 25.44 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

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right to have these defects rectified at the risk and cost of the Contractor if he fails to attend to these defects within specified time frame.

- 25.45 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.
- 25.46 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.
- 25.47 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.
- 25.48 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.
- 25.49 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.
- 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.
- 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.
- 25.50 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.
- 25.51 All design basis, calculations, drawings, layout, & specifications etc. are to be ratified / verified by the contractor. Major drawing and documents are to be approved by Nalco prior to use. A document control index (DCI) is to be prepared within one month from effective date of contract by the contractor indicating description

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- documents/drawings with corresponding schedule submission date and submitted to Nalco for record.
- 25.52 The Contractor to ensure full compatibility of the proposed system with the existing layout/ system & processes.
- 25.53 While selecting of the equipment, protection, enclosures, safety devices, drives etc.; emphasis has to be laid down on existing site conditions and operational practices.
- 25.54 Since the project has to be constructed in the vicinity of operating plant, contractor executing the project has to cushion unavoidable delays on account of operational constraints in construction/ commissioning activities. There may be requirement of taking shut down of the existing running plant for carrying out installation of any equipment or integration with existing system. In such cases, a micro planning for activities during 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 organised by the contractor during the shutdown period to minimize the shutdown hours. 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 assessed prior commencement of the project.
- 25.55 Appropriate provision of access points like walkway, staircase, ladders etc. for operational and maintenance convenience are to be suitable incorporated in the detailed engineering.
- 25.56 All correspondence, submission of Bills, Data sheet, documents shall be marked to the designated the Manager-in-charge or his/her authorised representative Compliance to statutory & regulatory requirements during consecution and erection shall be in the scope of EPC contractor.
- 25.57 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.
- 25.58 The contractor shall specify the manner for movement/ storage of construction material for so that normal operating plant is not affected.
- 25.59 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.
- 25.60 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.
- 25.61 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.
- 25.62 The site mobilization and work at site should start as per the time line mentioned approved Project schedule.
- 25.63 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.
- 25.64 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

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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.

## 26 DRAWINGS

### **LIST OF DRAWINGS & DOCUMENTS FOR SUBMISSION BY VENDOR**

#### **A. INSTRUMENTATION**

Detail drawings/documents as mentioned in sec 9 & 19.

#### **B. ELECTRICAL**

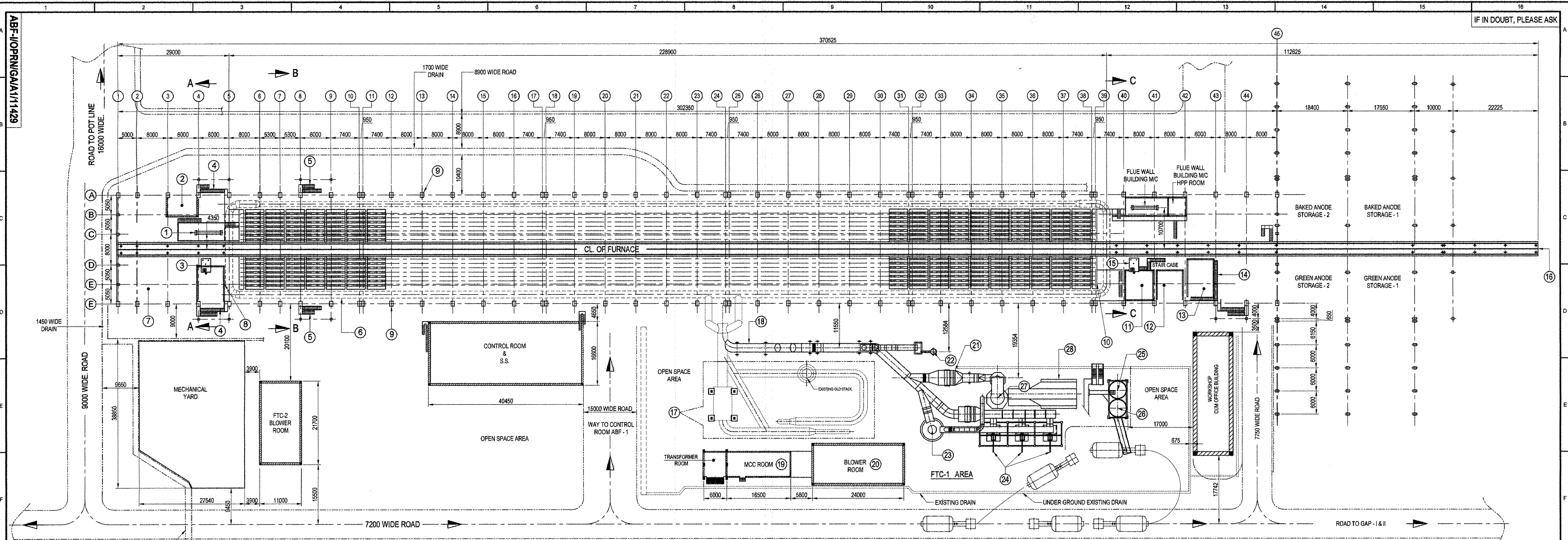
Detail drawings/documents as mentioned in sec 9 & 18.

#### **C. MECHANICAL**

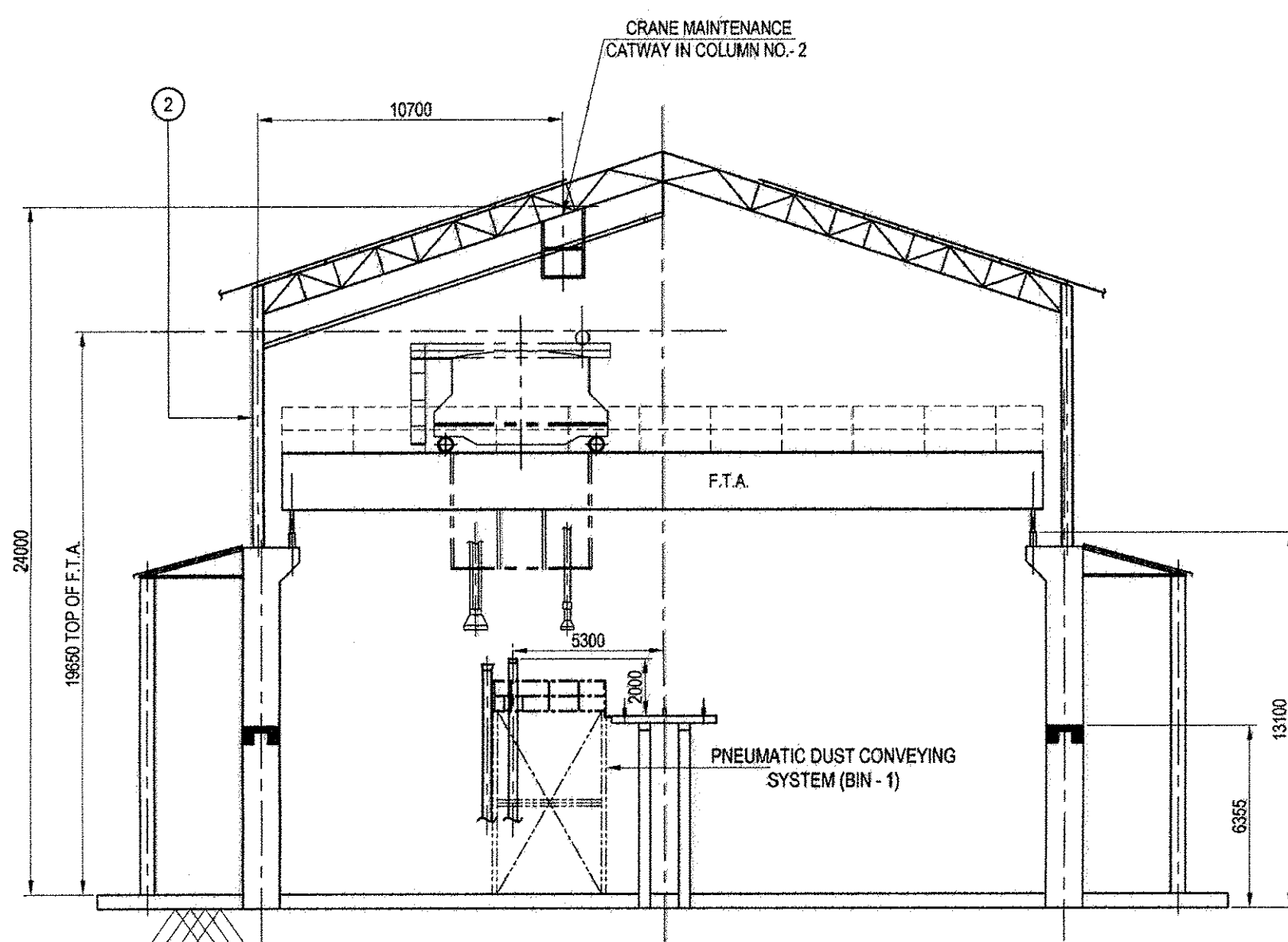
Detail drawings/documents as mentioned in sec 9 & 17.

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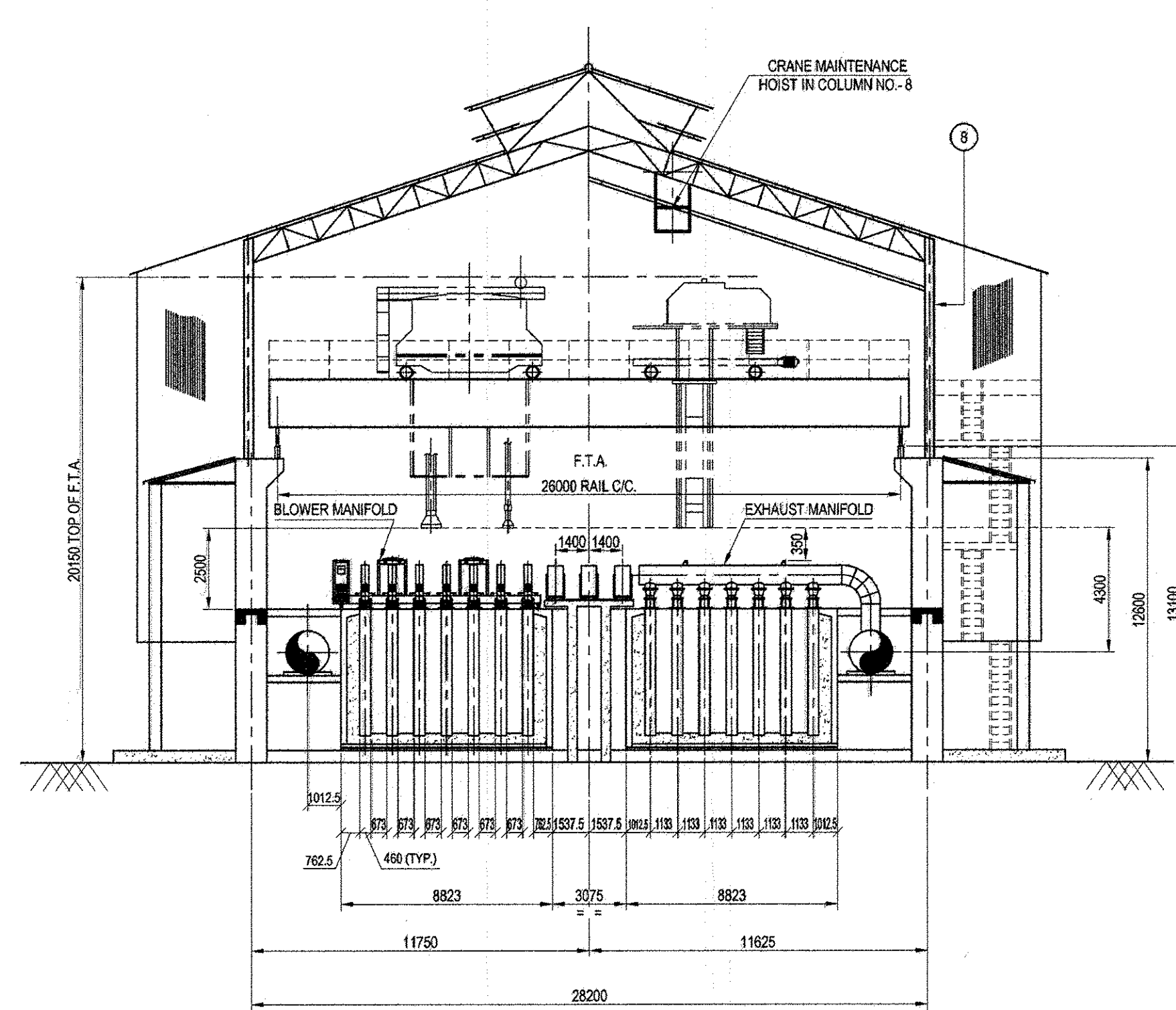




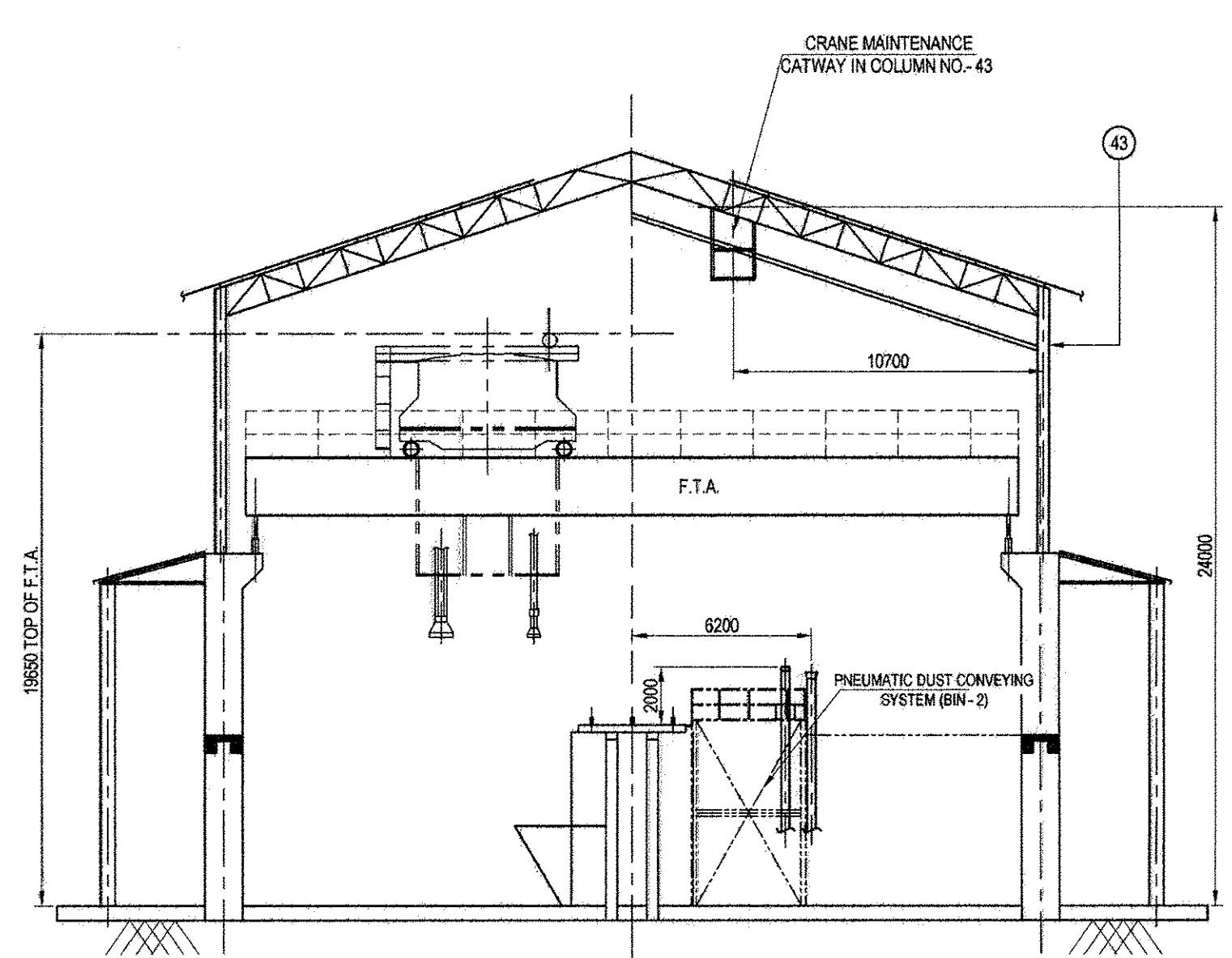
BAKE OVEN - I PLAN LAYOUT  
(SCALE - 1 : 500)



VIEW - AA  
(SCALE - 1 : 200)



SECTION - BB  
(SCALE - 1 : 200)



VIEW - CC  
(SCALE - 1 : 200)

LEGEND :-

1. FLUE WALL BUILDING M.C.
2. STORAGE OF SPENT FLUE WALL
3. PNEUMATIC DUST CONVEYING SYSTEM (BIN - 1)
4. STAIRCASE BETWEEN COLUMN NO. - 4 & 5
5. STAIRCASE BETWEEN COLUMN NO. - 8 & 9
6. DUCT LINE
7. MAINTENANCE ZONE
8. SOUTH CROSS OVER
9. R.C.C. COLUMN
10. NORTH CROSS OVER
11. DUST DISPOSAL POINT
12. STORAGE OF SPENT FLUE WALL
13. STORAGE OF ANTHRACITE COKE
14. STAIRCASE TO CRANE MAINTENANCE IN 43 NOS. CLIN.
15. PNEUMATIC DUST CONVEYING SYSTEM (BIN - 2)
16. WINCH DRIVE END
17. OLD FUME EXHAUST SYSTEM
18. GAS FLOW DUCT LINE
19. MCC ROOM
20. BLOWER ROOM
21. TREATMENT MODE INLET DAMPER
22. EMERGENCY STACK
23. MAIN STACK
24. MONORAIL MOUNTED HOIST FOR FAN MAINTENANCE
25. FRESH ALUMINA SILO
26. CHARGED ALUMINA SILO
27. GAS CONDITIONING TOWER
28. BAG FILTER

NOTE:-  
• ALL DIMENSIONS ARE IN mm ONLY.

APPD.	REV. NO.	DATE	REVISION NOTE	BY.	CHD.	VFD.	APPD.
S.S. NERALLA	1	13-02-20	PREPARED BY:-				
M. SOREN	2	13-02-20	DRN.				
A. SAHOO	3	13-02-20	CKD.				
	4		SCALE - AS SHOWN				
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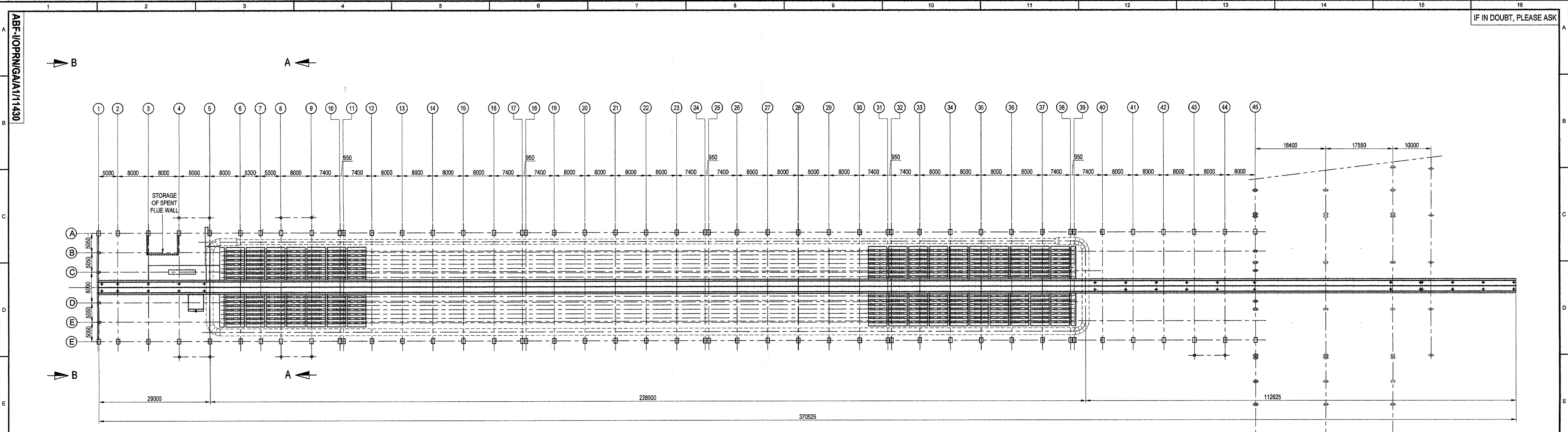
NATIONAL ALUMINIUM CO. LTD.  
SMELTER PLANT, ANGUL-759145

