

VOLUME-I
(COMMERCIAL PART)

**NATIONAL ALUMINIUM COMPANY LIMITED
(NALCO)**

SHORT NOTICE INVITING TENDER (NIT),
DETAILED NOTICE INVITING TENDER (DNIT),
INTSTRUCTION TO BIDDER (ITB),
SPECIAL CONDITIONS OF CONTRACT (SCC),
AND
GENERAL CONDITIONS OF CONTRACT (GCC)

FOR

DISMANTLING, MODIFICATION AND ERECTION OF MISCELLANEOUS
MECHANICAL WORK FOR INSTALLATION OF STEAM AND POWER PLANT
FOR 5TH STREAM ALUMINA REFINERY EXPANSION UNDER PHASE-3
EXPANSION OF M&R COMPLEX

AT

NALCO - MINES & REFINERY COMPLEX,
DAMANJODI - 763 008,
KORAPUT DISTRICT
ODISHA, INDIA.

August 2025



M.N. DASTUR & COMPANY (P) LTD
Consulting Engineers

C O N T E N T S

- 1.0 SHORT NOTICE INVITING TENDER (NIT)
- 2.0 DETAILED NOTICE INVITING TENDER (DNIT)
- 3.0 INSTRUCTION TO BIDDERS (ITB)
- 4.0 SPECIAL CONDITIONS OF CONTRACT (SCC)
- 5.0 GENERAL CONDITIONS OF CONTRACT (GCC)

**NATIONAL ALUMINIUM COMPANY LIMITED
(NALCO)**

SHORT NOTICE INVITING TENDER (NIT)

FOR

DISMANTLING, MODIFICATION AND ERECTION OF MISCELLANEOUS MECHANICAL
WORK FOR INSTALLATION OF STEAM AND POWER PLANT
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National Aluminium Company Limited
(Govt. of India Enterprise)



M.N. Dastur & Company (P) Ltd.

TENDER NOTICE FOR INVITATION FOR BIDS (IFB)

NIT No. NALCO CGPP/2025/MISC. MECH/01

Date:20.08.2025

DISMANTLING, MODIFICATION AND ERECTION OF MISCELLANEOUS MECHANICAL WORK FOR INSTALLATION OF STEAM AND POWER PLANT FOR 5TH STREAM ALUMINA REFINERY EXPANSION UNDER PHASE-3 EXPANSION OF M&R COMPLEX, DAMANJODI - 763 008, KORAPUT DISTRICT IN THE STATE OF ODISHA, INDIA.

(Domestic Competitive Bidding)

M/s. M.N. Dastur & Company Pvt. Ltd., on behalf of M/s. National Aluminium Company Ltd. (NALCO), Bhubaneswar, invites bids on Domestic Competitive Bidding on unit rate basis for the above mentioned Package on e-procure site of Central Public Procurement Portal (CPPP) (www.eprocure.gov.in) under single stage two part bid system, electronic mode of tendering, on “**Limited Tender**” (LTE) basis **Part-I:** EMD, Pre Contract Integrity Pact, signed NIT document without deviation, documents as per check list of NIT and **Part-II:** Priced Bill of Quantity for Dismantling, Modification and Erection of Miscellaneous Mechanical work for Installation of Steam and Power Plant for 5th stream Alumina Refinery expansion under Phase-3 expansion of M&R Complex, Damanjodi Plant in the State of Odisha.

EMD Amount (INR)	Cost of Tender document	Bid Download Period Date/Time		Due date /Time of submission/ uploading of Bid	Bid Opening
Rs.80,000/-	Nil	From	To	03.09.2025	04.09.2025
		20.08.2025	03.09.2025		

For detailed IFB & downloading of tender documents, please log on to Central Public Procurement Portal (CPPP) (www.eprocure.gov.in) and bidder may refer “Notice for Invitation of Bid” through NALCO web site (www.nalcoindia.com).

For any queries Contact Person:

Mr. Anirban Biswas
Project Manager (NALCO-CGPP Project),
M.N. Dastur & Company (P) Ltd.,
P-17, Mission Row Extension
Kolkata -700013
Tel. No : (033) 2225-0500/ (033) 2225-5420
Fax No: (033) 2225-1422
E-mail: Anirban.b@dastur.com

For and on behalf of M/s. NALCO

M. N. Dastur & Company (P) Ltd.

**NATIONAL ALUMINIUM COMPANY LIMITED
(NALCO)**

DETAILED NOTICE INVITING TENDER (DNIT)

FOR

DISMANTLING, MODIFICATION AND ERECTION OF MISCELLANEOUS
MECHANICAL WORK FOR INSTALLATION OF STEAM AND POWER PLANT
FOR 5TH STREAM ALUMINA REFINERY EXPANSION UNDER
PHASE-3 EXPANSION OF M&R COMPLEX

AT

NALCO - MINES & REFINERY COMPLEX,
DAMANJODI - 763 008,
KORAPUT DISTRICT
ODISHA, INDIA.