GENERAL LAYOUT OF  
ANODE BAKING FURNACE - I

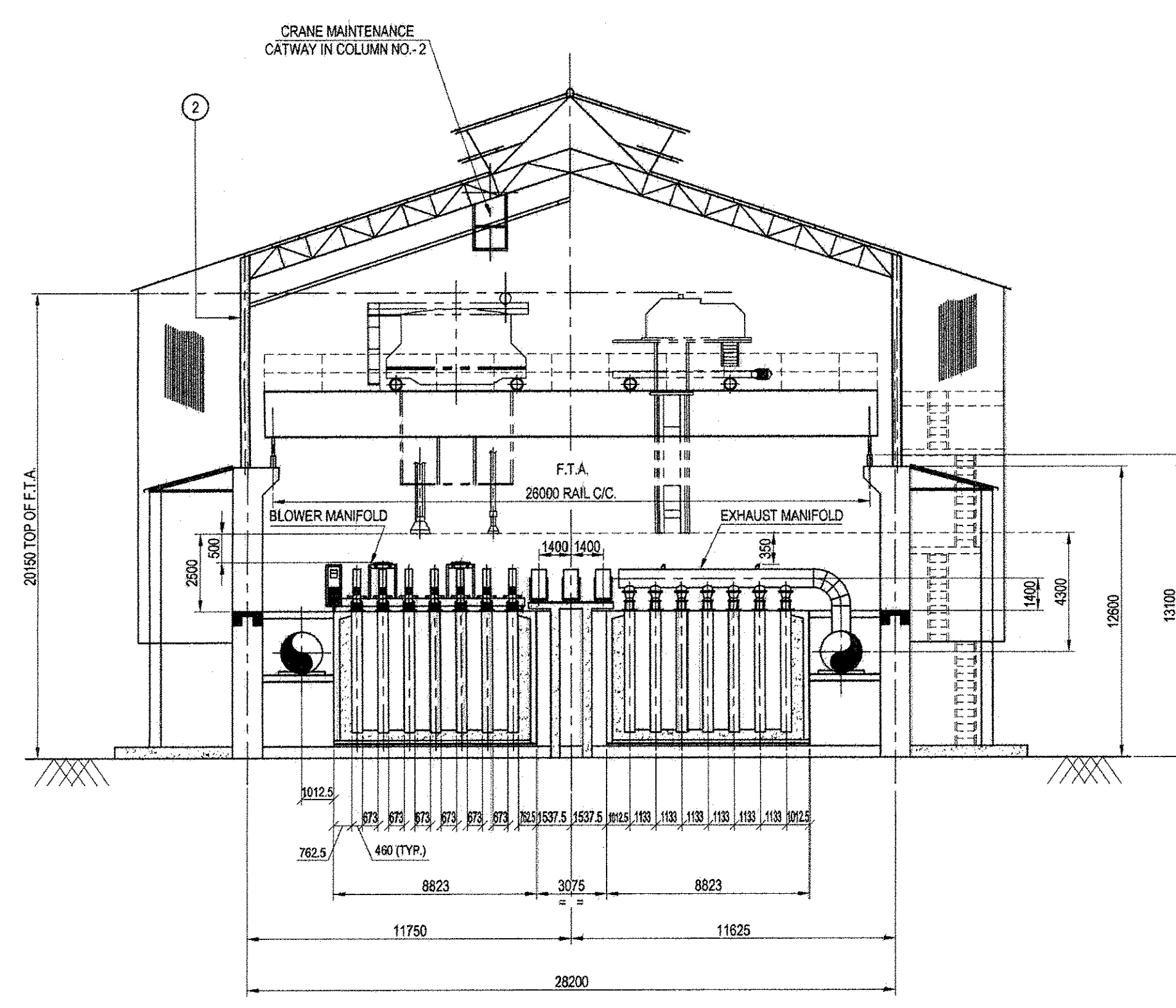
DRG. No. ABF-I/OPRNGA/1/11429

REVISION  
01

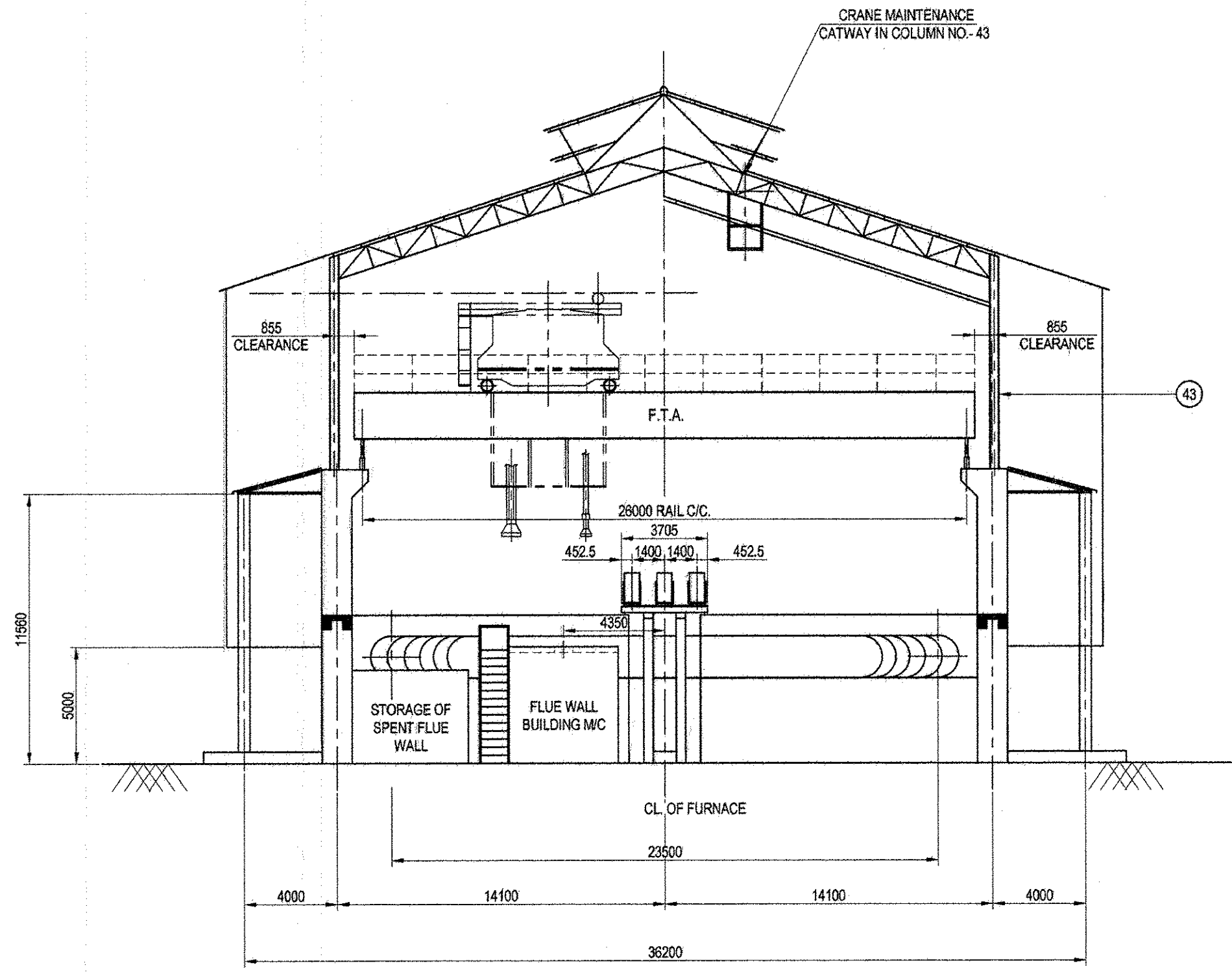




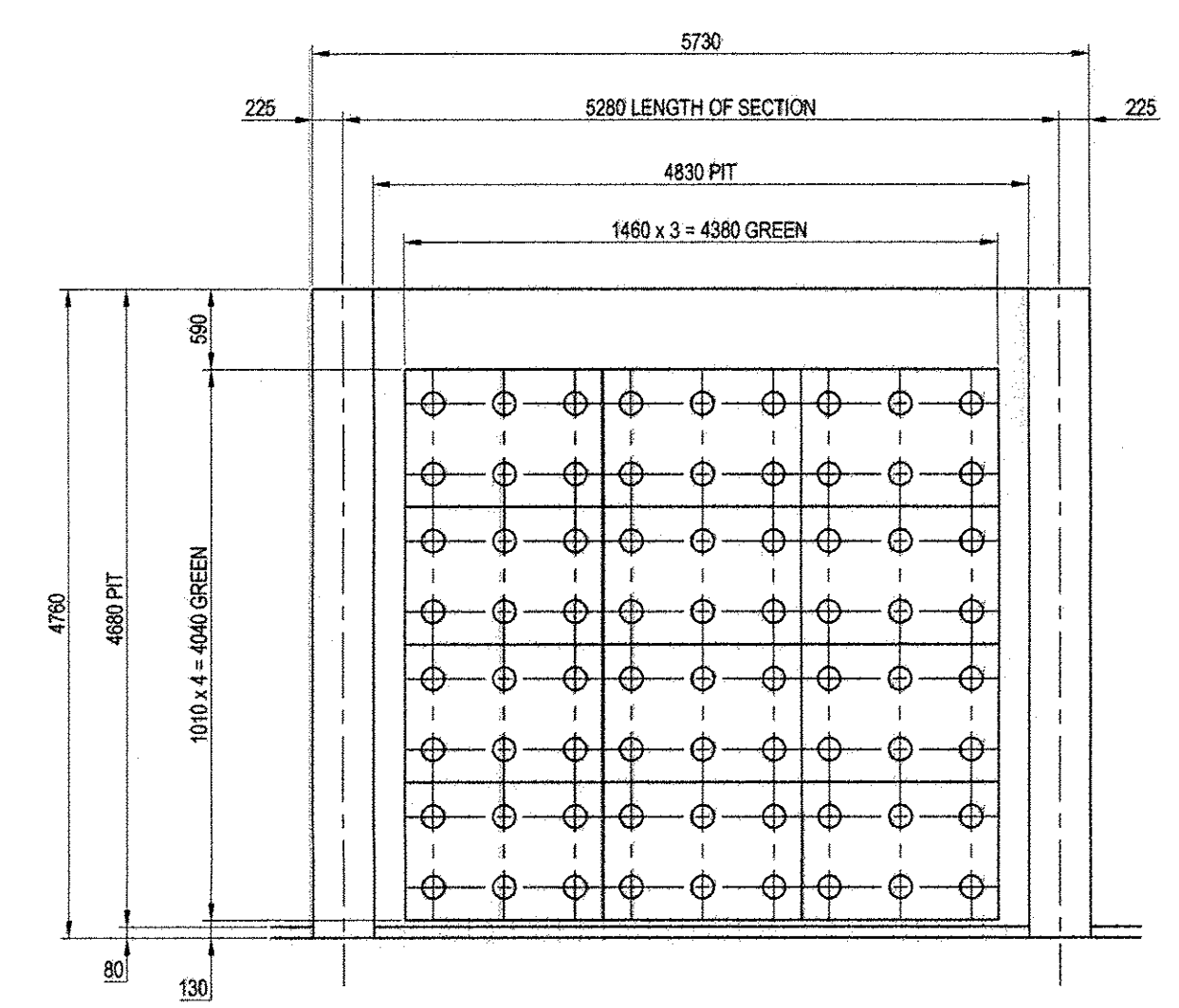
BAKE OVEN - I PLAN LAYOUT  
(SCALE - 1 : 500)



SECTION - AA  
(SCALE - 1 : 200)



VIEW - BB  
(SCALE - 1 : 200)



TYP. LONGITUDINAL SECTION OF PIT  
(SCALE - 1 : 50)

NOTE:-  
• ALL DIMENSIONS ARE IN mm ONLY.

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APPD.	S.S. NERALLA	PREPARED BY :-	I. MURMU	DRG. CODE	20340022001
VFD.	M. SOREN	DRN.	A. GHOSH		
CKD.	A. SAHOO	SCALE -	AS SHOWN		

NATIONAL ALUMINIUM CO LTD.	
SMELTER PLANT, ANGUL-759145	
TITLE:- GENERAL LAYOUT OF ANODE BAKING FURNACE - I BUILDING SECTION.	
DRG. No.	ABF-I/OPRN/GA/A1/11430
REVISION	0

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## Annexure - II

### **SPECIAL INSTRUCTIONS TO BIDDERS - COMMERCIAL**

#### **1.0 SCOPE OF PRE - BID MEET:**

1.1 Bidder is advised to visit and examine the Site, its surrounding and familiarize himself of the existing facilities and environment and collect all other information which he may require for preparing and submitting the bid and entering in to the contract. Claims and objections due to ignorance of existing conditions or inadequacy of information will not be considered after submission of the bid and during implementation.

1.2 The bidder or any of his personnel or agents will be granted permission by the Owner to enter upon his premises and land for the purpose of such inspection but only upon the explicit condition that the bidder, his personnel or agents will release and indemnify the owner and his personnel or agents from and against all liability in respect thereof and will be responsible for personnel injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, cost and expenses incurred as a result thereof.

#### **1.3 Name of Contact Person for Site Visit:**

(i) Mr. Bhabani Shankar Sahoo, DGM(Mech.-CRG)  
Smelter Plant, NALCO,  
Angul,  
Odisha – 759145  
Mob: +91 9437019284  
E-mail: [bhabani.sahoo@nalcoindia.co.in](mailto:bhabani.sahoo@nalcoindia.co.in)

(ii) Mr. Pramath Kumar Mohanty, GM(Mech.)  
Smelter Plant, NALCO,  
Angul,  
Odisha – 759145  
Mob: +91 9437079506  
E-mail: [pramath.mohanty@nalcoindia.co.in](mailto:pramath.mohanty@nalcoindia.co.in)

All technical clarifications should be addressed to above persons.

1.4 Bidder shall examine the bidding document thoroughly in all respect and if any conflict, discrepancy, error or omission is observed, bidder may request clarification within the cutoff date and 02 weeks prior to the bid closing date.

1.5 All commercial clarifications request shall be addressed to the following:

(i) Ms. Sumita Sahay, GM(Materials)  
National Aluminium Company Limited,  
Nalco Bhawean, P/1,  
Nayapalli, Bhubaneswar,  
Odisha - 751 013  
Mob: +91 9937307790  
E-mail: [sumita.sahay@nalcoindia.co.in](mailto:sumita.sahay@nalcoindia.co.in)

(ii) Mr. Mihir Behera, SM (Matls.),  
National Aluminium Company Limited,

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Nalco Bhawean, P/1,  
Nayapalli, Bhubaneswar,  
Odisha - 751 013  
Mob: +91 9437111103  
E-mail: [mihir.behera@nalcoindia.co.in](mailto:mihir.behera@nalcoindia.co.in)

- 1.6 A Pre-bid meeting will be arranged by the owner and consultant at Smelter Plant, Angul on technical and commercial issues after three weeks of issuance of tender. Following points are to be noted: -
- 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.
  - 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".
  - It may be noted that no clarification will be replied or entertained by the owner and consultant during "Pre bid meeting" if not submitted earlier, except in exceptional cases.
  - All the bidders should come prepared for site visit and they will be accompanied by authorized representative of the owner and consultant.
- 1.7 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.
- 1.8 Response to queries/ clarifications raised will be sent as expeditiously as possible. The response shall not form part of the tender document unless issued as an addendum/ amendment.
- 1.9 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.
- 2.0 Technical specifications should be strictly as per Annexure - I - Technical Specification of Tender Documents enclosed. In case of any deviation, please furnish the same clause-wise, in the deviation format of Annexure - I - Technical Specification. Any deviation mentioned elsewhere in the offer will not be considered.
- 3.0 The Questionnaire under the caption "Agreed Terms & Conditions (Import)"/ "Agreed Terms & Conditions (Indigenous)" are to be filled in & submitted along with the offer.
- 4.0 Bid should be submitted without any deviation to the bidding documents. In case of any deviation, deviation to bidding documents shall be submitted as per the pro-forma for deviations enclosed with Agreed terms and conditions questionnaire. Deviations , if any appearing anywhere else in the offer shall not be considered for evaluation and ordering.
- 5.0 The bidders are to furnish name and address of the official to whom correspondence should be sent including telephone number/ fax number and e-mail id. If e-mail id is not available, an undertaking is to be given that e-mail id is to be registered within 2 weeks of bid submission.

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- 6.0 Foreign bidders to quote prices in Single Foreign Currency preferably in **USD, GBP, CAD, EUR, CHF, JPY, NOK and AUD** only.
- 7.0 Foreign Bidder shall quote their prices on FOB sea port of exit as well as CFR Kolkata sea port basis indicating the firm ocean freight charges to Kolkata sea port separately. NALCO reserves the right to place order either on FOB basis or CFR basis. In case of acceptance of bid, Order will be placed on FOB basis and bidder will be required to furnish firm cargo details containing no. of packages, dimensions, net and gross weight, no. and types of containers required and port of shipment within **one month** of placement of order. Subsequently, the Order may be converted to CFR basis at Nalco's option within **one month** of submission of cargo details. Hence, quoted ocean freight charges to Kolkata sea port should remain valid for acceptance for a period of minimum **one month** from the date of submission of complete cargo details. The actual cargo shipped should not exceed the cargo details furnished in terms of volume, weight and no. of containers. In case the actual cargo dispatched exceeds the cargo details furnished, the extra freight incurred by Owner will be to Seller's account. In case the order is converted to CFR Kolkata basis, the free time for detention of the containers should not be less than 14 days.
- 8.0 To facilitate evaluation and comparison, NALCO will convert all bid prices of foreign Bidders expressed in the amounts in various currencies in which bid price is payable, to Indian Rupees based on Bill selling exchange rate of SBI or reference rate of Financial Benchmarks India Pvt. Ltd. (FBIL) as set up by Reserve Bank of India (RBI) prevailing as on date of price bid opening.
- 9.0 In case of indigenous vendors, prices should be quoted on F.O.R Destination at Smelter Plant, Angul, Odisha, India basis giving break-up of FOT dispatch point price, freight charges and applicable GST rate as per Price Schedule format.
- 10.0 GST Act. anti-profiteering provisions mandates that any reduction in tax rates or benefits of input tax credits be passed on to the consumer by way of commensurate reduction in prices. **Indigenous bidders to take note of the same and pass such benefits while quoting their price.**
- 11.0 The bidders registered under GST should provide their GSTIN along with a copy of the ARN with their bid.
- 12.0 **EVALUATION/ LOADING/ REJECTION CRITERIA:**
- 12.1 All evaluation shall be made on landed and erected on destination basis including design and engineering, supply of equipment & Spares (excluding Two Years O&M Spares and Consumables) etc. and all other construction, erection, installation, testing, commissioning supervision charges along with the taxes and duties for the same including dismantling, as per scope of Tender documents.
- 12.2 Arithmetical errors will be rectified on the following basis:-
- If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price will be corrected. If there is a discrepancy between the total amount and the sum of total prices, the sum of the total prices shall prevail and the total bid amount will be corrected. Further, if there is a discrepancy between the quoted lump sum price, and its separate break-up prices (if any), the quoted lump sum price shall prevail.

- 12.3 12.3 Supply prices shall be evaluated as follows:

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(i) **INDIGENOUS**

1.	FOT Despatch Point	: As quoted
2.	Freight Charges	: As quoted
3.	Total Price	: 1+2
4.	IGST/ CGST & SGST	: As per merit rate on 3
5.	Total Landed Cost	: 3+4
6.	Insurance to be borne by Nalco	: @ 0.02% on (5)
7.	Technical loadings, if any	: On FOT Despatch point price
8.	Commercial loading, if any	: On FOT Despatch point price
9.	Total after loading	: 6+7+8
10.	Less, Input Tax Credit	: (-4)
11.	Total Comparable Price	: 10+11

(ii) **IMPORTED**

1.	FOB Price	: As quoted
2.	Add Ocean freight charges to Kolkata Sea port	: Firm charges quoted
<b>Note:</b> In case firm ocean freight charges to Kolkata sea port not quoted by a vendor, loading shall be based on maximum ocean freight charges to Kolkata sea port quoted by other vendor from that region and in case there is no other offer from that region, loading will be based on estimation by NALCO.		
3.	Sub -Total (CFR)	: 1+2
4.	Marine Insurance	: 0.02% of CFR
5.	Sub-total (CIF)	: 3+4
6.	Custom duty	: Merit rate of Custom duty shall be considered
7.	Social Welfare Surcharge (SWS)	: @10% on (6)
8.	Total including Custom Duty & SWS	: 5+6+7
9.	IGST	: Merit rate of IGST shall be considered on (8)
10.	Landed cost	: 8+9
11.	Custom clearance, handling and transportation up to site	: @3% on 10
12.	Total Price	: 10+11
13.	Technical loadings, if any	: On FOB Supply Price
14.	Commercial loadings, if any	: On FOB Supply Price
15.	Total after loading	: 12+13+14
16.	Less, Input tax credit	: (-9)
17.	Total Comparable Price	: 15+16

12.4 All cost loadings will be calculated on F.O.T. despatch point.

12.5 No deviation to terms & conditions of the bid documents is allowed. Further Non acceptance of following commercial clauses shall lead to rejection of bid:

- (i) Bids that do not meet the qualification criteria as specified in the tender documents/ bid documents shall be summarily rejected.

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- (ii) A bid with incomplete scope of work and / or which does not meet the technical specifications and requirements as specified in the tender documents shall be considered as non-responsive and rejected.
- (iii) Prices must be furnished in accordance to the price schedule format enclosed and strictly based on the terms specified related to the bid prices in the instructions / conditions. Non compliance to this requirement shall make the bid liable for rejection.
- (iv) Bidders are requested to note that exceptions / modifications taken by them to the following clauses of General Conditions of Contract may result in rejection of their bid :-
  - (a) Proforma of Bank Guarantee for Contract - cum - Performance Bank Guarantee
  - (b) Contract Performance Guarantee clause
  - (c) Completion Schedule
  - (d) Period of validity of bid
  - (e) Guarantee / Warranty
  - (f) Replacement of Defective parts and materials

#### 13.0 ORDER OF PRECEDENCE:

In case of any difference between various sections of tender documents, the order of precedence shall be as follows:

- (i) Technical Specifications
- (ii) Price Schedule Format
- (iii) Special Instructions to Bidders
- (iv) Addendum to Tender Documents Commercial (Indigenous)
- (v) Tender documents commercial (Indigenous).

#### 14.0 REFERENCE LIST:

The bidders are requested to submit a list of buyers to whom the same or similar type of equipment have been supplied by them and which are under operation. The detailed addresses of such buyer's office/works including Telephone, Fax Nos. and Contact Person and Order Reference are to be mentioned.

#### 15.0 **ENGAGEMENT OF AGENTS/ MIDDLEMEN/ INTERMEDIARY/ CONSULTANTS/ SERVICE PROVIDERS:**

- 15.1 Any bidder, hereinafter referred as "Principal", who engages another entity (individual/ firm/ organization) to function, on their behalf, as Agents/ Middlemen/ Intermediary/ Consultants/ Service Providers, hereinafter referred as "Agent", against any tender (single/ limited / open) must disclose the name and address of such an agent in their offer or in course of tendering process prior to the placement of order by NALCO.
- 15.2 Agent shall file an authenticated Photostat copy duly attested by a Notary Public/ Original certificate of the principal confirming the agency agreement and giving the status, including the extent of authorization and authority given to commit the Principal, being enjoyed by the agent and the commission/remuneration/salary/ retainer-ship fee being paid by the principal to the agent before the placement of order by NALCO. Wherever the Agent is a foreign company, it shall be confirmed whether it is real substantial company and details of the same shall be furnished.

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- 15.3 Wherever the Agent have communicated on behalf of their principal, and the principal has stated that they are not paying any commission to the Agent, and the Agent is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the principal before the placement of order by NALCO.
- 15.4 Agent who submits offer, on behalf of their principal, against a tender must submit Letter of Authority of the Principal specifically authorizing the agent to make such an offer.
- 15.5 No entity can be allowed to function as agent on behalf of two principals against any particular tender.
- 15.6 Failure to furnish correct and detailed information as called for in above paragraphs render the concerned offer liable for rejection or in the event of a contract materializing; the same is liable to termination by NALCO. Besides this, there would be a scope for imposing a penalty of banning business dealings with NALCO and/or payment of a named sum as damages.

**16.0 CONTRACT PERFORMANCE GUARANTEE**

- 16.1 As a Contract Security, the successful Bidder, to whom the work is awarded, shall be required to furnish a Contract - cum - Performance Bank Guarantee (CPBG) in the attached Proforma in favor of the Owner within 30 days from the date of Letter of Intent/ Brief Order/ Purchase Order. Failure to submit the CPBG within the above time shall be treated as breach of contract and shall entitle the Owner to place the order on others at the risk and cost of successful bidder, in addition to forfeiture of Earnest money deposit. The guarantee amount shall be equal to 3% (three percent) of the total Contract Price (Supply + Transportation + Supervision + Site Work) and it shall guarantee the faithful performance of the contract in accordance with the terms & conditions specified in the documents and specifications. The guarantee shall be valid for the entire period of the Contract, namely till the end of Guarantee/ warranty period. The guarantee amount shall be payable without demur on demand to the Owner as per the currency in which it was submitted in the case of foreign bidders and in Rupees in the case of Indian bidders without any condition whatsoever. In the case of joint bidding by foreign party along with Indian party, the performance bank guarantee shall be submitted by the Party having unit responsibility from an Indian Nationalized Bank.
- 16.2 If the Bank Guarantee as stated above gets reduced / deducted for reasons of non-fulfillment of any contractual obligation before commencement of guarantee period, the Contractor shall immediately take action to increase the value of Bank Guarantee to 3% (three percent) of the contract price, to cover his warranties.
- 16.3 The Performance Guarantee will be returned to the Contractor without any interest at the end of warranty period subject to fulfillment of all contractual obligations by the Contractor.
- 16.4 On the breach of the contract by the supplier, Contract cum Performance Bank Guarantee shall be forfeited/ encashed whether or not the company has suffered a loss on this account & Purchase Order will be rescinded. Forfeiture/encashment of Contract Cum Performance Bank Guarantee does not prejudice NALCO'S rights to make risk purchase and recover damages on account of such risk purchase. However, credit may be given for the Contract cum Performance Bank Guarantee forfeited/ encashed in appropriate cases.

**17.0 PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA)**

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- 17.1 '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. Bidders offering imported products will fall under the category of non-local supplier. They cannot claim themselves as Class-I local supplier by claiming the services such as transportation, insurance, installation, commissioning, training and after sales service support like AMC/CMC etc. as local value addition.
- 17.2 'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-I local supplier' under this Order.
- 17.3 '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. Minimum local content for "Class-I local supplier" shall be 50%.
- 17.4 Order means as specified under Public procurement (Preference to Make in India) (PPP-MII) order 2017 dated 16.09.2020 & subsequent revisions thereof. In case of any ambiguity, the above order along with its subsequent revisions shall prevail.
- 17.5 Purchase Preference:
- Purchase preference shall be given to 'Class-I local supplier' only in procurements as specified here under.
  - The 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:
    - 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.
    - If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
    - In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.
    - Margin of Purchase Preference: The margin of purchase preference shall be 20%.
- 17.6 The 'Class-I local supplier' as per this provision at the time of tender, bidding or solicitation shall indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier'. 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 XX of the tender.

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- 17.7 In case of offer value in excess of Rs.10 Crore, the 'Class-I local supplier' shall require 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.
- 17.8 False declaration will be in breach of the code of integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

**18.0 PRICE VARIATION COMPENSATION (PVC)**

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, etc.

The following methodology shall be applicable for PVC clause both for UPWARD/DOWNWARD variation:

- 18.1 Price variation shall not be applicable for the price of items indicated in foreign currency in the contract.
- 18.2 No price variation shall be applicable for the cost of Free Issue Materials issued by NALCO.
- 18.3 Minimum percentage of variation, beyond which PVC clause will be admissible, is +/- 2% of the base price, calculated in quarterly basis.
- 18.4 15% of the quoted price is considered as fixed and not subject to price variation.
- 18.5 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.

AICPI-IW - All India Consumer Price Index (AICPI) for Industrial Workers (IW)

**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 - All India Wholesale Price Index (WPI)

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. 18.3 above.

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

**18.6.1 For Labour/Service Component(s):**

$$P = 0.85 \times V \times \frac{14}{100} \times \frac{(L1 - L0)}{L0}$$

Where,

P = Amount of Price variation

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

Lx = 15% (fifteen percentage) of labour/service component 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.

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

$$P = 0.85 \times V \times \frac{86}{100} \times \frac{(M1 - M0)}{M0}$$

Where,

P = Amount of Price variation

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

Mx = 85% (eighty five percentage) of material component 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.

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

- 18.7.1 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;

- 18.7.2 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;

- 18.7.3 For Contract(s) where completion period as stipulated is more than 36 months: 20% (Twenty percent) of the order price;

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

- 18.8.1 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.

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18.8.2 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. 18.5.

18.8.3 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.

18.8.4 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.

18.8.5 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.

18.8.6 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.

18.8.7 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:

18.8.7.1 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)

18.8.7.2 PVC is applicable for the work after revocation of force majeure up to the revised Contract Period as per Cl. 18.8.2.

18.8.7.3 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. 18.8.3, Cl. 18.8.4, Cl. 18.8.5 & Cl. 18.8.6.

18.9 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.

18.10 PVC will not be applicable for any type of advance payment.

18.11 CPBG will be applicable on basic PO value/amended basic PO value (if any) and PVC clause shall not be applicable on CPBG.

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18.12 PVC will not be applicable for retention amount.

18.13 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.

18.14 PRS/LD shall be applicable on the price as varied by the operation of PVC.

18.15 Final Value of contract will be the awarded value with price variation.

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### Annexure - III

## GENERAL CONDITIONS OF CONTRACT (GCC)



**NATIONAL ALUMINIUM COMPANY LIMITED**  
 (A GOVT. OF INDIA ENTERPRISE)  
 REGISTERED OFFICE: NALCO BHAVAN,  
 P/1, NAYAPALLI,  
 BHUBANESWAR - 751 013

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## 1.0 **SCOPE OF CONTRACT**

- 1.1 The scope of the Contract shall be the design, engineering, manufacture, supply and erection including testing, commissioning and PG tests of the equipments, in accordance with the specifications and documents, at Smelter Plant, Angul, Odisha.
- 1.2 The General Terms & Conditions shall form a part of the specifications and documents.

## 2.0 **CONTRACT DOCUMENTS**

- 2.1 The term 'Contract documents' shall mean and include the following which shall be deemed to form an integral part of the Contract:
- (a) Invitation to Bid, Instructions to Bidders, General Terms and Conditions of Contract and all other documents included therein.
  - (b) Contractor's bid proposal including the letters of clarifications thereto between the Contractor and the Consultant, representing Owner, prior to the Award of Contract.
  - (c) All the materials, literature, data and information of any sort given by the Contractor along with his bid, subject to the approval of the Consultant/ Owner.
  - (d) The 'CONTRACT AGREEMENT' between the Contractor and the Owner for the execution of the works.
  - (e) Specification of the equipments to be furnished and erected under the Contract as brought out in the accompanying technical specifications.
  - (f) Any agreed variations to the conditions of the documents and specifications and special terms and conditions of Contract, if any.

## 3.0 **DEFINITION OF TERMS**

- 3.1 'Owner' shall mean the National Aluminium Company Limited, Bhubaneswar, India (A Government of India Enterprise) and shall include their legal representatives, successors and permitted assigns.
- 3.2 'Contractor' or 'Manufacturer' shall mean the Bidder whose bid will be accepted by the Owner for the award of the works and shall include such successful Bidder's legal representatives, successors and permitted assigns.
- 3.3 Sub-Contractor' shall mean the person named in the Contract for any part of the works or any person to whom any part of the Contract has been sub-let by the Contractor with the consent in writing of the Owner and will include the legal representatives, successors and permitted assigns of such person.
- 3.4 Consulting Engineer/ Consultant' shall mean any person or Agency appointed by Owner and intimated to the Contractor and shall include their legal representatives, successors and permitted assigns who will be construed to be acting in all circumstances for and on behalf of the Owner.
- 3.5 The terms 'Equipment', 'Stores' shall mean and include plant, stores and materials to be provided by the Contractor under the Contract.

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- 3.6 'Works' shall mean and include the supply of equipment, labor and services, as per the technical specifications and complete erection, testing and commissioning of the equipments including activities covered under the clause 2.0 SCOPE OF PROPOSAL of Instructions to Bidders.
- 3.7 'Specification' shall mean the technical specifications forming a part of the Contract and such other schedules and drawings as may be mutually agreed upon.
- 3.8 'Site' shall mean and include the land and other places on, into or through which the additions to Aluminium Complex and the related facilities including the residential colony are to be constructed and any adjacent land, path, street or reservoir which may be allocated or used by the Consultant/ Owner or Contractor in the performance of the contract.
- 3.9 Manufacturer's Works or 'Contractor's Works' shall mean the place of work used by the Manufacturer, the Contractor, their Collaborators or Sub-Contractors for the performance of Works.
- 3.10 'Inspector' shall mean the Consultant/ Owner or any person nominated by the Consultant/ Owner from time to time, to inspect the equipments, stores or work under the Contract and/or the duly authorized representative of the Consultant/ Owner.
- 3.11 'Notice of Award of Contract'/ Fax of Intent/ Letter of Intent' shall mean the official notice issued by the Owner notifying the Contractor that his proposal has been accepted and that the Contractor is required to sign the Contract Agreement.
- 3.12 'Effective Date of Contract' shall mean the date on which Notice of Award of Contract/ Letter of Intent is issued to the successful Bidder.
- 3.13 'Month' shall ordinarily mean the calendar month, unless the context is obviously otherwise. 'Day' or 'Days' unless herein otherwise expressly defined shall mean calendar day or days of 24 hours each.
- 3.14 'Writing' shall include any manuscript, typewritten or printed statement, under or over signature and / or seal as the case may be.
- 3.15 When the words 'Approved', 'subject to Approval', 'Satisfactory', 'Equal to', 'Proper', 'Requested', 'As Directed', 'Where Directed', 'When Directed', 'Determined By', 'Accepted', 'Permitted' or words and phrases of like import are used, the approval, judgment, direction etc., is understood to be a function of the Consultant / Owner.
- 3.16 'Tests on Completion' shall mean such tests as prescribed in the Contract to be performed by the Contractor before the works are taken over by the Owner.
- 3.17 'Start-up' shall mean the time period required to bring the equipments covered under the Contract from an inactive condition, when construction is essentially complete, to the state ready for trial operation. The start -up period shall include preliminary inspection and check-out of equipment and supporting sub-systems initial operation of the complete equipments covered under the Contract to obtain necessary pre-trial operation data, perform calibration and corrective action, shut down inspection and adjustment prior to the trial operation period.
- 3.18 'Initial Operation' shall mean the first integral operation of the complete equipment covered under the Contract with sub-system and supporting equipment in service or available for service.

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- 3.19 'Trial Operation', 'Reliability Test', 'Trial Run', 'Completion Test' shall mean the extending period of time after the start-up period. During the trial operation period the unit shall be operated over the full load range. The length of Trial Operation shall be as specified elsewhere in the Contract.
- 3.20 'Performance and Guarantee Tests' shall mean all operational checks and test required to determine and demonstrate capacity, efficiency, and operating characteristics as specified in the Contract Documents.
- 3.21 'Commercial Operation' shall mean the condition of operation in which the complete equipment covered under the Contract is officially declared by the Owner to be available for continuous operation at different loads up to and including rated capacity.
- 3.22 The terms 'Final Acceptance' shall mean the Owner's written acceptance of the works performed under the Contract, after successful completion of Performance and Guarantee Tests.
- 3.23 'Warranty Period' shall mean the period during which the Contractor shall remain liable for repair or replacement of any defective part of the works performed under the Contract.
- 3.24 'Drawings', 'Plans' shall mean all
- Drawings furnished by the Consultant / Owner as a basis for proposals.
  - Supplementary drawings furnished by the Consultant / Owner to clarify and to define in greater detail the intent of the Contract.
  - Drawings submitted by the Contractor with his proposal provided such drawings are acceptable to the Consultant / Owner.
  - Drawings furnished by the Consultant / Owner to the Contractor during the progress of the work, and
  - Engineering data and drawings submitted by the Contractor during the progress of the work provided such drawings are acceptable to the consultant / Owner.
- 3.25 'Codes' shall mean the following, including the latest amendments, and / or replacements, if any, as applicable:
- Indian Boiler Act, 1923 and Rules and Regulations made there under.
  - Indian Electricity Act, 1905 and Rules and Regulations made there under.
  - Indian Factory Act, 1948 and Rules and Regulations made there under.
  - Indian Explosive Act, 1884 and Rules and Regulations made there under.
  - Indian Petroleum Act, 1934 and Rules and Regulations made there under.
  - A.S.M.E. Test Codes
  - A.I.E.E. Test Codes
  - American Society of Materials Testing Codes
  - Standards of the Indian Standards Institution
  - Other internationally approved standards and / or Rules and Regulations touching the subject matter of the contract.
- 3.26 Words importing the singular only shall also include the plural and vice versa where the context so requires.
- 3.27 Words importing 'Person' shall include firms, companies, corporations and associations or body of individuals, whether incorporated or not.

#### 4.0 **CONTRACTOR TO INFORM HIMSELF FULLY**

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The contractor shall be deemed to have carefully examined all Contract Documents to his entire satisfaction. If he shall have any doubt as to the meaning of any portion of the Contract Documents, he shall, before signing the contract, set forth the particulars thereof, and submit them to the Consultant / Owner in writing in sextuplicate in order that such doubt may be removed. The Consultant / Owner will provide such clarifications as may be deemed necessary, in writing to the Contractor which will be treated as final & binding on the Contractor. Any information otherwise obtained from the Consultant / Owner shall not in any way relieve the Contractor of his responsibility to fulfill his obligations under the contract.

## **5.0 CONTRACT AGREEMENT AND PERFORMANCE GUARANTEE**

The Contract Agreement shall be signed between the parties within 45 days from the date of Letter / Fax of Intent. The expenses for the preparation and stamping the contract agreements shall be to the account of the contractor. The Performance Guarantee shall be as per the terms prescribed in the Clause 17.0 of the Instructions to Bidders.

## **6.0 MANNER OF EXECUTION OF CONTRACT**

6.1 The Owner, after the issue of the Letter of Intent / brief order/Purchase order to the Contractor, will send one copy of the final agreement to the Contractor for his scrutiny and approval. The Contractor shall thereafter arrange to prepare the Contract Agreement, appropriately stamped and shall furnish to Owner Original with copies of the same. For this purpose the Contractor shall prepare a detailed deviation statement to tender documents and submit the same within 30 days of LOI / brief order/Purchase order. The Owner shall scrutinize the deviation statement immediately and finalize the contract document for execution.

6.2 The agreement, unless otherwise agreed to, shall be signed at the office on a date and time to be mutually agreed. The Contractor shall provide for signing of the Contract, appropriate power of attorney and other requisite materials.

## **7.0 EFFECT AND JURISDICTION OF CONTRACT**

7.1 The Contract shall be considered as having come into force from the date of the acceptance of Award of Contract / Letter of Intent.

7.2 The laws applicable to this Contract shall be the laws in force in India. The Courts of Bhubaneswar shall have exclusive jurisdiction in all matters arising under this Contract.

## **8.0 ASSIGNMENTS AND SUB-LETTING OF CONTRACT**

The Contractor may after informing the Consultant and getting his written approval, assign or sub-let the contract or any part thereof other than for raw-materials, for minor details or for any part of the plant for which the makers are named in the Contract, provided that any such assignment shall not relieve the Contractor from any obligation, duty or responsibility under the Contract. Any assignment as above, without the prior written approval of the Consultant shall be void.

## **9.0 PATENT RIGHTS AND ROYALTIES**

Royalties and fees for patents covering materials, articles, apparatus, devices, equipments or processes used in the Works shall be deemed to have been included in the Contract Price. The Contractor shall satisfy all demands that may be made at any time

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for such royalties or fees and he alone shall be liable for any damages or claims for patent infringements and shall keep the Owner and Consultant, indemnified in that regard. The Contractor shall, at his own cost and expenses, defend all suits or proceedings that may be instituted for alleged infringement of any patents involved in the works, and, in case of an award of damages, the Contractor shall pay for such an award. In the event of any suit or other proceedings instituted against the Owner, the same shall be defended at the cost and expenses of the Contractor who shall also satisfy / comply any decree, order or award made against the Owner. But it shall be understood that no such machine, plant, work, material or thing has been used by the Owner for any purpose or any manner other than that for which they have been furnished, and installed by the Contractor and specified under these specifications. Final payment to the Contractor by the Owner will not be made while any such suit or claim remains unsettled. In the event any apparatus or equipment or any part thereof furnished by the Contractor is in such suit or proceedings held to constitute infringement, and its use is enjoined, the Contractor shall, at his option, and at his own expense, either procure for the Owner the right to continue use of said apparatus, equipment or part thereof, replace it with non-infringing apparatus or equipment or modify it, so it becomes non-infringing.

## **10.0 TIME - THE ESSENCE OF CONTRACT**

- 10.1 The time and the date of completion of Works as stipulated in the Contractor's proposal and accepted by the Owner shall be deemed to be the essence of the Contract. The Contractor shall so organize his resources and perform his work as to complete it not later than the date agreed to. The time for completion shall be reckoned from the date of acceptance of the Letter of Intent by the Contractor.

## **11.0 PERT NETWORK**

The Contractor shall submit a detailed PERT network within the time frame agreed above consisting of adequate number of activities covering various key phases of the Works such as design, procurement, manufacturing, shipment and field erection activities within 15 (fifteen) days after the date of Notice of Award of Contract. This network shall also indicate the interface facilities to be provided by the Owner and the dates by which such facilities are needed. Contractor shall discuss the network so submitted with the Consultant / Owner and the agreed network which may be in the form as submitted or in revised form in line with the outcome of discussions shall form part of the Contract, to be signed within 30 (thirty) days from the date of Notice of Award of Contract. During the performance of the Contract, if in the opinion of the Consultant / Owner proper progress is not maintained suitable changes shall be made in the Contractor's operations to ensure proper progress.

The above PERT network shall be reviewed and periodic review reports shall be submitted by the Contractor as directed by the Consultant / owner.

## **12.0 CONTRACT PRICE**

The lump sum prices quoted by the Contractor in his bid with additions and deletions as may be agreed before signing of the Contract, for the entire scopes of the work viz. Supply and erection of equipments covered under the specification and documents shall be treated as the Contract Price.

## **12.1 ADJUSTMENT OF PRICES FOR WEIGHTS**

The total net binding weight of the Equipments is covered under the specification and documents. Should the total net weight of such actual supplies fall below 95% of the

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above weight, a deduction at the average price per tonne of Equipment shall be made for the difference between the binding weight and the net weight supplied. No adjustment shall be made if the total net weight of the actual supply exceeds the binding weight.

### **13.0 DEDUCTIONS FROM CONTRACT PRICE**

All costs, damages or expenses, which the Owner may have paid for which under the Contract, the Contractor is liable / will be liable, will be claimed by the Owner. All such claims shall be billed by the Owner to the Contractor regularly as and when they fall due. Such bills shall be supported by appropriate and certified vouchers or explanations, to enable the Contractor to properly identify such claims. Such claims shall be paid by the Contractor within 15 (fifteen) days of the receipt of the corresponding bills and if not paid by the Contractor within the said period, the Owner may then deduct the amount from any money due or becoming due by him to the Contractor under the Contract or may be recovered by actions of law or otherwise, including encashment of performance bank guarantee if the Contractor fails to satisfy the Owner of such claims.

### **14.0 PACKING, FORWARDING AND SHIPMENT**

#### **14.1 Foreign Contractors**

14.1.1 The Contractor wherever applicable shall after proper painting, pack and crate all equipments for sea shipment in a manner suitable for export to a tropical, humid climate region in accordance with the internationally accepted export practices and in such a manner so as to protect it from damage and deterioration in transit by road, rail and / or sea and during storage at the Site till the time of erection. The Contractor shall be held responsible for all damages due to improper packing.

14.1.2 The Contractor shall notify the Consultant / Owner of the date of each shipment from the port of embarkation as well as the expected date of arrival of such shipment at the designated port of arrival only for enabling the Owner to be prepared for any of his (Owner's) own Customs clearance formalities at the port of dis-embarkation.

14.1.3 The Contractor shall give complete shipping information concerning the weight, size, content of each package including any other information the Consultant / Owner may require.

#### **14.1.4 Foreign Invoice**

The following documents shall be air -mailed to the Owner within seven days from the date of shipment to enable the Owner to make progressive payments to the Contractor.

- Bill of Lading (2 non-negotiable copies)
- Invoice (2 copies)
- Test Certificate (2 copies) & Inspection Release Note
- Invoice for Ocean Freight (2 copies)

Also 2 sets of the above documents shall simultaneously be air mailed by the Contractor to the Consultants, if any.

#### **14.2 Indian Contractors**

14.2.1 Indian Contractors wherever applicable shall after proper painting, pack and crate all equipments in such a manner as to protect them from deterioration and damage during rail and road transportation and to the site and storage at the Site till the time of erection. The Contractor shall be held responsible for all damages due to improper packing.

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14.2.2 The Contractor shall notify the Consultant / Owner of the date of each shipment from his works and expected date of arrival at the Site for the information of the Consultant / Owner.

14.2.3 The Contractor shall also give all shipping information concerning the weight, size and content of each packing including any other information the Consultant / Owner may require.

#### **14.2.4 Domestic Invoice:**

The following documents shall be sent by registered post to the Owner within 3 days from the date of shipment, to enable the Owner to make progressive payments to the Contractor:

- Invoice (2 copies)
- Test Certificate (4 copies) & Inspection Release Note
- Railway Receipt / Lorry Receipt (2 copies)

Also 2 sets of the above documents shall simultaneously be airmailed by the Contractor to the Consultant.

14.3 The Contractor shall prepare detailed packing list of all packages and containers, bundles and loose material forming each and every consignment dispatched to Site. The Contractor shall further be responsible for making all necessary arrangements for loading, unloading and other handling right from his work till the Site and also till the equipment is erected, tested and commissioned. He shall be solely responsible for proper storage and safe custody of all equipments.

#### **15.0 DEMURRAGE, WHARFAGE, ETC.**

All demurrage, wharfage and other expenses incurred due to delayed clearance of the material or any other reason including delayed receipt of shipping documents, or mistake in the preparation of shipping documents etc. shall be to the account of the Contractor. However, in case of foreign Contractors the Consultant / Owner may offer assistance to the extent possible to the Contractor for getting the necessary documentary import clearance formalities completed at the port of discharge.

#### **16.0 INSURANCE**

16.1 The owner will arrange for INSURANCE of equipment and material, included under the scope of contract, to cover

- (a) Risks in transit by ship/ air between Contractor's port of shipment / airport and Indian Port of entry.
- (b) Risks in transit by rail/ road during inland transportation up to the Project Site.
- (c) Risks during storage and erection at the Project Site till the plant is fully commissioned under an open general policy. The Owner shall intimate the name of Insurance Company and other details in due course.

16.2 The Contractor shall furnish dispatch particulars of each consignment including its value immediately to the Insurance Company. If for any delay in intimating of dispatch particulars to the insurance on the part of the Contractor the claims for damages are rejected, the Contractor shall be fully responsible for replacement of the damaged equipment.

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- 16.3 The risks that are to be covered under the insurance shall include but not be limited to the loss of damage in transit, theft, pilferage, riot, civil commotion, weather conditions, accidents of all kinds, fire, war, risk, etc. The scope of such insurance shall cover the entire value of the Works from time to time.
- 16.4 In respect of equipment damaged in transit or during erection and commissioning, the Contractor shall replace them expeditiously and the replacement cost payable by the Owner shall be limited to the invoice cost of damaged equipment. In case of consignment received at the Project Site in outwardly sound condition of package but found shortage/damage on being opened the liability for free replacement will be accepted by the Contractor.

#### **17.0 LIABILITY FOR ACCIDENTS AND DAMAGES**

Under the Contract, the Contractor shall be responsible for loss or damage to the plant until the plant is taken over in accordance with Contract Conditions.

#### **18.0 LIQUIDATED DAMAGES FOR DELAY IN COMPLETION**

If the Contractor fails in the due performance of the contract to supply/erection/testing/commissioning the equipment within the time fixed in the contract or any extension thereof, he shall be liable at the discretion of the Engineer to the liquidated damages and not by way of penalty amounting to ½% (one half of one percent) of the contract price per week. The contractor's liability for delay shall not in any case exceed 10% (ten percent) of the total contract price.

If the Contractor shall fail to supply the equipment or any part thereof within a reasonable period after the expiry of the appointed time or extended time as may be provided for in the contract, the provision in clause No. 19 "Negligence" shall become operative, in addition to the liability of liquidated damages as above.

#### **19.0 CONTRACTOR'S DEFAULT**

- 19.1 If the Contractor neglects to execute the work with due diligence and expedition or refuses or neglect to comply with any reasonable orders given to him in writing by the Engineer-in-connection with the work, or contravene the provisions of the contract, the Purchaser may give notice in writing to the Contractor calling upon him to make good the failure, neglect or contravention complained of. Should the Contractor fail to comply with such notice within a period considered reasonable by the Purchaser from the date of service thereof, in the case of failure, neglect or contravention capable of being made good within that time or otherwise within such time as may in the opinion of the Purchaser be reasonably necessary for making it good, then and in such case the Purchaser shall have the option and be at liberty to take the work wholly or in part, out of the Contractor's hand and may carry on the work envisaged in the contract at a price with any other person or persons to execute the same or any part thereof and provide any other materials, tools, tackle or labor for the purpose of completing the works or part thereof. In such event the Purchaser shall without being responsible to the Contractor for fair wear and tear of the same be entitled to seize and take possession and have free use of all materials, tools, tackle or other things which may be on the Site, for use at any time in connection with the work to the exclusion of any right of the Contractor over the same and the Purchaser shall be entitled to retain and apply balance sum which may otherwise be then due on the contract by him to the Contractor or such part thereof as may be necessary, to the payment of the cost of execution of such work as aforesaid. If the cost of executing the work as aforesaid shall exceed the balance due to the Contractor and the Contractor fails to make good the deficit, the said materials, tools, tackle, construction

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plant or other things, the property of the Contractor as may not have been used up in the completion of the works, may be sold by the Purchaser and the proceeds applied towards the payments of such difference and the cost of and incidental to such sale. Any outstanding balance existing after crediting the proceeds of such sale shall be paid by the Contractor on the certificate of the Engineer, but when all expenses cost and charges incurred in the completion of the work are paid by the Contractor all such things not used up in the completion of the works and remaining unsold shall be removed by the Contractor. If the proceeds of the above sale of Contractor's materials, tools, tackle, construction plant etc. are insufficient to cover the executing the aforesaid work, the balance remaining after crediting the proceeds of such sale shall be recoverable from the Contractor by encashing the Bank Guarantee available / any other money payable by Purchaser or by action of law.

- 19.2 Notwithstanding anything contained above, the Purchaser may determine the contract due to any breach of failure of the contract without notice before determining the contract as above, if in the opinion of the Purchaser, the default or defaults committed by the Contractor is / are curable and can be cured by the Contractor if an opportunity is given to him, then the Owner may issue a notice in writing calling upon the Contractor to cure the default within such time as may be as specified in the notice.
- 19.3 In the event of termination, the Security Deposit will be forfeited without reference to the contractor and if no amount is available towards Security Deposit and identical amount is recoverable from the Contractor.

## **20.0 OUT - BREAK OF WAR**

- 20.1 If during the currency of the contract there shall be an out-break of war whether declared or not, in that part of the world which whether financially or otherwise materially affect the execution of the Works, the Contractor shall unless and until the Contract is terminated under the provisions in this clause continue to use his best endeavor to complete the execution of the Works provided always that the Owner shall be entitled, at any time after such out-break of war, to terminate the Contract by giving notice in writing to the Contractor and upon such notice being given the Contract shall, save as to the rights of the parties under this clause and to the operation of the clauses entitled Settlement of Dispute and Arbitration hereof, be terminated but without prejudice to the rights of either party in respect of any antecedent breach thereof.
- 20.2 If the Contract shall be terminated under the provisions of the above clause, the Contractor shall with all reasonable diligence remove from the Site all the Contractor's equipments and shall give similar facilities to his Sub-Contractors to do so.

## **20.3 Payment if the Contract is terminated**

If the contract shall be terminated as aforesaid, the Contractor shall be paid by the Owner (in so far as much amounts of items shall not have already been covered by payments on account made to the Contractor) for all work executed and accepted by the Owner prior to the date of termination at the rate and prices provided in the Contract and in addition to the following:

- (a) The amount payable in respect of any preliminary items so far as the work or service comprised therein has been carried out or performed and an appropriate portion as certified by the Owner of any such items of the work or service comprised in which has been partially carried out or performed.

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- (b) Any other expenses which the Contractor has expended for performing the works under the Contract subject to being duly certified by the Owner based on documentary evidence for having incurred such expenses.

20.4 In the event of any dispute in regard to the price of the works and portion of the payment to be made to Contractor, the matter will be referred to Arbitration as per the Clause 27. The decision of the Arbitrator(s) shall be final & binding on both the parties.

20.5 The Contractor will be further required to transfer the title and provide the Owner with the following in the manner and as directed by the Owner:

- (a) Any completed works.  
(b) Such partially completed work including drawings, information and Contract rights as the Contractor has specially performed, produced or acquired for the performance of the Contract.

## **21.0 FORCE MAJEURE**

21.1 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 authorities, compliance with any other or request of any Government authorities, act of war, rebellion, sabotage, fire, flood, explosions, riots or illegal strikes provided always that such occurrences result in impossibility of performance of the contract.

21.2 Only events of Force Majeure, which impedes the execution of the Contract at the time of its occurrence, shall be taken into cognizance.

## **22.0 TERMINATION OF CONTRACT ON OWNER'S INITIATIVE**

22.1 The Owner reserves the right to terminate the Contract either in part or in full due to reasons other than those mentioned under clause entitled Contractor's Default. The Owner shall in such an event give 15 (fifteen) days' notice in writing to the Contractor of his intention to do so.

22.2 The Contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and contracts to the extent they are related to the work terminated and upon terms satisfactory to the Owner, stop all further sub-contracting or purchasing activity related to the work terminated, and assist the Owner in maintenance, protection, and disposition of the Works acquired under the Contract by the Owner.

22.3 In the event of such a termination, the Contractor shall be paid compensation equitable and reasonable dictated by the circumstances prevalent at the time of termination.

## **23.0 NO WAIVER OF RIGHTS**

Neither the inspection by the Owner or the Consultant or any of their officials, employees, or agents nor any order by the Owner or the Consultant for payment of money or any payment for or acceptance of, the whole or any part of the Works by the Owner or the Consultant, nor any extension of time, nor any possession taken by the Consultant shall operate as a waiver of any provision of the Contract or of any power herein reserved to the Owner, or any right to damages herein provided, nor shall any waiver of any breach in the Contract be held to be a waiver of any other or subsequent breach.

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## **24.0 CERTIFICATE NOT TO AFFECT RIGHT OF OWNER AND LIABILITY OF CONTRACTOR**

No interim payment certificate of the Owner, nor any sum paid on account, by the Owner, nor any extension of time for execution of the works granted by the Consultant / Owner shall affect or prejudice the rights of the Owner against the Contractor or relieve the Contractor of his obligations for the due performance of the Contract, or be interpreted as approval of the Works done or of the equipment supplied and no certificate shall create liability in the Owner to pay for alterations, amendments, variations or additional Works not ordered. In writing, by the Consultant / Owner or discharge the liability of the Contractor for the payment of damages whether due, ascertained, or certified or not or any sum against the payment of which he is bound to indemnify the Owner, nor shall any such certificate nor the acceptance by him of any sum paid on account of otherwise affect or prejudice the rights of the Contractor against the Owner.

## **25.0 SETTLEMENT OF DISPUTE**

- 25.1 Except as otherwise specially provided in the Contract all disputes concerning questions of fact arising under the Contract shall be decided by the Owner subject to a written appeal by the Contractor to the Owner, whose decision shall be final to the parties hereto.
- 25.2 Any dispute or differences including those considered as such by only one of the parties arising out of or in connection with the Contract shall be to the extent possible settled amicably between the parties.
- 25.3 If amicable settlement cannot be reached then all disputed issues shall be settled by arbitration as provided in clauses 26 below.

## **26.0 ARBITRATION**

- 26.1 All disputes or differences arising under the contract whether during or after completion of the contract or whether before or after determination, for 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 CMD NALCO who shall be 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 select 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 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 to / unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever sole arbitrator shall be appointed as aforesaid. The work under the contract shall not be stopped during the arbitration proceedings.

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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 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 cost 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 and 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 and Conciliation Act, 1996 (Amendment Act, 2015) or any statutory modification or re-enactment thereof and the rules made there under, and for the time being in force, shall apply to the Arbitration proceeding under this clause.

For Public Sector Enterprises guidelines as per circular of BPE No. 15.9.86 BPE (FIN), dated 30.3.89 as amended from time to time will be applicable for resolving any disputes.

## **27.0 GRAFTS AND COMMISSIONS etc.**

Any graft, commissions gift or advantage given, promised or offered by or on behalf of the Contractor or his partner, agent, officers, director, employee or servant or any one on his or their behalf in relation to the obtaining or to the execution of this or any other Contract with the Owner, shall, in addition to any criminal liability which it may incur, subject the Contractor to the cancellation of this and all other Contracts and also to payment of any loss or damage to the Owner resulting from any cancellation. The Owner shall then be entitled to deduct the amounts so payable from any money otherwise due to the Contractor under the Contract.

## **28.0 LANGUAGE AND MEASURES**

All documents pertaining to the Contract including specifications, schedule, notices, correspondence, operating and maintenance instructions, drawings or any other writing shall be written in English language. The Metric System of measurement shall be used in the Contract.

## **29.0 TRANSFER OF RISK / TITLE**

29.1 The passage of risk / Ownership from the CONTRACTOR and the Sub-Contractor as the case may be, to the PURCHASER, shall be governed by the following:

29.2 The title to all imported Materials, Delivered by the CONTRACTOR in terms of this Agreement, shall pass on to the PURCHASER at the time the said Materials have passed the rail of the carrying Vessel at the Port of Shipment.

29.3 In respect of Imported Materials directly dispatched to Sub-Contractor's works for further processing, notwithstanding the fact that the title for such Materials shall have passed to the PURCHASER at the time the said Materials have passed the rail of the carrying Vessel

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at the port of shipment. The CONTRACTOR shall remain responsible for such Materials, till the time of their arrival at the Site.

- 29.4 The title to all Indian materials, delivered by the CONTRACTOR, in terms of this Agreement, shall pass to the PURCHASER on its being handed over to the nominated transporter.

### **30.0 RELEASE OF INFORMATION**

The Contractor shall not communicate or use in advertising, publicity, sales releases or in any other medium, photograph or other reproduction of the works under this Contract or descriptions of the Site, dimensions, quantity, quality or other information, concerning the Works unless prior written permission has been obtained from the Owner.

### **31.0 CONSTRUCTION OF THE CONTRACT**

- 31.1 Notwithstanding anything contained elsewhere, this Contract shall be read and construed as a Divisible Contract.

In case of a joint bid submitted under joint participation between the Foreign and Indian Bidders, three separate contracts will be awarded: One between Owner and the Foreign Contractor covering foreign portion and Second between Owner and the Indian Contractor covering Indian rupee portion. One between all the three parties.

- 31.2 The Contract shall in all respects be construed and governed according to Indian Laws.

### **32.0 COMPLETION OF CONTRACT**

Unless otherwise terminated under the provision of any of the relevant clause, this Contract shall be deemed to have been completed at the expiration of the Guarantee Period as provided for under the clause entitled 'Guarantee'.

### **33.0 ENFORCEMENT OF TERMS**

The failure of either party to enforce at any time any of the provisions of this Contract or any rights in respect thereto or to exercise any option herein provided, shall in no way be construed to be a waiver of such provision, rights options or in any way to affect the validity of the Contract. The exercise by either party of any of its rights herein shall not preclude or prejudice either party from exercising the same or any other right it may have hereunder.

### **34.0 OWNER's / CONSULTANT's DECISION**

- 34.1 In respect of all matters which are left to the decision of the Consultant / Owner including the granting or withholding of the certificates, thereon Consultant / Owner shall, if required to do so by the Contractor, give in writing a decision thereon.
- 34.2 If in the opinion of the Contractor, a decision made by the Consultant / Owner is not in accordance with the meaning and intent of the Contract, the Contractor may file with the Consultant / Owner within 15 (fifteen) days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered as acceptance of the Consultant's / Owner's decision and the decision shall become final and binding.

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- 34.3 The Consultant's / Owner's decision and the filing of the written objection thereto shall be a condition precedent to the right to request for Arbitration. It is the intent of the agreement that there shall be no delay in the execution of the works and the decision of the Consultant / Owner as rendered shall be promptly observed.

### **35.0 CO-OPERATION WITH OTHER CONTRACTORS AND CONSULTING ENGINEER**

The Contractor shall agree to co-operate with the Owner's, other Contractors and Consulting Engineers and freely exchange with them such technical information as is necessary to obtain the most efficient and economical design and to avoid unnecessary duplication of efforts.

The Consultant shall be provided with four copies of all correspondence addressed by the Contractor to other Sub-Contractors and Consulting Engineers in respect of such exchange of Technical Information.

### **36.0 TRAINING OF OWNER'S PERSONNEL**

- 36.1 The Contractor shall undertake to train, free of cost, engineering personnel selected and sent by the Owner at the Works of the Contractor unless otherwise specified in the Technical Specifications. The period and the nature of training for the individual personnel shall be agreed upon mutually between the Contractor and the Owner. These engineering personnel shall be given special training in the shops, where the equipment will be manufactured and / or in their collaborator's works and where possible, in any other plant where equipment manufactured by the Contractor or his collaborators is under installation or test to enable those personnel to become familiar with the equipment being furnished by the Contractor.
- 36.2 All traveling and living expenses for the engineering personnel to be trained during the total period of training will be borne by the Owner. These engineering personnel while undergoing training shall be responsible to the Contractor for discipline.
- 36.3 In the event of the Owner, for any reason, failing to avail of the training facilities, he shall not be entitled for any rebate whatsoever on this account.

### **37.0 SUSPENSION OF WORK**

- 37.1 The Consultant / Owner reserves the right to suspend and reinstate execution of the whole or any part of the Works without invalidating the provisions of the Contract. Orders for suspension or re-instatement of the works will be issued by the Consultant to the Contractor in writing. The time for completion of the Works will be extended for period equal to duration of the suspension.
- 37.2 Any necessary and demonstrable costs incurred by the Contractor as a result of such suspension of the Works will be paid by the Owner, provided such costs are substantiated to the satisfaction of the Owner. The Owner shall not be responsible for any liabilities if suspension or delay is due to some default on the part of the Contractor or his Sub-Contractor.

### **38.0 POWER TO VARY OR OMIT WORK**

- 38.1 No alterations, amendments, omissions, suspensions or variations of the Works (hereinafter referred to as 'Variation' under the Contract as detailed in the Contract Documents), shall be made by the Contractor except as directed in writing by the Consultant/Owner, but the Consultant/Owner shall have full power, subject to the

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provision hereinafter contained from time to time during the execution of the Contract, by notice in writing, to instruct the Contractor to make such variation without prejudice to the Contract. The Contractor shall carry out such Variations occurred in the Contract Documents. If any suggested Variation would, in the opinion of the Contractor, if carried out, prevent him from fulfilling any of his obligations or guarantees under the contract he shall notify the Consultant/Owner thereof in writing and the Consultant/Owner shall decide forthwith whether or not, the same shall be carried out and if the Consultant/Owners confirms his instructions, Contractors, obligations and guarantees shall be modified to such an extent as may be mutually agreed. Any agreed difference in cost occasioned by any such variation shall be added to or deducted from the Contract Price as the case may be.

- 38.2 In the event of the Consultant / Owner requiring any Variation, such reasonable and proper notice shall be given to the Contractor to enable him to work his arrangements accordingly, and in cases where goods or materials are already prepared or any design, drawings or pattern made or work done requires to be altered, a reasonable and agreed sum in respect thereof shall be paid to the Contractor.
- 38.3 In any case in which the Contractor has received instructions from the Consultant / Owner as to the requirement of carrying out the altered or additional substituted work which either then or later on, will in the opinion of the Contractor, involve a claim for additional payment, the Contractor shall immediately and in no case later than 30 (thirty) days, after receipt of the instructions, advise the Consultant / Owner to that effect. But the Owner shall not become liable for the payment of any charges in respect of any such Variations, unless the instructions for the performance of the same are confirmed in writing, by the Consultant / Owner.
- 38.4 If any Variation in the Works, results in reduction of Contract price, the parties shall agree in writing, as to the extent of any change in the price, before the Contractor proceeds with the change.
- 38.5 In all the above cases, in the event of a disagreement as to the reasonableness of the said sum, the decision of the Consultant / Owner shall prevail.

### **39.0 GUARANTEE**

- 39.1 The Contractor shall warrant that the equipments will be new and in accordance with the Contract Documents and be free from defects in material and workmanship for a period of 12 (twelve) calendar months commencing immediately upon the satisfactory completion of the performance guarantee tests or 24 (twenty four) months from the date of completion of erection whichever expires earlier. The Contractor's liability shall be limited to the replacement of any defective parts in the equipments of his own manufacture or those of his sub- Contractor, under normal use and arising solely from faulty design, materials and / or workmanship provided always that such defective parts are repairable at the Site and are not in the meantime essential in the commercial use of the plant. Such replaced defective parts shall be returned to the Contractor unless otherwise arranged. No repairs or replacement shall normally be carried out by the Consultant / Owner, when the plant is under the supervision of the Contractor's supervisory engineers.
- 39.2 In the event of an emergency where, in the judgment of the Consultant / Owner, delay would cause serious loss or damage, repairs or adjustments may be made by the Consultant / Owner or a third party chosen by the Consultant / Owner without advance notice to the Contractor and the cost of such work shall be paid by the Contractor. In the event such action is taken by the Consultant / Owner, the Contractor will be notified

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promptly and he shall assist wherever possible in making the necessary corrections. This shall not relieve the Contractor's liability under the terms and conditions of the contract.

- 39.3 If it becomes necessary for the Contractor to replace or renew any defective portions of the plant under this clause, the provisions of this clause shall apply to the portions of the plant so replaced or renewed until the expiration of 12 (twelve) months from the date of such replacement or renewal. If any defects be not remedied within a reasonable time, the Consultant / owner may proceed to do the work at the Contractor's risk and costs, but without prejudice to any other rights which the Owner may have against the Contractor in respect of such defects.

The repaired or new parts will be supplied and erected free of cost by the Contractor. If any repair is carried out on his behalf at the Site, the Contractor shall bear the cost of such repair. In case of Imported Items Contractor shall be responsible for all cost up to erection including import duty, clearing, forwarding, transport expenses etc.

- 39.4 The cost of any special or general overhaul rendered necessary during the maintenance period due to defects in the plant or defective work carried out by the Contractor, the same shall be borne by the Contractor.
- 39.5 The acceptance of the equipment by the Engineer shall in no way relieve the Contractor of his obligation under this clause.
- 39.6 In the case of those defective parts which are not repaired at Site but are essential for the commercial operation of the equipment, the Contractor and the Consultant / Owner shall mutually agree to a program of replacement or renewal which will minimize interruption to the maximum extent, in the operation of the equipment.
- 39.7 At the end of the Guarantee Period, the Contractor's liability ceases except for latent defects in respect of goods supplied by Sub- Contractors to the Contractor where a longer guarantee (more than 12 months) is provided by such Sub-Contractors, the Owner shall be entitled to the benefit of such longer guarantees.

#### **40.0 REPLACEMENT OF DEFECTIVE PARTS AND MATERIALS**

- 40.1 If during the progress of the Works the Consultant / Owner shall decide and inform in writing to the Contractor, that the Contractor has manufactured any plant or part of the plant unsound or imperfect or has furnished the plant inferior than the quality specified, the Contractor on receiving details of such defects or deficiencies shall at his own expenses within 7 (seven) days of his receiving the notice, or otherwise, within such time as may be reasonably necessary for making it good proceed to alter, re-construct or remove such work and furnish fresh equipments up to the standards of the specifications. In case the Contractor fails to do so, the Consultant / Owner may on giving the Contractor 7 (seven) days' notice in writing of his intentions to do so, proceed to remove the portion of the works so complained of and at the cost of the Contractor, perform all such work or furnish all such equipments provided that nothing in the clause, shall be deemed to deprive the Owner of or affect any rights under the Contract which the Owner may otherwise have in respect of such defects and deficiencies.
- 40.2 The Contractor's full and extreme liability under this clause shall be satisfied by the payments to the Owner of the extra cost, of such replacements procured including erections as provided for in the Contract, such extra cost being the ascertained difference between the price paid by the Owner for such replacements and the Contract Price portion for such defective plants and repayments of any sum paid by the Owner to the Contractor in respect of such defective plant. Should the Owner not so replace the defective plant

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the Contractor's extreme liability under this clause shall be limited to the repayment of all sums paid by the Owner under the Contract for such defective plant.

#### **41.0 DEFENCE OF SUITS**

If any action in court is brought against the Owner or Consultant or an officer or agent of the Owner, for the failure, omission or neglect on the part of the Contractor to perform any acts, matters, covenants or things under the Contract, or for damage or injury caused by the alleged omission or negligence on the part of the Contractor, his agents, representatives or his Sub- Contractors, workmen, suppliers or employees, the Contractor shall in such cases indemnify and keep the Owner, and the Consultant and / or his representative harmless from all losses, damages, expenses or decrees arising out of such action.

#### **42.0 LIMITATIONS 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.

#### **43.0 FOREIGN FIELD PERSONNEL**

The Contractor shall submit to the Consultant / Owner a complete list of foreign field personnel (including necessary data as may be required by Consultant / Owner) required for the performance of the works in India. He shall also intimate the program of their visit to India and departure from India during the pendency of the Contract. The Owner will have the right to review the list of such personnel and ask for increase in the strength or re-schedule the visits of such personnel if in the opinion of the Engineer, the list of personnel mentioned is not sufficient for effective performance of the Contract.

#### **44.0 TAXES, PERMITS & LICENCES**

The Contractor shall be liable and pay all non-Indian taxes, duties, levies, lawfully assessed against the Owner in pursuance of the Contract. In addition the Contractor shall be responsible for payment of all Indian duties, levies and taxes lawfully assessed against the Contractor for his personal effects only.

#### **45.0 PROGRESS REPORTS AND PHOTOGRAPHS**

During the various stages of the Works in pursuance of the Contract, the Contractor shall at his own cost submit periodic progress reports as may be reasonably required by the Consultant / Owner with such materials as charts, net-works, photographs, test certificates etc. Such progress reports shall be in the form and size as may be required by the Consultant and shall be submitted in at least 3 (three) copies.

#### **46.0 SPARES**

- 46.1 The Contractor shall guarantee the Owner that before going out of production of Spare Parts for the equipment furnished and erected he shall give at least 12 (twelve) months advance notice to the Owner so that the latter may order his requirement of Spares in one lot, if he so desires.

#### **47.0 PAYMENT**

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- 47.1 The payment to the Contractor for the performance of the Works under the Contract will be made by the Owner as per the guidelines and conditions specified herein. All payments made during the Contract shall be on account payments only. The final payment will be made on completion of all the Works and on fulfillment by the Contractor of all his liabilities under the Contract.

**47.2 Currency of Payment:**

The payments for the foreign currency portion of the Contract price will be made in the currency of the bid. If the bid is in a currency other than that of the country of origin of goods, payment may be made in an amount equivalent to the bid price in the currency of the country of origin. The Indian Rupee portion of Contract Price stated in the Contractor's bid will be paid in Indian Rupee.

**47.3 Due Dates for Payment:**

Owner will make progressive payment as and when the payment is due as per the terms of payment set forth in the Contract. Payment other than that under the Letter of Credit will become due and payable by the Owner within 30 (thirty) days from the date of receipt of Contractor's bill / invoice / debit note by the Owner, provided the documents submitted are complete in all respects.

**47.4 Payment Schedule:**

The Contractor shall prepare and submit to the Consultant / Owner for approval, a break-up of the Contract Price. This Contract Price break-up shall be inter-linked with the agreed detailed PERT network of the Contractor setting forth his starting and completion dates for the various key phases of Works. Any payment under the Contract shall be made only after the Contractor's price break-up is approved by the Consultant. The aggregate sum of the Contractor's price break-up shall be equal to the total Contract Price.

**47.5 Application for Payments:**

- 47.5.1 The Contractor shall submit to the Owner separate applications for payments in different currencies whenever payment is to be made in more than one currency.

- 47.5.2 Each such application shall state the amount claimed and shall set forth in detail, in the order of the payment Schedule, particulars of the Works including the Works executed at Site and of the equipments shipped / brought on to the Site pursuant to the Contract up to the date mentioned in the application and for the period covered since the last preceding certificate, if any.

- 47.5.3 Every interim payment certificate shall certify the Contract value of the Works executed up to the date mentioned in the application for the payment certificate.

**47.6 Mode of Payment:**

- 47.6.1 In the case of Foreign Vendors the Owner will establish an irrevocable Letter of Credit in favor of the Contractor through the Owner's Bank in India, valid for the completion period agreed to between the Contractor and the Owner. The payments, due on completion of various activities from CIF point (Indian Port of Entry) up to & including handing over the Plant / System to the Owner, shall be progressively paid direct to the Contractor by the Owner.

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47.6.2 In the case of Indian Vendors, payment shall be made against submission of documents either directly to Owner or through Owner's Bankers.

#### 47.7 Terms of Payment:

47.7.1 The terms of payment for the price-components of the equipment and its erection are detailed herein for each equipment package. A certain percentage of the equipment and erection costs, for each package shall be paid as initial advance on fulfillment of the following, by the Contractor.

- (i) For the price - component of equipment:
  - (a) Acceptance of Letter of Intent
  - (b) Submission of an unconditional Bank Guarantee covering the advance amount.
- (ii) For the erection price - components
  - (a) On establishing his office at Site preparatory to mobilization of his erection establishment, and
  - (b) Submission of an unconditional Bank Guarantee for an equivalent amount.

47.7.2 All further payments under the Contract shall be made as stipulated in the technical specifications and after signing the Contract.

#### 47.7.3 Ocean Freight & Marine Insurance:

In case of foreign Bidders, the Ocean Freight and Marine Insurance charges shall be paid on production of invoices, evidence of shipment and other supporting documents for Marine Insurance and Ocean Freight Price Components. In case of marine insurance, however, the total of all payments shall not exceed the total amount quoted by the Contractor in his bid for marine insurance.

#### 48.0 COMPLETENESS OF CONTRACT

All equipment, mounting, fitting, accessories or apparatus which may not have been specifically mentioned, but which are usual or necessary in the equipment or for the efficient working of the plant shall be deemed to have been included in Contract and shall be provided by the Contractor without any extra charge. All plant and apparatus shall be complete in all details whether such details are mentioned in this Contract or not. The decision regarding the necessity or otherwise for any accessory for efficient operation of the plant shall be mutually arrived at by the Owner / Consultant and the Contractor. It shall be ensured that the equipment supplied in respect to each of equipment envisaged in Contract is complete and composite. In case of a joint bid which is ultimately split into two separate contracts, the completeness of the Contract shall imply that any one Contractor shall supply, after taking into account the supplies covered under the contract with the other Contractor, all the rest of the equipment and accessories required for satisfactory commissioning and efficient operation of the total system, whether specifically mentioned or not in the Contract.

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## **ANNEXURE - IV**

### **ADDENDUM TO TENDER DOCUMENTS (COMMERCIAL)**

#### **1.0 SCOPE**

- 1.1 The subject tender is being issued to main bidder with all the contractual responsibilities for the execution of entire work resting on the main bidder. Main bidder in turn may associate reputed Indian company for carrying out the works and supplies from India including site activities at the Project Site.
- 1.2 The overall responsibility of the scope of work / supply covered under the above separate contracts including project management up to successful Commissioning and handing over of plant/equipment/system to the Owner shall be with the main bidder. A separate agreement/MOU amongst the main bidder and Indian associate company may be signed before order finalization.
- 1.3 The prospective associate Indian Company's credentials should be informed to the Owner for their acceptance. Necessary commercial data for evaluation of Indian Associate (as mentioned below) should be furnished. Bidder is also expected to be ready with name of alternative associate, in case proposed Indian Associate is not acceptable.
  - (i) Document showing annual turnover for similar works for the past three years.
  - (ii) Annual Report, certified profit and loss statement etc. for the last three years.
  - (iii) Concurrent commitments giving details namely start date, value, expected date of completion, and contact person with Telephone No. etc.
  - (iv) Solvency certificate from Nationalised / Scheduled Bank.
- 1.4 The vendor has to submit the itemized list of Two Years O&M Spares & Consumables in their offer. The itemized un - priced list is to be submitted in Part - I Bid and the itemized price list is to be submitted in the Part - II Bid. Vendor also has to submit estimated requirements of spares consumption per annum. The Two Years Spares & Consumables shall not be considered for comparison. The order for these spares shall be placed separately. Hence, the quoted prices of Two Years Spares shall be valid for **six months** beyond the validity of main offer.

#### **2.0 PAYMENT TERMS**

##### **2.1 FOR INDIAN VENDORS:**

##### **(A) FOR SUPPLY PORTION (i.e., EQUIPMENT'S, ACCESSORIES, ETC.):**

- (i) Payment for 10% (ten percent) of the basic supply order value (excluding applicable taxes and freight charges) shall be paid as interest bearing advance against submission of advance bank guarantee (ABG) for 110% of advance amount valid up to delivery period plus one-month and CPBG. (*refer para 2.3 below for guidelines for release of interest bearing advance amount*)
- (ii) Payment for 10% (ten percent) of the basic supply order value (excluding applicable taxes and freight charges) shall be made against submission of project schedule, quality plan, document lists for the project, etc. with duly certification of Engineer-in-charge (EIC) from NALCO and against submission of advance bank

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guarantee (ABG) for equivalent amount which will remain valid till dispatch of materials on FOT destination basis.

- (iii) Payment for 60% (sixty percent) of the basic supply order value (excluding applicable taxes) along with 100% taxes and freight charges shall be made on prorated basis against dispatch documents through bank.
- (iv) Payment for 10% (ten percent) of the basic supply order value (excluding applicable taxes and freight charges) shall be made after completion of mechanical erection against submission of certificate duly certified by Engineer-in-charge from NALCO.
- (v) Balance 10% (ten percent) of the basic supply order value (excluding applicable taxes) shall be made after PG test and final handing over of system to the Owner at site.

**(B) FOR SERVICES PORTION (i.e. ERECTION, COMMISSIONING, TESTING, DISMANTLING, ETC.):**

100% (hundred percent) payment shall be made within 30 days based on site activities against submission of monthly progress bills duly certified by Engineer-in-Charge from NALCO.

**NOTE:**

1. All payments shall be through Bank transfer. All payments are subject to submission of acceptable Contract -cum - Performance Bank Guarantee (CPBG) for 3% of Total Order Value within 30 days of placement of LOI/Purchase order, in Nalco's prescribed format. Direct Payments will be made through e-payment mode through SBI as well as NEFT/ RTGS mode through designated enabled branches. Sellers are requested to furnish duly filled Bank Mandate form in duplicate with due authentication from their Banker, as per format attached with tender documents.

**2.2 FOR FOREIGN VENDORS:**

**(A) FOR SUPPLY PORTION (i.e., EQUIPMENT'S, ACCESSORIES, ETC.):**

- (i) Payment for 10% (ten percent) of the basic supply order value (excluding freight charges, in case of CFR order) shall be paid as interest bearing advance against submission of advance bank guarantee (ABG) for 110% of advance amount valid up to delivery period plus one-month and CPBG. *(refer para 2.3 below for guidelines for release of interest bearing advance amount)*
- (ii) Payment for 10% (ten percent) of the basic supply order value (excluding freight charges, in case of CFR order) shall be made against submission of project schedule, quality plan, document lists for the project, etc. with duly certification of Engineer-in-charge (EIC) from NALCO and against submission of advance bank guarantee (ABG) for equivalent amount which will remain valid till dispatch of materials on FOB basis.
- (iii) Payment for 60% (sixty percent) of the basic supply order value along with 100% freight charges (in case of CFR order) shall be made on prorated basis against presentation of shipping documents.

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- (iv) Payment for 10% (ten percent) of the basic supply order value (excluding freight charges) shall be made after completion of mechanical erection against submission of certificate duly certified by Engineer-in-charge from NALCO.
- (v) Balance 10% (ten percent) of the basic supply order value shall be made after PG test and final handing over of system to the Owner at site.

**(B) FOR SERVICES PORTION (i.e. ERECTION, COMMISSIONING, TESTING, DISMANTLING, ETC.):**

100% (hundred percent) payment shall be made within 30 days based on site activities against submission of monthly progress bills duly certified by Engineer-in-Charge from NALCO.

**NOTE:**

- (i) All payment for supply shall be through Irrevocable Letter of Credit (LC) or through cash against Documents (CAD) basis. The letter of Credit shall be opened by Buyer's bank in India (State Bank Of India, Commercial Branch, Unit-II, Ashok Nagar, Bhubaneswar-751009, ODISHA, INDIA, SWIFT code: SBININBB119) and shall be advised through buyer's corresponding bank in Seller's country. Hence, the L/C shall not be confirmed. In case any bidder insists on confirmation, charges towards confirmation shall be borne by them. The Contract-cum- Performance Bank Guarantee (CPBG) for 3% of Total Order Value shall have to be furnished within 30 days of placement of order to facilitate opening of L/C.
- (ii) **Tax Residence Certificate:** As per Indian Income Tax rules for foreign payment, seller has to furnish Tax Residence Certificate issued by Tax Authority of his country from where his office/ establishment is located. The Tax Residence Certificate is required for release of payment by Banker. The Tax Residence Certificate is to be issued in English Language. If the same is issued in any other Language, the seller must translate it to English Language & submit for release of payment.
- (iii) For import consignments, all taxes, duties and levies of any kind that may be payable outside India shall be borne by the Seller. All taxes and duties payable in India on the supply material shall be payable by the Purchaser

### 2.3 GUIDELINE FOR PAYMENT OF MOBILISATION ADVANCE

Interest bearing recoverable Advance shall be paid to the Contractor up to 10% of Contract Value after the following conditions have been fulfilled:

- (i) Advance shall be paid after acceptance of order and submission of confirmed Bank Guarantee for Advance amount and contract-cum-performance bank guarantee i.e., CPBG@3%.
- (ii) Contractor shall submit Bank Guarantee(s) for an amount equivalent to 110% of the advance amount valid up to delivery period plus one-month from any bank as per list provided by the owner and in a format acceptable to the owner.
- (iii) The contractor shall at the request of the owner suitably extend the validity of the Bank Guarantee(s) for such period as may be required.
- (iv) Contractor may submit multiple BGs for facilitating release of BG amount equivalent to advance realized from bills.
- (v) The Rate of Interest shall be variable during tenure of contract. The Rate of Interest applicable on balance amount of Advance, applicable for the financial year

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shall be fixed to MCLR (1-year-tenor) of SBI declared in the month of April of that financial year plus 1%.

- (vi) The interest shall be charged up to original contractual delivery period plus one month, if the delay is not attributable to the vendor.
- (vii) Recovery of advance paid shall start from 1<sup>st</sup> Invoice. Depending upon the percentage of advance opted by the vendor, the recovery shall be made in such a manner that the total advance is recovered when 80% of the Total Order Value gets paid. The percentage of recovery from invoices for advance shall be decided as per given formula:  

$$\% \text{ Recovery} = (\% \text{ Advance}/80) \times 100$$
- (viii) No loading shall be done on account of payment of advance

### 3.0 Following points must be taken care while submitting your bid:

- (a) Selection of associate Indian company is subject to approval of Owner.
- (b) Scope division between main bidder and associate Indian company shall be clearly defined in the bid.

### 4.0 GST Clause applicable for Indigenous Bidders:

- 4.1 It would be the responsibility of the contractor to get the registration with the respective Tax authorities under provision of GST. Any taxes being charged by the Contractors would be claimed by issuing proper TAX Invoice in a GSTN (Goods & Services Tax Network) acceptable format indicating details elements of all taxes charged and necessary requirements as prescribed under the respective tax laws and also to mention his correct and valid GSTN number along with NALCO's GSTN number as applicable for particular supply on all invoices raised on NALCO under GST Regime.
- 4.2 The contractor would be liable to reimburse or make good of any loss/claim by NALCO towards tax credit rejected /disallowed by any tax authorities due to non-deposit of taxes or non updation of the data in GSTIN network or non-filing of returns or non-compliance of tax laws by the Contractor by issuance of suitable credit note to NALCO. In case, contractor does not issues credit note to NALCO, NALCO would be constrained to recover the amount including interest payable along with Statutory levy/Tax, if any, payable on such recovery.
- 4.3 Tax element on any Debit Note/Supplementary invoice, raised by the contractor will be reimbursed by NALCO as long as the same is within the permissible time limit as per the respective taxation laws and also permissible under the Contract terms and conditions. Contractors to ensure that such debit Notes are uploaded while filing the statutory returns as may be prescribed from time to time.
- 4.4 The contractor will be under obligation for quoting/charging correct rate of tax as prescribed under the respective Tax Laws. Further the Contractor 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.
- 4.5 In case, NALCO's Input Tax Credit (ITC) is rejected on account of wrong levy of tax i.e., payment of Integrated Tax in place of Central Tax+ State/Union Territory Tax or vice versa, the contractor is liable to make good the loss suffered by NALCO by issuance of suitable credit note to NALCO. In case, contractor does not issue credit note to NALCO, NALCO would be constrained to recover the amount including interest payable along with Statutory levy, if any, payable on such recovery.

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- 4.6 NALCO shall reimburse GST levied as per invoice issued by the Contractor as prescribed under section 46 of the CGST Rules 2017 and respective states Act and Rules.
- 4.7 To enable NALCO to avail ITC, the contractor/supplier shall furnish/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.
- 4.8 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.
- 4.9 In case, NALCO is not able to take 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.).
- 4.10 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.
- 4.11 Any benefit by way of reduction in rate of tax or increase in input tax credit arising due to introduction of GST shall be passed on to NALCO through reduction in supply value by way of commensurate reduction in Bill value.
- 4.12 Tax deduction at source (TDS) under GST: As per section 51 of CGST Act 2017, Nalco shall deduct TDS as applicable at time of payment.

## 5.0 **INSURANCE**

- 5.1 The Contractor shall, at his expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, a composite and comprehensive Marine-cum-Erection Insurance Policy or separate insurance policies for Marine/transit and storage-cum-erection with an Insurance Regulatory and Development Authority of India (IRDAI) registered Insurance Company(s) for entire LSTK package till successful execution of the contract.
- 5.2 The risks that are to be covered under the insurance shall include the following:

(i) Transit Insurance Policy for indigenous cargo:

The policy shall cover movement of all goods from the manufacturer's/ Contractor's/ Supplier's works to the project's warehouse at final destination site. The sum insured shall be for 110% of total of FOT dispatch point price + inland freight charges up to Site including unloading + applicable taxes and duties in India till delivery at Site.

The cover should be an Open policy on Warehouse to warehouse basis and should be taken in the Joint Name of Both Principal (NALCO) and Contractor. However, if the Contractor is having an open policy for its line of business, it should obtain an endorsement of the open cover policy from the insurance company indicating that the dispatches against this Contract are duly covered. The insurance policy should cover All risk Institute Transit Clause 'A', War, SRCC, terrorism, Institute replacement clause, Special replacement clause (Air duty) and deferred unpacking clause, Insurers right of subrogation against all parties (excluding carrier) waived. This policy will also cover the replacement items, if any.

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The deductible shall be 0.25% of Consignment Value.

(ii) Erection All Risk Policy/Contractor All Risk Policy:

The policy should cover all physical loss or damage to the facility at site during storage, erection and commissioning covering all the perils as provided in the policy as a basic cover and the add on covers as mentioned below:

- Earthquake
- RSMD
- STFI
- Terrorism
- Escalation cover (approximately @10% of sum insured on annual basis)
- Extended Maintenance cover of 12 months for Defect Liability Period
- Design Defect cover
- Air Freight cover
- Extra charge cover if any
- Clearance & Removal of Debris - Rs.10.00 Crore for Project of value More than Rs.100.00 Crore and 10% of Project Cost for project value less than Rs.100.00 Crore.
- Offsite Storage and Fabrication Limit - Rs.10.00 Crore for Project value More than Rs.100.00 Crore and 10% of Project Cost for project value less than Rs.100.00 Crore.
- Contractor's plant & machinery - Rs.25.00 lakh. Cross liability
- Additional custom duty for imported machine (if any) for adequate value
- 72 hours' clause
- 50:50 Clause
- Owners Surrounding Property - Rs.10.00 Crore for Project of value more than Rs.100.00 Crore and 10% of Project Cost for project value less than Rs.100.00 Crore.
- Loss minimization clause
- Waiver of subrogation clause (for projects of more than Rs.100.00 crore)

The sum insured should be the sum insured value of supplied materials as per Para (i) above plus 110% of cost of site work including taxes (including erection, civil works, allied works etc.) cover should be taken in the Joint Name of both Principal (NALCO) and Contractor. The deductible shall be Minimum as per insurance Policy.

(iii) Third Party Liability cover with cross Liability as on ADD-on cover to the basic EAR cover:

The third party liability add-on cover shall cover bodily injury or death suffered by third parties (including Owner's (NALCO) personnel) and loss of or damage to property (including Owner's (NALCO) property and any parts of the Facilities which have been accepted by the Owner's (NALCO)) occurring in connection with supply and installation of the Facilities.

The sum insured shall be Rs.10.00 Crore for Project of value more than Rs.100.00 Crore and 10% of Project Cost for project value less than Rs.100.00 Crore.

The deductible shall be Minimum as per insurance Policy.

- 5.2.1 In case any equipment and materials will be supplied by the Owner as Free Issue Material for the erection (as per Technical Specification), it shall be kept insured by the Contractor against any loss, damage, pilferage, theft, fire, etc. from the point of unloading up to the

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time of taking over by Owner including handling, transportation, storage, erection, testing and commissioning etc. The insurable value of the equipment being supplied by the Owner shall be intimated to the Contractor for arranging the insurance. The Premium paid to the Insurance Company by the Contractor for such insurance shall be reimbursed by Owner to the Contractor. The Contractor shall obtain competitive quotation for such insurance and shall take prior approval from Owner before taking the insurance. Alternatively, the Contractor may take a single policy covering the entire cost of the project including the cost of Free Issue Material. For this purpose, the Contractor shall submit documentary evidence for the premium paid for the entire project to the Owner and Owner shall reimburse to the Contractor the proportion of premium equal to value of FIM to total sum insured.

- 5.2.2 The insurance policy should be taken on replacement value basis and/or incorporating appropriate insurance clause.
- 5.2.3 On receipt of material at site, the Contractor shall promptly check for damages if any and notify the Owner and shall take necessary action for lodging insurance claim for damages.
- 5.2.4 If during the execution of Contract, the Owner/ NALCO requests the Contractor to take any other add-on cover(s)/ supplementary cover(s) in aforesaid insurance, in such a case, the Contractor shall promptly take such add-on cover(s)/ supplementary cover(s) and the charges towards such premium for such add-on cover(s)/ supplementary cover(s) shall be reimbursed to the Contractor on submission of documentary evidence of payment to the Insurance company.
- 5.2.5 Any loss or damage to the plant and equipment during handling, transportation, storage, installation, commissioning, civil works (including structural steel works), allied works etc. and all activities to be performed till the Completion of Project i.e. till taking over of the plant shall be to the account of the Contractor. It will be the responsibility of the Contractor to lodge, pursue and settle all claims with the insurance company in case of any damage, loss, theft, pilferage or fire during execution of Contract and Owner shall be kept informed about it. The transfer of title shall not in any way relieve the Contractor of the above responsibilities during the period of the Contract. Any FIR required to be lodged to local Police Station shall be the responsibility of the Contractor. The Contractor shall replace the lost/ damaged materials promptly by way of repairs and/or replacement of plant and equipment damaged or lost. Notwithstanding the extent of insurances cover and the amount of claim available from the underwriter, the contractor shall be liable to make good the full replacement/rectification of all the equipment/materials and to ensure their availability as per project requirement without additional financial liability to the Owner (NALCO). The losses, if any, in such replacement will have to be borne by the Contractor.
- 5.2.6 If the work is completed earlier than the period of policy considered, the Contractor shall obtain the refund as per provisions of the policy and pass on the benefit to Owner. In case no refund is payable by the insurance company then the certificate to that effect shall be submitted to Owner at the completion of the project.
- 5.2.7 Upon grant of extension of time for completion by Owner (NALCO), the Contractor shall promptly furnish documentary evidence to Engineer In-charge towards extension of insurance policies for the period of time extension.
- 5.2.8 The Contractor shall, in accordance with the provisions of the Contract Agreement, deliver to the Owner certificates of insurance (or copies of the insurance policies) and proof of payment of premium thereof as evidence that the required policies are in full force and effect.

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5.2.9 The Contractor shall also inform the Owner in writing at least sixty (60) days in advance, regarding the expiry, cancellation and/or change in any of such documents and ensure revalidation/renewal, etc. as may be necessary well in time. The contractor, while arranging the insurance, shall ensure to obtain all discounts on premium, which may be available for higher volume or for reason of financing arrangement of the project.

5.2.10 All costs on account of insurance liabilities covered under the Contract as above will be on Contractor's account and will be quoted in the price bid as required. The reimbursement of premium paid by the Contractor towards insurance shall be made against copy of certificates of insurance (or copies of the insurance policies) and proof of payment of premium subject to total and maximum amount quoted in the price bid. The reimbursement shall be made along with payment against 1<sup>st</sup> supply bill (for marine/transit insurance) and against 1<sup>st</sup> RA bill for site work (for EAR/ CAR policy).

5.2.11 The Owner at its discretion may arrange for the above insurance cover at its own expense. In such an event, the amount quoted towards 'Comprehensive/ Transit, Storage cum erection insurance' in 'Price Schedule', shall not be payable to the contractor. However, processing of all the insurance claims shall be the responsibility of the contractor. Also, the Contractor shall perform all the obligations as mentioned in sub-clauses above.

5.3 The Contractor shall arrange insurance to cover all risks in respect of their personnel, materials and equipment belonging to the Contractor or its subcontractor (if applicable) or hired during the currency of the contract. The Contractor shall, at his expense take out and maintain in effect the following policies to protect their own interest:

5.3.1 Automobile Liability Insurance:

The Contractor shall ensure that all the vehicles deployed by the Contractor or its Subcontractors (whether or not owned by them) in connection with the supply and installation of the Facilities in the project are duly insured as per RTA act. Further the Contractor or its Subcontractors may also take comprehensive policy (own damage plus third party liability) of each individual vehicles deployed in the project on their own discretion in their own name to protect their own interest against all claims for injuries, disability, disease and death to members of public including the Owner's men and damage to the property of others arising from the use of motor vehicles, during on or off the Site Operations, irrespective of the ownership of such vehicles.

5.3.2 Workmen's Compensation/Employer's liability Policy:

Workmen Compensation Policy shall be taken by the Contractor in accordance with the statutory requirement applicable in India. The Contractor shall ensure that all the workmen employed by the Contractor or its Subcontractors for the project are adequately covered under the policy.

The policy may either be project specific covering all men of the Contractor and its Subcontractors. The policy shall be kept valid till the date of Operational Acceptance of the project. Alternatively, if the Contractor has an existing 'Workmen Compensation Policy' for all its employees including that of the Subcontractor(s), the Contractor must include the interest of the Owner/ NALCO for this specific Project in its existing 'Workmen Compensation Policy'.

Without relieving the Contractor of its obligations and responsibilities under this Contract, before commencing work the Contractor shall insure against liability for death of or injury to persons employed by the Contractor including liability by statute and at common law.

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The insurance cover shall be maintained until all work including remedial work is completed including the Defect Liability Period. The insurance shall be extended to indemnify the Principal (NALCO) for the Principal's statutory liability to persons employed by the Contractor.

The Contractor shall also ensure that each of its Subcontractors shall effect and maintain insurance on the same basis as the 'Workmen Compensation Policy' effected by the Contractor.

#### 5.3.3 Contractor's Plant and Machinery (CPM) Insurance:

The Owner (NALCO) (including without limitation any consultant, servant, agent or employee of the Owner) shall not in any circumstances be liable to the Contractor for any loss of or damage to any of the Contractor's Equipment or for any losses, liabilities, costs, claims, actions or demands which the Contractor may incur or which may be made against it as a result of or in connection with any such loss or damage.

#### 5.3.4 Employees State Insurance Act:

The Contractor agrees to and does hereby accept full and exclusive liability for the compliance with all obligations imposed by the Employee State Insurance Act 1948 and the Contractor further agrees to defend, indemnify and hold Owner harmless for any liability or penalty which may be imposed by the Central, State or Local authority by reasons of any asserted violation by Contractor or his Sub-contractor of the Employees' 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 Contractor, 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 Employee's State Insurance Corporation, the Declaration forms, and all forms which may be required in respect of the Contractor's or his Sub-contractor's employees, who are employed in the WORK provided for or those covered by ESI from time to time under the Agreement. The Contractor shall deduct and secure the agreement of his sub-contractor to deduct the employee's contribution as per the first schedule of the Employee's State Insurance Act from wages and affix the Employees Contribution Card at wages payment intervals. The contractor shall remit and secure the agreement of his sub-contractor to remit the State Bank of India, Employee's State Insurance Corporation account the Employees 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 his sub-contractor to maintain such records.

Any expenses incurred for the contributions; making contributions or maintaining records shall be to the Contractor's or his Sub-contractor's account.

Owner shall retain such sum as may be necessary from the total value of contract until the Contractor shall furnish satisfactory proof that all contributions as required by the Employees State Insurance Act, 1948 have been paid. This will be pending on the Contractor when the ESI Act is extended to the place of work.

#### 5.3.5 Comprehensive General Liability Insurance:

This insurance shall protect the Contractor against all claims arising from injuries, disabilities, disease or death of members of public or damage to property of others, due to any act or omission on the part of the Contractor, his agents, his employees, his

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representative and Sub-Contractors or from riots, strikes and civil commotion. This insurance shall cover all the liabilities of the contractor arising out of the relevant clauses of enquiry documents.

The hazards to be covered will pertain to all the works which and areas where, the Contractor, his Sub-Contractors, his agents and his employees have to perform work pursuant to the contract.

**5.3.6 Any other Insurance required under Law or Regulations:**

Contractor shall also carry and maintain any and all other Insurance(s) which he may be required under any law or regulation from time to time without any extra cost to Owner.

**5.3.7** The above are only illustrative list of insurance covers normally required and it will be the responsibility of the Contractor to maintain all necessary insurance coverage to the extent both in time and amount to take care of all his liabilities either direct or indirect, in pursuance of the contract.

**5.3.8** All costs on account of insurance liabilities covered under the Contract as above will be on Contractor's account and will be quoted in the price bid as required or included in their quoted price in case no separate break-up is sought in the price schedule.

**5.4 Accident or Injury to Workmen:**

The Contractor shall arrange Accident Insurance Policy for all his personnel including foreign Experts / Specialists / Personnel deputed to site and Contractor's / his sub-contractors' manufacturing works as well as for his Indian engineers & supervisory staff. 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 his Sub-Contractor and the Contractor shall indemnify and keep indemnified the Owner against all such damages and compensation and against all claims, demands, proceedings, costs, charges and expenses, whatsoever in respect or in relation thereto.

**5.5** The Contractor shall follow local acts and laws as may be prevalent for insurance purposes.

**5.6** The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.

**5.7** Notwithstanding the insurance requirements mentioned above, it would be the Contractor's responsibility to take adequate insurance cover as may be pertinent to protect his interest and interest of the Owner. If at any point of time during execution of the Contract, the insurance policies are found to be inadequate, the Contractor shall take fresh insurance policies meeting aforesaid requirements. The Contractor's failure in this regard shall not relieve him of any of his Contractual responsibilities and obligations.

**5.8** Should there be a lapse in any insurance required to be carried out by the Contractor for any reason whatsoever, loss/damage claims resulting there from shall be to the sole account of Contractor.

**5.9** The Owner reserves the right to take out whatever policy that is deemed necessary by him if the Contractor fails to keep the said policy alive and valid at all times and/or causes

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lapses in payment of premium thereby jeopardising the said policy. The cost of such policy(s) shall be recovered/deducted from the amount payable to the Contractor.

## 6.0 **CONSTRUCTION, ERECTION OF PLANT AND MATERIAL**

### 6.1 Contractor's Material brought on the Site

The Contractor shall bring to Site all equipments, components, parts, materials, including construction equipment, tools and tackles for the purpose of the Works under intimation to the Owner. All such goods shall, from the time of their being brought vest in the Owner, but may be used for the purpose of the Works only and shall not on any account be removed or taken away by the Contractor without the written permission of the Owner. The Contractor shall nevertheless be solely liable and responsible for any loss or destruction thereof and damage thereto.

### 6.2 Work & Services to be provided by the Owner

Works and services which shall be provided by the Owner for carrying out complete work at Site shall be as defined in the technical part of the Enquiry Documents and its clarification up to award of Contract.

- (a) Water supply for construction purpose may be provided by the Owner at one mutually agreed point at Site. Drinking water will also be made available at one central point at Site. The Contractor shall make his own arrangement for any further distribution. Such distribution pipe network shall have the prior approval of the Engineer at Site so as not to interfere with the layout and progress of other construction works. Supply of water shall be charged from Contractor at the rates prevailing at Site.

Contractor shall ensure that there is no wastage of water. On completion of the work, the Contractor shall remove all such work and shall reinstate and make good any work disturbed to the satisfaction of the Engineer.

- (b) Cranes, if available, will be provided by Owner on payment of rent to the Owner.

### 6.3 Work and Services to be provided by the Contractor

The following work and services shall also be provided under the contract:

- (i) Material transportation to erection site at Contractor's risk and cost.
- (ii) All construction activities to complete the plant as per the specifications agreed by the Owner. The activities shall be included but not limited to building structures, rooms, foundations for equipments and accessories and stack etc.
- (iii) Labor license for contractor and sub-contractor's labor if required / applicable as per State Govt.

### 6.4 Owner's Lien on Equipments

The Owner shall have lien on all equipments including those of the Contractor brought to the Site for the purpose of construction, erection, testing and commissioning of the plant. The Owner shall continue to hold the lien on all such equipments throughout the period of Contract. No material brought to the Site shall be removed from the Site by the Contractor and / or his Sub-contractors without the prior written approval of the Owner.

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#### 6.5 Protection of Work

The contractor shall have total responsibility for protecting his Works till it is finally taken over by the Owner. No claim will be entertained by the Owner or the Consultant for any damage or loss to the Contractor's Works and the Contractor shall be responsible for the complete restoration of the damaged works to its original condition to comply with the specifications and drawings. Should any such damage to the Contractor's Works occur because of other party not under his supervision or control, the Contractor shall make his claim directly with the party concerned. If disagreement or conflict or dispute develops between the Contractor and the party or parties concerned regarding the responsibility for damage to the Contractor's Works the same shall be resolved as per the provisions of the clause entitled 'Co-operation with other Contractors'. The Contractor shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The Contractor shall proceed to repair the work immediately and no cause thereof will be assigned pending resolution of such dispute.

#### 6.6 Security

The Contractor shall have total responsibility for all equipments and materials in his custody stored, loose, semi-assembled and / or erected by him at Site. The Contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages and loss. All materials of the Contractor shall enter and leave the Project Site only with the written permission of the Owner in the prescribed manner.

Contractor's employees shall wear identification badges while on the work at Site.

#### 6.7 Contractor's Area Limits

The Owner will mark-out the boundary limits of access road, parking spaces, storage and construction areas for the Contractor and the Contractor shall not trespass the areas not so marked out for him. The Contractor shall be responsible to ensure that none of his personnel move out of the areas marked out, for his operation. In case of such a need for the Contractor's personnel to work, out of the areas marked out for him, the same shall be done only with the written permission of the Owner.

#### 6.8 Contractor's Co-operation with the Owner

In cases where the performance of the Site Work by the Contractor affects the operation of the system facilities of the Owner such Site Work of the Contractor shall be scheduled to be performed only in the manner stipulated by the Owner and the same shall be acceptable at all times to the Contractor. The Owner may impose such restriction on the facilities provided to the Contractor such as electricity, water, etc. as he may think fit in the interest of the Owner and the Contractor shall strictly adhere to such restrictions and co-operate with the Owner. It will be responsibility of the Contractor to provide all necessary temporary instrumentation and other measuring devices required during start-up and operation of the equipment systems which are erected by him. The Contractor shall also be responsible for flushing and initial filling of all the oil and lubricants required for the equipment supplied and erected by him, so as to make such equipments ready for operation. The Contractor shall be responsible for supplying such flushing oil and other lubricants unless otherwise specified elsewhere in these documents and specifications.

#### 6.9 Protection of Property and Contractor's Liability

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6.9.1 The Contractor shall be responsible for any damage resulting from his operations. He shall also be responsible for protection of all persons including members of public and employees of the Owner and the employees of other Contractors and Sub-Contractors and all public and private property including structures, building, other plants and equipments and utilities either above or below the ground.

6.9.2 The Contractor will ensure provisions of necessary safety equipment such as barriers, sign-boards, warning lights and lamps, etc. to provide adequate protection to persons and property. The Contractor shall be responsible to give reasonable notice to the Owner and the Owner of public or private property and utilities when such property and utilities are likely to get damaged or injured during the performance of his works and shall make all necessary arrangements with Owners, related to removal and/or replacement of such property and utilities.

#### 6.10 Painting

All exposed metal parts of the equipment including piping, structures railing, etc. wherever applicable, after installation unless otherwise surface protected, shall be first painted with at least one coat of suitable primer which matches the shop primer paint used, after thoroughly cleaning all such parts of all dirt, rust, scales, greases, oil and other foreign materials by wire brushing, scraping or sand blasting, and the same being inspected and approved by the Engineer for painting. Afterwards, the above parts shall be finished with two coats of an alloyed resin machinery enamel paints. The quality of the finish paint shall be as per the standards of ISI or equivalent and to be of the colour as approved by the Owner.

#### 6.11 Unfavorable Working Conditions

The Contractor shall confine all his field operations to those works which can be performed without subjecting the equipment and materials to adverse effects, during inclement weather conditions, like monsoon, storms, etc. and during other unfavourable construction conditions. No field activities shall be performed by the Contractor under conditions which might adversely affect the quality and efficiency thereof unless special precautions or measures are taken by the Contractor in a proper and satisfactory manner in the performance of such works and with the concurrence of the Consultant/Owner. Such unfavorable construction conditions will in no way relieve the contractor of his responsibility to perform the works as per the schedule.

#### 6.12 Protection of monuments and reference points

The Contractor shall ensure that any finds such as relic, antiquity, coins, fossile, etc. which he may come across during the course of performance of his works either during excavation of elsewhere, are properly protected and handed over to the Owner. Similarly, the Contractor shall ensure that the bench marks, reference points, etc. which are marked out either with the help of Owner or by the Owner shall not be disturbed in any way during the performance of his works. If any work is to be performed which may disturb such reference, the same shall be done only after these are transferred to other suitable locations under the direction of the Owner.

### 7.0 CONSTRUCTION

#### 7.1 Rules and Regulations

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Contractor shall observe all national and local laws, ordinances, rules and regulations pertaining to the work, and shall be responsible for extra costs arising from violations of same.

## 7.2 Safety

Contractor shall take all necessary measures to protect the work and workmen against accidents and occupational disease. They shall observe and comply with all Government safety regulations as specified by the Owner.

The Contractor shall be responsible for following the proper procedures in reporting accidents or incident.

The Owner's Safety Engineer located in Site will be immediately notified by faster means possible of any accident which involves the following:

- (a) Death from any cause whatsoever.
- (b) A fractured skull, arm, thigh or spine, fore-arm or leg.
- (c) A dislocated shoulder.
- (d) The amputation of arm or hand, or of one or more fingers on the same hand, or of a leg or a foot.
- (e) The loss of sight of an eye.
- (f) Any other serious bodily injury, including internal bleeding or burns or asphyxia where such injury is likely to endanger life, cause permanent incapacity or temporary incapacity of 5 days or more.

- 7.3 In case of death, the Contractor shall be responsible for immediately notifying the nearest Indian Police so that they can make the proper investigation in accordance with the law.

## 8.0 **GUARANTEE/ WARRANTY PERIOD**

The Contractor shall warrant that the equipments will be new and in accordance with the Contract Documents and be free from defects in material and workmanship. All system, equipments and components supplied under this order shall be guaranteed against all defects in design, raw materials, manufacturing, assembly, workmanship and performance, etc. for a period of 12 (twelve) months commencing immediately upon the satisfactory completion of the performance guarantee tests or 24 (twenty four) months from the date of completion of erection or 36 (thirty six) months from date of delivery, whichever expires earlier.

All other provisions of these clauses remain unaltered.

## 9.0 **PRICE REDUCTION SCHEDULE FOR DELAY IN COMPLETION**

- 9.1 Liquidated Damages (LD) for delay in delivery/ completion wherever mentioned in tender documents, is to be read as Price Reduction Schedule (PRS).

- 9.2 The Contractor's liability for delay in completion shall not in any case exceed **five percent** of the total contract price.  
All other provisions of these clauses remain unaltered.

## 10.0 **LIMITATION OF LIABILITIES**

- 10.1 "Notwithstanding the above, the maximum liability shall be 100% (hundred percent) of contract value and the vendor will not be liable for any indirect consequential damages/ losses".

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## **ANNEXURE - V**

### **TERMS & CONDITIONS FOR ERECTION, TESTING, COMMISSIONING AT SITE**

1. The lump sum charges quoted for erection, testing, commissioning at site shall include lodging, boarding, transport, out of pocket expenses, all health care/ medical expenses and all other incidental charges for your personnel.
2. Seller shall be working at Owner's site along with agencies who will be engaged in similar other activities. The vendor shall perform their jobs in eco-friendly manner and in consonance with the objectives of NALCO Project Site environment management system. Seller shall be working at Owner's site along with agencies who will be engaged in similar other activities. For this purpose, the third party risk shall also be covered by seller at his cost.
3. Following site conditions shall apply:
  - (i) Working hours at those prevailing site - normally 8 hours a day, Monday through Saturday.
  - (ii) Vendor's personnel to observe/ abide by
    - Site working conditions and Safety codes.
    - All applicable Indian Laws at Site.
  - (iii) Payment Terms shall be as per Special terms & condition of PO & as per special instruction to the bidder attached to the NIT Documents.

The lump charges for erection, testing, commissioning of foreign vendor shall be net of Income Tax (i.e., exclusive of Indian income tax). The Owner will consider Income Tax (by grossing up) at the prevailing rate for evaluation of bids. Further, Owner shall deposit Tax at source as applicable after grossing up the sums due while making payments against each invoice for the services in India. Any statutory variation on account of change in Indian Income Tax rate in Double Taxation Avoidance agreement (DTAA) shall be to Owner's account. Certificate for Tax Deducted at Source (TDS) shall be provided to the vendor which the vendor can claim/ offset the Tax liability in their Country. The bidder to quote their prices considering the benefits of DTAA and the Indian Income Tax, TDS certificate credit while submitting their bids. The Contractor shall provide Tax Residency Certificate (TRC), a copy of PAN Card issued by Indian Issuing Authority, Form No. 10F and declaration towards 'no permanent establishment' before release of payment for such activities. Failing to provide the above, the payment to supplier/ contractor/ consultant shall be subject to recovery of additional TDS also as per the provisions of Indian income tax act/ rules.

The lump charges for erection, testing, commissioning, etc. activities of Indian Vendor shall be inclusive of Income Tax. Indian Income Tax will be deducted from the bill amount & Tax Deducted at Source Certificate will be issued.

4. The charges shall be exclusive of applicable GST. Indian Vendors shall indicate the SAC code and the applicable GST rate for this activity in the price schedule. For Foreign vendors the same shall be borne by NALCO.
5. Since it is an existing NALCO Site with various units in operation, the proposed site has constraints of space availability, restriction in movement of over dimensioned/ overweight consignments both within and outside the NALCO Site limits. Further,

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construction/ erection work for several other project facilities at various location within Site will be progressing concurrently. It will be the responsibility of vendor to seek approvals from the Owner for working within & outside the NALCO Site limits and also of taking all suitable safety measures as per regulations in force for the safety of existing NALCO Site.

6. The material shall be collected by the vendor from Owner's Store/ Project Site/ Vendor's Own Store (as the case may be) and transported to the erection Site at vendor's cost and risk.
7. All labour (both skilled and unskilled), tools, tackles and consumables shall be arranged by vendor at his own cost.
8. Vendor shall arrange for the necessary transport, accommodation, medical, canteen and other facilities for their employees/ staff at their own cost and abide by all labour laws/ safety codes and statutory regulations and keep Owner indemnified in respect thereof.
9. Vendor shall arrange and pay for all insurances as may be required under the law for their employees/ materials/ subcontractor(s) and shall also cover against all risk for the material issued by Owner. Vendor shall be working at Owner's Site along with agencies who will be engaged in other activities. For this purpose the third party risk shall also be covered by Vendor.
10. The vendor is responsible for keeping his work place neat and clean and shall always avoid scattering of any materials around the work place. The vendor shall clear the work site of all debris, materials, tools & tackles etc. immediately upon completion of the job. Any temporary lines/ cables etc. laid for the purpose of execution of a particular job shall be immediately removed to an agreed location and the site cleared off all such materials.
11. The vendor shall not throw out gaskets, used electrode pieces, hand gloves, cotton wastes, gunny bags, polythene bags etc. into open channel, any drains or pipeline systems. These are to be collected together and deposited in bins/ waste collectors earmarked for the purpose of disposal after consultation with Engineer In - charge.
12. The contractor is required to arrange all handling equipments, Mobile Crane of required capacity, welding sets and other materials for erection and commissioning at their cost. However, on request the same can be spared from site subject to availability on payment basis.
13. As per the applicable factory act, the labour license required shall be taken by the vendor before starting the works.

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-V - TERMS & CONDITIONS FOR ERECTION, TESTING, COMMISSIONING AT SITE	00	2 of 3

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
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**COMPLIANCE TO REQUIREMENT OF PAN NO. , TAX RESIDENCY CERTIFICATE AND FORM NO.10F**

*(Applicable for foreign bidder in case of services in India is required as per scope of NIT)*

It is mandatory for the foreign bidder to furnish the following information in case his receipts are subject to tax deduction at source in India:

**1. PAN No.**

In case, where site services / site work is applicable, bidder shall furnish Indian Income Tax PAN Number (if available) and latest Tax Residency Certificate (TRC) along with Form No. 10F and declaration towards 'no permanent establishment'.

PAN No. as per the Indian Income Tax requirements shall be submitted by foreign vendor, failing which the Supplier/ Contractor/ Consultant shall be responsible for any additional tax deduction at source as per the provisions of the Indian Income Tax Act/ Rules and the same shall be deducted from the payment made to supplier/ Contractor/ consultant.

**2. Tax Residency Certificate (TRC)**

Tax Residency Certificate (TRC) containing prescribed particulars (as mentioned below) from the Government of foreign country shall have to be submitted by foreign vendor in order to claim the benefits of DTAA as per the Indian Income Tax requirements, failing which the relief under DTAA will not be available and consequently the higher rate of withholding tax may be applicable and deducted from the payment made to supplier/ Contractor/ consultant (i.e., non-resident taxpayer). The TRC shall be duly verified by the Government of the country of which the assessee claims to be a resident for the purposes of tax.

TRC obtained by the Non-resident from Government of foreign country shall contain the following particulars:

- (a) Name of the assessee;
- (b) Status (individual, company, firm, etc.) of the assessee;
- (c) Nationality (in case of individual);
- (d) Country or specified territory of incorporation or registration (in case of others);
- (e) Assessee's tax identification number in the country or specified territory of residence or in case no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory;
- (f) Residential status for the purposes of tax;
- (g) Period for which the certificate is applicable; and
- (h) Address of the applicant for the period for which the certificate is applicable;

**3. Form 10F**

In addition to TRC, bidder in order to claim the benefits of DTAA shall also submit additional information in Form No. 10F. Form 10F has to be furnished electronically under as per sub-rule (1) and sub-rule (2) of Rule 131 of the Indian Income Tax Rules, 1962 & to be verified by the assessee himself.

The above shall be furnished before release of any payment for site activities or within one month of the release of Order.

Failing in submission of the above information, any additional tax liability on Owner, will be deducted from the payment due to the Supplier/ Contractor.

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-V - TERMS & CONDITIONS FOR ERECTION, TESTING, COMMISSIONING AT SITE	00	3 of 3

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8- 566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	1 of 10

## **ANNEXURE – VI (A)**

### **AGREED TERMS & CONDITIONS (INDIGENOUS)** **(FOR INDIGENOUS BIDDERS)**

#### **IMPORTANT**

1. This questionnaire must be filled in against all Serial nos. & enclosed with the Un-priced offer. Non submission or submission of incomplete questionnaire may lead to rejection of the offer.
2. All commercial terms except the deviations to Tender Documents must be given in this questionnaire itself and not elsewhere in the quotation. In case of contradiction, the terms given below shall prevail. Deviations to Tender Documents, if any, must be listed in the format attached at the end of this questionnaire.

Sl. No.	Descriptions	Vendor's Confirmations
1	(i) Acceptance of Technical specifications and scope of work as per attached <b>Annexure - I</b> .	
	(ii) In case of deviations, confirm that the same has been highlighted separately.	
2	Confirm that data sheets/ technical questionnaire duly filled in are attached, wherever required.	
3	Confirm Spare parts list, wherever required with item wise prices have been submitted for following categories of Spares	
	(a) Commissioning Spares	
	(b) Standard Tools & Tackles	
	(c) Consumables for first 02 years	
	(d) O&M Spares for first 02 years	
	(e) Optional attachments	
4	It is noted that deviations to terms & conditions shall lead to loading of prices or rejection of offer.	
5	Indicate Manufacturer's name & address with Tel/ Fax no.	
6	Confirm that the quoted prices are based on FOR/ FOT Despatch point including packing & forwarding.	
	(i) If quoted on Ex-works basis, indicate P&F charges in terms of percentage.	
	(ii) Indicate dispatch station.	
7	Please confirm that firm freight charges up to Site are quoted in price bid.	
8	In case you have not quoted the freight charges separately in the Price Schedule, please quote the same in terms of % of the quoted FOT dispatch point price.	
9	Confirm you have quoted prices strictly in the price schedule format enclosed with NIT documents.	
10	Confirm insurance charges are included in the quoted prices as per NIT.	
11	(a) Statutory variation in GST, if any, upto the contractual delivery date (CDD) shall be borne by NALCO. Any increase beyond the CDD shall be borne by the vendor. However, the benefit of any reduction in any of the above statutory levies beyond CDD must be passed on to NALCO. Pl. note and confirm.	

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<b><u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u></b>	00	1 of 10

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	2 of 10

Sl. No.	Descriptions	Vendor's Confirmations
	(b) Please indicate the present rate of GST applicable on the supplies (For Intra-state supplies CGST + SGST shall be applicable whereas for Inter-state IGST shall be applicable. Vendor to quote accordingly).	
	(c) If there is any increase in GST at the time of supplies for any reasons, other than statutory, including turnover, confirm the same will be borne by the vendor..	
	(d) If GST is presently not applicable, confirm whether the same will be borne by the vendor in case it becomes leviable later.	
	(e) In case (c) or (d) is not acceptable, advise maximum rate of GST chargeable	
12	Confirm submission of GSTIN along with acknowledgement receipt containing the ARN	
13	Confirm in case of delay on a/c of vendor, any new or additional taxes and duties imposed after contractual delivery shall be to vendor's account.	
14	Confirm acceptance to Delivery/ Completion Period as mentioned in tender documents	
15	Confirm utility requirement wherever applicable are given in offer.	
16	Confirm customer references are given in offer.	
17	Confirm complete technical literature/catalogue are being submitted along with offer.	
18	Confirm acceptance of Price Reduction Schedule for delay in deliveries specified in Tender Documents.	
19	Confirm acceptance of relevant terms of payment as per the tender documents attached.	
20	Confirm that the quoted prices shall remain firm and fixed till complete execution of order.	
21	Confirm that Contract cum Performance Bank Guarantee wherever required will be furnished for value and terms & conditions as per document attached with tender documents.	
22	Confirm acceptance of Guarantee/ Warranty as per documents attached with tender.	
23	Confirm that quoted prices are inclusive of all inspection & testing charges as per NIT terms.	
24	<del>Although you were not eligible for input tax credit of Central &amp; State Taxes in pre-GST period but under GST you are entitled to full credit of GST paid and you shall have benefit of incremental input tax credit under the GST regime as above. As such you need to pass on the benefit of your incremental input tax credit to NALCO. Accordingly, Please quote your best basic prices (In Price bid)</del>	NA
25	Indicate type of your Vendor category under GST: Compounding Scheme Vendor or Registered Vendor or Un Registered Vendor	

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<b>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</b>	00	2 of 10

TENDER DOCUMENT (NIT)		PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023		FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	3 of 10

Sl. No.	Descriptions	Vendor's Confirmations
	If Vendor is GST Compounding Scheme vendor, Please confirm that you have submitted the copy of the declaration: FORM GST–CMP 01 or FORM GST CMP 02. (In case of non-submission of these documents, your offer may be liable for rejection.)	
26	Please confirm that you have quoted the HSN (Harmonized System of Nomenclature) code of goods or Accounting Code of services for all items as per scope of work of NIT.	
27	(i) All other Commercial terms & conditions shall be as per Standard Terms & Conditions of Purchase Order (Indigenous) and other documents attached with the NIT. Confirm acceptance.	
	(ii) Please confirm acceptance to attached terms & conditions for erection, testing, commissioning at site	
	(iii) In case of deviations, confirm clause wise comments have been specified in the format attached at the end of this questionnaire.	
	(iv) All the terms & conditions have been indicated in this format including Annexure and has not been repeated elsewhere. It is noted that terms & conditions indicated elsewhere shall be ignored.	
28	If offer is based on certain Imported Raw Materials required for Equipments/ Materials offered, please note and specify the following:	
	(i) Owner will not provide any Import License for the same. Any expenditure towards the same shall be borne by Seller.	
	(ii) Indicate Description, Quantity & CIF value of Imported Materials (in Rs.) for each Equipment/ item of quotation in price bid.	
	(iii) Confirm that all variations in Customs duty and Foreign Exchange till complete execution of the contract shall be to Seller's account.	
29	Confirm that all taxes, duties and levies of any kind payable by Seller up to the stage of handing over of the system to Owner shall be borne by you.	
30	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 Owner is a member or Director.	
31	Confirm that the quoted prices are valid for acceptance up to six months from the final due date of submission of Bid.	
32	Confirm that quoted prices for Optional attachments are valid for the stated period as asked in the tender documents.	
33	Confirm that in case of conflicting version of various terms & conditions at different places, Owner can choose any version.	

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u>	00	3 of 10

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	4 of 10

Sl. No.	Descriptions	Vendor's Confirmations
34	Confirm that net worth of your company during the last financial year is positive.	
35	Please furnish Annual Report containing Balance Sheet & Profit & Loss Account for the last 3 years.	
36	As soon as shipment/ dispatch is made, the seller shall intimate Nalco's Underwriters the dispatch details at the address, to be intimated later.	
37	Please note that you have not been banned or de-listed by any Government or Quasi Government agencies or PSU. Confirm you have submitted declaration to this effect as per tender conditions.	
38	Please furnish name and address of the official to whom correspondence should be sent including telephone number/ fax number and e-mail id. If e-mail id is not available, an undertaking is to be given that e-mail id is to be registered within 2 weeks of bid submission	
39	Vendors shall indicate the SAC code and the applicable GST rate for the Service activity	
40	Confirm you have submitted EMD as per NIT	
41	Confirm you have submitted two original copies of the pre - contract Integrity Pact as per NIT.	
42	Confirm you have submitted the duly filled in SA 8000 Questionnaire as per NIT.	
43	The Vendor is required to state whether M/s AP/ ALCAN has any shareholding/ management control in your Company.	
43	Please confirm that you will generate the E-waybill as per tax invoice following the provision of E-waybill Rule 138 to 138 D read with notification issued by respective States.	
44	Please confirm type of Supplier i.e., Whether Class-I or Class-II local supplier or Non Local Supplier (As defined in order dtd. 16.09.2020 & OM Dtd. 04.03.2021 of DPIIT, Ministry of Commerce and Industry, GoI).	
45	Provision for PREFERENCE TO MAKE IN INDIA: Please confirm your acceptance to the said provision	
46	Confirm percentage of local content for the offered goods.	
47	Confirm, submission of Certificate for local content from statutory auditor or cost auditor of the company or form a practicing cost accountant or practicing chartered accountant.	
48	Confirm, submission of certificate/ declaration that bidder is not from a country which shares a land border with India.	

Place:

Date:

Signature:

Name :

Designation :

Seal :

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u>	00	4 of 10

TENDER DOCUMENT (NIT)		PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023		FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	5 of 10

### **DEVIATIONS TO TENDER DOCUMENTS**

SL. NO.	REFERENCE OF TENDER DOCUMENT		SUBJECT	DEVIATIONS
	DOCUMENT	CLAUSE NO.		

NOTE: This shall be submitted along with the Un - priced Offer. Deviation mentioned anywhere else in the offer shall not be considered.

Signature:

Date:

Name:

Designation:

Seal:

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<b><u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u></b>	00	5 of 10



TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
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**ANNEXURE – VI (B)**

**AGREED TERMS & CONDITIONS (IMPORT)**  
**(FOR FOREIGN BIDDERS)**

**IMPORTANT**

1. This questionnaire must be filled in against all Serial nos. & enclosed with the Un-priced offer. Non submission or submission of incomplete questionnaire may lead to rejection of the offer.
2. All commercial terms except the deviations to Tender Documents 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 Tender Documents, if any, must be listed in the format attached at the end of this questionnaire.

Sl. No.	Descriptions	Vendor's Confirmations
1	(i) Acceptance of Technical specifications and scope of work as per attached <b>Annexure - I</b> .	
	(ii) In case of deviations, confirm that the same has been highlighted separately.	
2	Confirm that data sheets/ technical questionnaire duly filled in are attached, wherever required.	
3	Confirm Spare parts list, wherever required with item wise prices on FOB & CFR basis have been submitted for following categories of Spares	
	(a) Commissioning Spares	
	(b) Standard Tools & Tackles	
	(c) Consumables for 02 years	
	(d) O&M Spares for 02 years	
	(e) Optional Attachments	
4	It is noted that deviations to terms & conditions shall lead to loading of prices or rejection of offer.	
5	Indicate Manufacturer's Name and Address with Tel/ Fax no. etc.	
6	Confirm you have quoted prices strictly in the price schedule format enclosed with tender documents.	
7	Indicate International sea Port of exit/ shipment.	
8	Please confirm that ocean freight charges up to Kolkata sea port have been quoted by you in the Price Schedule.	
	(a) In case you have not quoted the ocean freight charges to Kolkata sea port separately in the Price Schedule, please quote the same in terms of % of the quoted FOB price	
9	Indicate Shipping weight (net and gross) including dimensions/ volume of consignments.	

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<b><u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u></b>	00	6 of 10

TENDER DOCUMENT (NIT)		PROJECT TITLE	OVERALL PAGE
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Sl. No.	Descriptions	Vendor's Confirmations
10	As soon as shipment/ dispatch is made, the seller shall intimate Nalco's Underwriters the dispatch details at the address, to be intimated later.	
11	Prices quoted must include insurance charges as per NIT.	
12	Indicate the country of origin of goods offered.	
13	Confirm that the quoted prices are in the currency of country of origin and also indicate currency of quote.	
14	Confirm acceptance to Delivery/ Completion Period as mentioned in tender documents.	
15	Confirm utility requirement wherever applicable are given in offer.	
16	Confirm customer references are given in offer.	
17	Confirm complete technical literature/ catalogue are being submitted along with offer.	
18	Please confirm that you have indicated the item wise HS Code of all items as per scope of Work of the NIT.	
19	Confirm acceptance of Price Reduction Schedule for delay in completion specified in Tender Documents.	
20	Confirm acceptance of relevant terms of payment as per the tender documents attached.	
21	Letter of Credit shall be opened through a Govt. of India Bank and hence need not be confirmed. Confirm that confirmed L/C is not required by you.	
22	In case confirmed L/C is required, L/C confirmation charges shall be to your account.	
23	All Bank charges and Stamp duties payable outside India in connection with payments to be made under this Purchase Order shall be borne by you. All bank charges and stamp duties payable in India shall be borne by the Purchaser.	
24	All taxes, duties and levies of any kind payable up to FOB Port of Shipment shall be borne by you.	
25	Confirm that the quoted prices shall remain firm and fixed till complete execution of order.	
26	Please indicate name and address of your Bankers.	
27	All correspondence must be in ENGLISH language only.	
28	Confirm that Contract cum Performance/ Performance Bank Guarantee wherever required will be furnished for value and terms & conditions as per document attached with tender/ NIT.	
29	Confirm acceptance of Guarantee/ Warranty as per documents attached with tender/ NIT.	
30	Confirm that the quoted prices are inclusive of all inspection & testing charges as per tender documents	

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u>	00	7 of 10

TENDER DOCUMENT (NIT)		PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023		FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	8 of 10

Sl. No.	Descriptions	Vendor's Confirmations
31	Confirm that the quoted prices are valid for acceptance up to six months from the final due date of submission of Bid.	
32	Confirm that quoted prices for Optional attachments are valid for the stated period as asked in the tender documents.	
33	Confirm that in case of placement of order, you will be submitting firm cargo details containing weight, dimensions, no. of packages, no. and types of containers required and port of shipment within one month of placement of order.	
34	Confirm that the quoted prices for ocean freight charges to Kolkata sea port shall remain valid for acceptance up to one month beyond submission of complete cargo details by you.	
35	In case the order is converted to CFR basis at Nalco's option, then the free time for detention of containers shall not be less than 14 days	
36	(i) All other Commercial terms & conditions shall be as per the Standard terms & conditions (Import), Special terms & conditions of Purchase order attached with the Tender Documents. Confirm acceptance.	
	(ii) Please confirm acceptance to attached Terms & Conditions for erection, testing, commissioning at Site.	
	(iii) In case of deviations, confirm clause wise comments have been specified in a separate Annexure.	
	(iv) All the terms & conditions have been indicated in this format including Annexure and has not been repeated elsewhere. It is noted that terms & conditions indicated elsewhere shall be ignored.	
37	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 Owner is a member or Director.	
38	Confirm that net worth of your company during the last financial year is positive.	
39	Please furnish Annual Report containing Balance Sheet & Profit & Loss Account for the last 3 years.	
40	Please note that you have not been banned or de-listed by any Government or Quasi Government agencies or PSU. Confirm you have submitted declaration to this effect as per tender conditions.	

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u>	00	8 of 10

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
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Sl. No.	Descriptions	Vendor's Confirmations
41	Confirm that in case of conflicting version of various terms & conditions at different places, Owner can choose any version.	
42	Furnish name and address of the official to whom correspondence should be sent including telephone number/ fax number and e-mail id. If e-mail id is not available, an undertaking is to be given that e-mail id is to be registered within 2 weeks of bid submission.	
43	Confirm you have submitted EMD as per NIT	
44	Confirm you have submitted two original copies of the pre - contract Integrity Pact as per NIT.	
45	Confirm you have submitted the duly filled in SA 8000 Questionnaire as per NIT.	
46	The Vendor is required to state whether M/s AP/ ALCAN has any shareholding/ management control in your Company.	
47	Provision for PREFERENCE TO MAKE IN INDIA: Please confirm acceptance	
48	Confirm, submission of certificate/ declaration that bidder is not from a country which shares a land border with India.	

Place:  
Date:

Signature:  
Name:  
Designation:  
Seal:

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u>	00	9 of 10

TENDER DOCUMENT (NIT)		PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023		FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	10 of 10

### **DEVIATIONS TO TENDER DOCUMENTS**

SL. NO.	REFERENCE OF TENDER DOCUMENT		SUBJECT	DEVIATIONS
	DOCUMENT	CLAUSE NO.		

NOTE: This shall be submitted along with the Un - priced Offer. Deviation mentioned anywhere else in the offer shall not be considered.

Signature:

Name:

Designation:

Date:

Seal:

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	<u>ANNEXURE-VI (A&amp;B) - AGREED TERMS &amp; CONDITIONS (INDIGENOUS &amp; IMPORT)</u>	00	10 of 10

Tender Inviting Authority: GM (Materials), NALCO Corporate Office, Bhubaneswar (Odisha), India

Name of Work: Furnace Tending Assembly (FTA) for Anode Baking Furnace-I (ABF) in Smelter Plant, NALCO, Angul, Odisha, India including dismantling of existing FTA-1, adjoining Garlic Crane-261, old structure/ equipment/system

Contract No: NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023

Offer No. & Date:	
Name of the Bidder/ Bidding Firm / Company :	

**PRICE SCHEDULE**

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )

**NOTE:-**

- Do not insert any additional sheet, rows, column or any condition in the BOQ sheet. Please do not tamper with the BOQ sheet. Enabled Cells (Cyan Colour), are only to be filled by the bidder. Non-compliance may lead to rejection of the bid.
- In case the bidder opts not to quote against any of the Sl. Nos. indicated please enter "Zero"/'0'.
- Bidder to clearly indicate Quoted / Not Quoted against each Sl. No. in the column 6 and 7 in the BOQ below and submit the same duly stamped and signed in the un-priced bid. The priced part of this BOQ shall be submitted in the price bid only.
- Foreign bidders shall quote the FOB price in respective cell under column 6. Indigenous bidders will quote FOT dispatch point price in respective cell under column 6.
- Foreign bidder to quote total ocean / sea freight charges from FOB port of exit up to nearest Indian Sea Port (i.e., Kolkata) in containerized vessel on liner terms basis / in packed condition basis, wherever applicable in the respective cell under column 7 below. Indian bidder shall quoted freight charges (i.e., by road) considering road transportation up to site in the respective under column 7 below.
- In the Price Schedule, no column should be left blank.
- The quoted prices shall include charges towards testing and all documentation required as per NIT.
- Insurance shall be arranged by party and therefore bidders are required to include insurance in their offer as per NIT.
- For foreign bids all taxes and duties in India including import duties, statutory port charges shall be to NALCO's account and as such same shall not be included in quoted prices.
- For indigenous bids, GST shall be payable extra at actuals against GST compliant invoice based on the HSN code indicated by the bidder in their offer.
- Please choose any of the preferred currency (i.e., INR, USD, GBP, CAD, EUR, CHF, JPY, NOK and AUD only) in the drop-down in the respective cell under column 6 & 7 (click & choose the option).
- Optional prices under column 6 & 7 shall not be considered for price evaluation. However, the optional prices shall remain valid till one year from the Bid due date and may be exercised by NALCO, in case NALCO decides for the same.
- Indigenous Bidder is required to submit the item wise break up for scope of supply (as per Annexure-I of NIT) in a SEALED ENVELOPE AS COVER-4 on or before the bid submission due date & time with item description, HSN code, quantity, UOM, FOT dispatch point price , freight charges and applicable GST rate.
- Vendor to ensure that the sum of itemized price should match with the lumpsum price quoted against theSl. No. of this BOQ.
- Foreign Bidder is required to submit the item wise break up for scope of supply (as per Annexure-I of NIT) in a SEALED ENVELOPE AS COVER-4 on or before the Part-I bid opening due date & time with item description, HSN code, quantity, UOM, FOB Price and Ocean freight charges. Vendor to ensure that the sum of itemized price should match with the lumpsum price quoted against theSl. No. of this BOQ
- Vendor to submit the itemized list with item description, HSN code, quantity, UOM but without price of items in Un-priced bid.
- Prices shall remain firm & fixed till complete execution of order.

NUMBER #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	BASIC RATE In Figures To be entered by the Bidder	Lump sum Freight charges for Sl. Nos. - 1.01 and 1.03 to 1.04. N.B.: Foreign bidder to quote total ocean / sea freight charges from FOB port of exit up to nearest Indian Sea Port (i.e., Kolkata) in containerized vessel on liner terms basis / in packed condition basis, wherever applicable. Indian bidder shall quote total freight charges (i.e., by road) considering road transportation up to NALCO site.	TOTAL AMOUNT, It will be converted (= 3 x 7)	TOTAL AMOUNT In Words
1	2	3	4	5	6	7	8	9
1	Supply of Furnace Tending Assembly (FTA) for Anode Baking Furnace-I (ABF)							
1.01	Design, engineering, manufacture, procurement of materials and bought out components, supply, transport/ shipment, Inspection, Testing at manufacturer works and supply of new <b>Furnace Tending Assembly (FTA) for Anode Baking Furnace-I (ABF)</b> in Smelter Plant, NALCO, Angul, Odisha, India along with all accessories, first fill of all lubricant & lubricating oil, Hydraulic oil, commissioning spares, mandatory spares along with safety gadget, special & standard tools and tackles as per the scope of supply as per NIT document.	1.00	Lump sum	INR			0.0000	INR Zero Only
1.02	Charges for pre – dispatch inspection (PDI) at suppliers works by NALCO representatives (for inspection by NALCO representatives, Inspector's to & fro charges, lodging, boarding, conveyance, etc. will be borne by NALCO)	1.00	Lump sum	INR			0.0000	INR Zero Only
2.0	<b>OPTIONAL ITEMS (Offered price shall remain valid for a period of of at least 01 year from the bid due date)</b>							
2.01	Lump sum price for Two (2 Years) recommended O&M spares & consumables (optional) as per NIT Documents	1.00	Lump sum	INR			0.0000	INR Zero Only
3.0	<b>SERVICES: ERECTION, TESTING, COMMISSIONING, DISMANTLING, ETC. AT NALCO Site</b>							
3.01	Lump sum charges for fabrication, assembly, installation, erection, testing, commissioning, performance & process guarantee, PG test, handing over of <b>new Furnace Tending Assembly (FTA) for Anode Baking Furnace-I (ABF)</b> in Smelter Plant, NALCO, Angul, Odisha, India including dismantling of existing FTA-1, adjoining Garlic Crane-261, old structure/ equipment/system, if any, cutting to small sizes and shifting to designated location as per NIT document.	1.00	Lump sum	INR			0.0000	INR Zero Only

NUMBER #	TEXT #	NUMBER #	TEXT #	TEXT #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Quoted Currency in INR / Other Currency	BASIC RATE In <b>Figures</b> To be entered by the <b>Bidder</b>	Lump sum Freight charges for Sl. Nos. - 1.01 and 1.03 to 1.04. N.B.: Foreign bidder to quote total ocean / sea freight charges from FOB port of exit up to nearest Indian Sea Port (i.e., Kolkata) in containerized vessel on liner terms basis / in packed condition basis, wherever applicable. Indian bidder shall quote total freight charges (i.e., by road) considering road transportation up to NALCO site.	TOTAL AMOUNT, It will be converted (= 3 x 7)	TOTAL AMOUNT In Words
1	2	3	4	5	6	7	8	9
3.02	Indian Income Tax as currently applicable & deductible at source based on double taxation avoidance agreement (DTAA), if any, on foreign supervision cost (on Sl.No. 3.01) to be specified & indicated considering necessary Tax deduction at Source Certificate will be furnished. <b>N.B.:</b> Indian Income Tax has to be quoted by <b>foreign bidder</b> only as per the Annexure-IX of NIT. <b>For Indian vendors / contractors</b> , the lump sum prices as at Sl.No. 3.01 shall be inclusive of income tax. Indian bidder not to quote against the same and please enter <b>"Zero"</b> .	1.00	Lump sum	INR			0.0000	INR Zero Only
Total in Figures							0.0000	Zero Only

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8- 566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	1 of 2

## **ANNEXURE - VIII**

### **PROFORMA OF 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 ..... (Foreign vendors to incorporate Nalco's Corporate Office address/ Indigenous vendors to incorporate Nalco's Unit address where the supply or work is to be executed) (hereinafter called "the 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 Contract No/ P.O. No..... dt..... and various documents forming part thereof herein after referred to as the "said contract" which expression include all amendments, modification and/or variation thereto and whereas the Contractor/Seller has agreed for due execution of the entire contract and guarantees its performance including any parts executed through any others agencies/sub-contractors.

AND WHEREAS one of the conditions of the "said contract" is that "contractor/seller 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 defects liability obligations and the performance guarantee obligations of the contractor/seller 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 and conditions of the said Contract including defects 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 and 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 notwithstanding any dispute or disputes raised by the Contractor(s)/Supplier(s) in any suit or proceeding pending before any office, court or Tribunal relating thereto, our liability under this present 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 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 respects 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.

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-VIII - CPBG FORMAT	00	1 of 2



TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	2 of 2

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 discharge this 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 Contractor(s)/ Order(s) or to extend 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 Contractor(s)/Seller(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 effect 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 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-751XXX.
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 Contractor(s)/Seller(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

Details of person issuing the BG:

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

Address for correspondence: \_\_\_\_\_

Telephone and Fax No.: \_\_\_\_\_

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

IFSC Code of the Bank: \_\_\_\_\_

**Note:-**

- (a) BG is to be furnished from any of Nalco approved Banks.
- (b) In case, any domestic guarantee issued by PSU Banks (or) Private Banks (or) Foreign Banks operating in India must be operational and invocable in Bhubaneswar (Odisha, India) only. For guarantee to be operational in Bhubaneswar, the issuing Bank must designate a specified Bank branch in Bhubaneswar. If the Bank issuing BG is not operational in India, the clause no. 9 above may be ignored. However, point no. 'C' is to be followed.
- (c) In the case of foreign currency BGs, the BG issuing Bank must have correspondent relationship with State Bank of India.

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-VIII - CPBG FORMAT	00	2 of 2

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	1 of 2

## **ANNEXURE - IX**

### **PROFORMA FOR ADVANCE PAYMENT**

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

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

Date \_\_\_\_\_

1. In consideration of National Aluminium Company Limited (A Government of India Enterprise), having its registered office at P/1, Nayapalli, Bhubanesar 751013 (hereinafter called "The Company ", 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 ..... (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) under the terms and conditions of the Contract/Order dated ..... for ..... (work/ assignment description) on production of a bank guarantee equivalent to 110% of the advance payment indicated above.
2. We ..... Bank having its branch office at ..... do hereby undertake to pay the amount due and payable under this guarantee without any demure 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 or conditions contained in the said Contract(s)/Order(s) or by reason 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 notwithstanding 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 there under. 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 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 authorized 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)/ Seller(s) and accordingly discharges this guarantee.

<b>NALCO</b>	DOCUMENT TITLE	REVISION	DOC.PAGE
	<b>ANNEXURE-VIII - ABG FORMAT</b>	00	1 of 2

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	2 of 2

6. 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.
7. 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-751XXX.
8. We ..... Bank, lastly undertake no 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)/Seller(s).

Date: ..... Bank  
Corporate Seal of the Bank by its constitutional Attorney.

Signature of duly authorized person  
on behalf of the Bank with seal & signature code

Details of person issuing the BG:

Name: .....  
Address for correspondence: .....  
Telephone and Fax No.: .....  
E-mail: .....  
IFSC Code of the Bank: .....

**Note:-**

- (a) BG is to be furnished from any of Nalco approved Banks.
- (b) In case, any domestic guarantee issued by PSU Banks (or) Private Banks (or) Foreign Banks operating in India must be operational and invocable in Bhubaneswar (Odisha, India) only. For guarantee to be operational in Bhubaneswar, the issuing Bank must designate a specified Bank branch in Bhubaneswar. If the Bank issuing BG is not operational in India, the clause no. 9 above may be ignored. However, point no. 'C' is to be followed.
- (a) In the case of foreign currency BGs, the BG issuing Bank must have correspondent relationship with State Bank of India.

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-VIII - ABG FORMAT	00	2 of 2

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	1 of 4

## **ANNEXURE - X**

### **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 National Aluminium Company Limited (A Government of India Enterprise), having its Office at Nalco Bhavan, P/1, Nayapalli, Bhubaneswar - 751 013, Orissa (hereinafter referred as "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. .... dtd. .... 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 Rs. .... (Rupees ..... Only) towards earnest money in lieu of cash.
2. We \_\_\_\_\_ Bank having its branch office at \_\_\_\_\_ do hereby undertake to pay the amounts 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 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 or would be caused or suffered by the Company by reason of any breach by the said tenderer(s) of any 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 Rs..... (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 dependant or conditional on the Company proceeding against the tenderer(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 respects and for all purposes be binding and operative until payment of all money due or liabilities under the said tender 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 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.

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-X - BG FORMAT FOR EMD	00	1 of 4

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	2 of 4

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 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 liability under this guarantee.
8. 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-751XXX.
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 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

Details of person issuing the BG:

Name: \_\_\_\_\_  
Address for correspondence: \_\_\_\_\_  
Telephone and Fax No.: \_\_\_\_\_  
E-mail: \_\_\_\_\_  
IFSC Code of the Bank: \_\_\_\_\_

- (i) BG is to be furnished from any of Nalco approved banks.
- (ii) In the case of Foreign currency BGs, BG issuing bank must have correspondent relationship with State Bank of India.

**Note:-**

- (a) BG is to be furnished from any of Nalco approved Banks.
- (b) In case, any domestic guarantee issued by PSU Banks (or) Private Banks (or) Foreign Banks operating in India must be operational and invocable in Bhubaneswar (Odisha, India) only. For guarantee to be operational in Bhubaneswar, the issuing Bank must designate a specified Bank branch in Bhubaneswar. If the Bank issuing BG is not operational in India, the clause no. 9 above may be ignored. However, point no. 'C' is to be followed.
- (c) In the case of foreign currency BGs, the BG issuing Bank must have correspondent relationship with State Bank of India.

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-X - BG FORMAT FOR EMD	00	2 of 4

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	3 of 4

## FORMAT FOR ONLINE SUBMISSION OF EARNEST MONEY DEPOSIT (EMD)

### FOR INDIGENOUS BIDDERS SUBMITTING EMD IN INR

#### **PART – A:**

#### **DETAILS TO BE FURNISHED BY NALCO**

1)	TENDER NO.	NBC/MM/510/8-566/FTA/2023
2)	DATE	30/03/2023.
3)	DESCRIPTION OF TENDER	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA
4)	EMD AMOUNT (IN RS)	INR 25,00,000/- (Rupes Twenty Five Lakh Only).
5)	SBI ACCOUNT NO	10044880013
6)	SBI BRANCH CODE	09817
7)	SBI IFSC CODE	SBIN0009817

#### **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	

Indian bidders submitting the EMD in INR should send the scanned copy of the duly filled in and signed Annexure – XV along with the scanned copy of Transaction Slip/ receipt of the Bank on the same day of payment by e-mail to [purna.gummadi@nalcoindia.co.in](mailto:purna.gummadi@nalcoindia.co.in) with copy marked to [mihir.behera@nalcoindia.co.in](mailto:mihir.behera@nalcoindia.co.in) .

The bidders should upload the scanned copy of the duly filled in and signed above format 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 format along with the Transaction Slip/ receipt should be submitted in cover - 1 of the hard copy offer.

<b>NALCO</b>	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-X - BG FORMAT FOR EMD	00	3 of 4

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8-566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	4 of 4

## FORMAT FOR ONLINE SUBMISSION OF EARNEST MONEY DEPOSIT (EMD)

### FOR FOREIGN BIDDERS SUBMITTING EMD IN USD/ EURO

#### **PART – B:**

#### **DETAILS TO BE FURNISHED BY NALCO**

1)	TENDER NO.	NBC/MM/510/8-566/FTA/2023
2)	DATE	30/03/2023.
3)	DESCRIPTION OF TENDER	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA
4)	EMD AMOUNT (IN RS)	<b>USD 30,355.00 or EURO 28,036.00</b>
5)	SBI ACCOUNT NO	10229906147
6)	SBI SWIFT CODE	SBININBB119

#### **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	

Foreign bidders submitting the EMD in USD or EURO should send the scanned copy of the duly filled in and signed Annexure – XV along with the scanned copy of SWIFT message of the Bank on the same day of payment by e-mail to [purna.gummadi@nalcoindia.co.in](mailto:purna.gummadi@nalcoindia.co.in) with copy marked to [mihir.behera@nalcoindia.co.in](mailto:mihir.behera@nalcoindia.co.in) .

The bidders should upload the scanned copy of the duly filled in and signed Annexure – XV along with the scanned copy of SWIFT message of the Bank with their On - line Part - I - Bid.

The original copy of the duly filled in and signed Annexure – XV along with the SWIFT message should be submitted in cover - 1 of the hard copy offer.

NALCO	DOCUMENT TITLE	REVISION	DOC.PAGE
	ANNEXURE-X - BG FORMAT FOR EMD	00	4 of 4

TENDER DOCUMENT (NIT)	PROJECT TITLE	OVERALL PAGE
NBC/MM/510/8- 566/FTA/2023 DTD: 30/03/2023	FURNACE TENDING ASSEMBLY (FTA) FOR ANODE BAKING FURNACE-I (ABF) OF SMELTER PLANT, NALCO, ANGUL, ODISHA, INDIA	1 of 3

## **ANNEXURE - XI**

### **LIST OF STANDARDIZED BANKS**

#### **I . SCHEDULE OF PUBLIC SECTOR (PSU) BANKS OF INDIA**

Sl.No.	Public Sector Banks of India
01	Allahabad Bank
02	Andhra Bank
03	Bank of Baroda
04	Bank of India
05	Bank of Maharashtra
06	Canara Bank
07	Central Bank of India
08	Corporation Bank
09	Dena Bank
10	IDBI Bank
11	Indian Bank
12	Oriental Bank of Commerce
13	Punjab & Sind Bank
14	Punjab National Bank
15	State Bank of India
16	Syndicate Bank
17	UCO Bank
18	Union Bank of India
19	Vijaya Bank

#### **II. SCHEDULE OF PRIVATE SECTOR BANKS OF INDIA**

Sl.No.	Private Sectors Banks of India
01	HDFC Bank Ltd.
02	ICICI Bank Ltd.
03	Axis Bank Ltd.
04	Kotak Mahindra Bank Ltd.
05	YES Bank
06	IndusInd Bank Ltd.
07	The Federal Bank Ltd.
08	The Jammu & Kashmir Bank Ltd.
09	The South Indian Bank Ltd.
10	The Karur Vysya Bank Ltd.
11	The Karnataka Bank Ltd.
12	IDFC Bank
13	RBL Bank
14	The Lakshmi Vilas Bank Ltd.
15	Tamilnad Mercantile Bank Ltd.
16	City Union Bank Ltd.

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### III. SCHEDULE OF FOREIGN BANKS

Sl.No.	Foreign Banks	BIC
01	Abu Dhabi Commercial Bank Limited	ADCB AE AA
02	Australia & New Zealand Banking Group Limited	ANZB AU 3M
03	Bank of America NA	BOFA US 3N
04	Bank of Bahrain and Kuwait B.S.C.	BBKU BH BM
05	Bank of Ceylon	BCEY LK LX
06	Barclays Bank PLC	BARC GB 22
07	BNP Paribas	BNPA FR PP
08	Citibank N.A.	CITI US 33
09	Commonwealth Bank of Australia	CTBA AU 2S
10	Credit Agricole Corporate & Investment Bank	BSUI FR PP
11	Credit Suisse AG	CRES CH ZZ
12	DBS Bank Ltd.	DBSS SG SG
13	Deutsche Bank AG	DEUT DE FF
14	Doha Bank	DOHB QA QA
15	FirstRand Bank Ltd.	FIRN ZA JJ
16	Industrial Bank of Korea	IBKO KR SE
17	Industrial & Commercial Bank of China Limited	ICBK CN BJ
18	JP Morgan Chase Bank	CHAS US 33
19	KEB Hana Bank	KOEX KR SE
20	Krung Thai Bank Public Company Ltd.	KRTH TH BK
21	Mashreqbank PSC	BOML AE AD
22	Mizuho Bank Ltd.	MHCB JP JT
23	National Australia Bank Ltd.	NATA AU 33
24	Sberbank	SABR RU MM
25	Shinhan Bank	SHBK KR SE
26	Societe Generale	SOGE FR PP
27	Sonali Bank Ltd.	BSON BD DH
28	Standard Chartered Bank	SCBL GB 2L
29	Sumitomo Mitsui Banking Corporation	SMBC JP JT
30	The Bank of Nova Scotia	NOSC CA TT
31	The Bank of Tokyo-Mitsubishi UFJ, Ltd.	BOTK JP JT
32	The Hongkong and Shanghai Banking Corp.Ltd.	HSBC HK HH
33	The Royal Bank of Scotland PLC	RBOS GB 2L
34	United Overseas Bank Ltd.	UOVB SG SG
35	Westpac Banking Corporation	WPAC AU 2F
36	Woori Bank	HVBK KR SE

Note: In the case of Foreign currency BGs, BG issuing bank must have correspondent relationship with State Bank of India

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**ECS MANDATE FORM**  
**ELECTRONIC CLEARING SERVICES / ELECTRONIC FUND TRANSFER/ INTERNET**  
**BANKING MANDATE FORM**

To  
National Aluminium Company Limited,  
NALCO Bhawan, Plot No. P/1, Nayapalli,  
Bhubaneswar - 751013

Dear Sir,

Sub: Authorization for release of payment due from NALCO, Corporate Office, Bhubaneswar through Electronic Clearing Services (RBI)/ Electronic fund transfer (RBI/SBI)/ Internet Banking (SBI).

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	?
Account Number(as appearing in the Cheque Book)		Current	?
RTGS / IFSC Code		Cash Credit	?

**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 updation of records for purpose of credit of amount through RBI ECS/RBI EFT/SBI NET.

**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)**

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## **ANNEXURE - XII**

### **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)
• <b><u>Permanent</u></b>		
• Casual		
• Badli		
• Temporary		
• Contracted		

#### **B. Information regarding Social Accountability**

- What is the minimum age required to join your organization? \_\_\_\_\_ Years
- What types of certificates (Like mark sheet, birth certificate) you keep with you? Original Copy / Xerox
- Do you require to keep any kind of deposit inform of cash at the time of employment? Yes/No
- Do you provide safe & healthy work environment as per statutory requirement? Yes/No
- 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) in last 2 years? Yes/No

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 (COC Audit) in last 2 years? Yes/No

- Do you provide personal protective equipment(s) Yes/No

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to your employees free of cost?

- 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?

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- Do you allow trade union and collective bargaining in your organization? Yes/No  
If no, how do you ensure freedom of expression?

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

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

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- 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?

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

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- 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?

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- 
- 
- Do you pay overtime to your employees as per law? Yes/No
  - What is the lowest amount (salary/wage) you pay to your employees? Rs. \_\_\_\_\_/-
  - 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 from supplier/subcontractors or sub-suppliers Yes/No
    - Do you receive, handle or promote goods and/or services from supplier/subcontractors or sub-suppliers who are classified as home worker? Yes/No
    - If yes, what steps you have taken to ensure that they get similar level of protection as afforded to directly employed employees?

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- 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

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## **ANNEXURE - XIII**

### **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 **Ms.S Sahay, GM (Materials)** (with designation of the Officer) (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 for LSTK package for **"design, engineering, manufacture, supply, transport/shipment, storage, fabrication, assembly, installation, erection, testing, commissioning, performance & process guarantee, PG test, handing over of new Furnace Tending Assembly (FTA) for Anode Baking Furnace-I (ABF) in Smelter Plant, NALCO, Angul, Odisha, India including dismantling of existing FTA-1, adjoining Garlic Crane-261, old structure/ equipment/system, if any, cutting to small sizes and shifting to designated location"** 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

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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.

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- 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.

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- (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.

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- 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 his 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.

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- 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  
**BUYER**

For & on behalf of  
**BIDDER**

Name of the Officer:  
Designation:  
Company:  
Official Seal

NALCO

Witness

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

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

Witness

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

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

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#### **ANNEXURE - XIV**

#### **RESTRICTION FOR BIDDERS/ SUPPLIERS FROM A COUNTRY WHICH SHARES A LAND BORDER WITH INDIA**

1. Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority (as specified).
2. A bidder is permitted to procure raw materials, components, sub-assemblies etc. from the vendors from the countries sharing land borders with India. Such vendors will not be required to be registered with the Competent Authority, as it is not regarded as "sub-contracting".
3. However, in case a bidder has proposed to supply finished goods procured directly/ indirectly from the vendors from the countries sharing land borders with India, such vendors will be required to be registered with the Competent Authority.

**Note:**

- (i) Competent authority shall be the Registration Committee constituted by the Department of Industry and Internal Trade (DPIIT), Government of India.
- (ii) 'Bidder' (including the term 'tenderer', 'consultant' or 'service provider' in certain context) means any person or firm or company, including any member of a consortium or joint venture (that is association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- (iii) "Bidder from a country which shares a land border with India" for the purpose of this Order means: -
  - a. An entity incorporated, established or registered in such a country; or
  - b. A subsidiary of an entity incorporated, established or registered in such a country; or
  - c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
  - d. An entity whose *beneficial owner* is situated in such a country; or
  - e. An Indian (or other) agent of such an entity; or
  - f. A natural person who is a citizen of such a country; or
  - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
- (iv) The beneficial owner for the purpose of (iii) above will be as under:
  - (a) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.
  - (b) In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
  - (c) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more

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- than fifteen percent of the property or capital or profits of such association or body of individuals;
- (d) Where no natural person is identified under (a) or (b) or (c) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
- (e) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- (v) An Agent is a person employed to do any act for another, or to represent another in dealings with third person.
- (vi) The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

4. **Model Certificate/ declaration for Renderers'**: In this regards, bidders are required to give declaration / certificate for tenders as follows failing which your offer may be considered for further evaluation:

*"I have read the clause regarding restrictions on procurement from a bidder of a Country which shares a land border with India; I certify that \_\_\_\_\_ (bidder name) is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that \_\_\_\_\_ (bidder name) fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"*

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## **ANNEXURE - XV**

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

To,  
GM (Materials)  
National Aluminium Company Limited,  
NALCO Bhawan, P/1,  
Nayapalli, Bhubaneswar,  
Odisha – 751013, INDIA

Date-

Dear Madam/Sir,

We, M/s. \_\_\_\_\_ (*bidder name*) having its office at \_\_\_\_\_ (*address*) hereby confirm that the offered product has \_\_\_\_% of the local content.

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

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

Yours sincerely,

Signature  
Name  
Designation  
Contact No.

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