August 2025



M.N. DASTUR & COMPANY (P) LTD
Consulting Engineers



National Aluminium Company Limited
(Govt. of India Enterprise)



M.N. DASTUR & Company (P) Ltd.

TENDER NOTICE FOR INVITATION FOR BIDS (IFB)

**DISMANTLING, MODIFICATION AND ERECTION OF
MISCELLANEOUS MECHANICAL WORK FOR INSTALLATION OF STEAM
AND POWER PLANT FOR 5TH STREAM ALUMINA REFINERY
EXPANSION UNDER PHASE-3 EXPANSION OF M&R COMPLEX,
DAMANJODI - 763 008, KORAPUT DISTRICT
IN THE STATE OF ODISHA, INDIA.**

(NIT No. NALCO CGPP/2025/MISC.MECH/01)

(Domestic Competitive Bidding)

A GENERAL

1.0 Introduction

- 1.1 National Aluminium Company Limited (NALCO), a Government of India undertaking and a Navaratna company owns and operates a large integrated Mines-Alumina-Aluminium complex in India. It has multi-location operation as follows:

a)	Mines & Alumina Refinery	Damanjodi, Odisha.
b)	Aluminium Smelter	Angul, Odisha
c)	Captive Power Plant	Angul, Odisha
d)	Port Handling Facilities (for alumina export & caustic soda import)	Visakhapatnam, Andhra Pradesh

In the initial plant of Alumina Refinery, there were 2 streams. During 1st and 2nd phase expansion, 3rd & 4th streams have been added. Co-generation steam & power plant (SPP) of capacity 4 x 200 tph+ 1 x 250 tph steam generation along with 4 x 18.5 MW + 1 x 19.5 MW back pressure TGs were installed for catering power & process steam requirement.

As a part of NALCO's growth plan, it is planned to set up of one more stream (5th stream) in its Alumina refinery under 3rd phase expansion at Damanjodi with stream capacity of 1.0 MTPA and process technology based on medium pressure digestion.

For catering the supply of steam and power for above expansion facilities, it is being planned to add one (1) no. Pulverized Coal fired boiler of 300tph capacity and one (1) no. condensing cum extraction TG of 18.5 MW capacity as a part of SPP expansion.

NALCO has appointed M/s M.N. Dastur & Company (P) Ltd. (DASTUR) as EPCM Consultant (hereafter referred as CONSULTANT) for implementation of this Project.

- 1.2 M/s M.N. Dastur & Company (P) Ltd., on behalf of NALCO, invites bids for Dismantling, Modification and Erection of Miscellaneous Mechanical work for Installation of Steam and Power Plant under single stage two part bid system, electronic mode of tendering, on “**Limited Tender (LTE)**” basis, Part-I: EMD, Pre Contract Integrity Pact, signed NIT document without deviation, documents as per check list of NIT and Part-II: Priced Bill of Quantity from competent agencies.

2.0 BRIEF SCOPE OF WORK:

- 2.1 The scope of work covers for execution of Dismantling, Modification and Erection of Miscellaneous Mechanical work for Installation of Steam and Power Plant for 5th stream Alumina Refinery expansion under Phase-3 expansion of M&R Complex, Damanjodi Plant in the State of Odisha as per Technical Specification No. **TS-28812-COS-000618A**.
- 2.2 The Technical Specification is being issued for placement of Contract for Dismantling, Modification and Erection of Miscellaneous Mechanical work with supply of materials, labour, tools & tackles, Erection equipment, testing equipment/kits as well as storage, office and other services and facilities whether of temporary or permanent nature as required for satisfactory completion of work.
- 2.3 The Technical Specification forms a part of tender document and shall be read in conjunction with Instruction to Bidder (ITB), Special Conditions of Contract (SCC), General Conditions of Contract (GCC) and Bill of Quantity (BOQ) in the tender document.

3.0 BIDDER’S TO PROVIDE DOCUMENTS:

- 3.1 Submission of proof of possession of independent EPF code of the bidder
- 3.2 Submission of proof of possession of independent ESI Code of the bidder
- 3.3 Submission of copy of Proprietorship deed/ Partnership Deed / Article & Memorandum of Association of the bidder, copy of PAN Certificate and copy of GSTIN Certificate.

- 3.4 Submission of copy of General Power of Attorney (GPA) of the signatory of the bid

4.0 TIME SCHEDULE:

- 4.1 The Quality of work output and time is the essence of the contract. All work within scope of this tender shall be completed within **Twelve (12) months** from the date of issue of Letter/Fax of Acceptance (LOA/ FOA) by NALCO strictly in accordance with the programme.

5.0 SALIENT FEATURES OF BIDDING DOCUMENT:

i)	NAME OF THE WORK	DISMANTLING, MODIFICATION AND ERECTION OF MISCELLANEOUS MECHANICAL WORK FOR INSTALLATION OF STEAM AND POWER PLANT FOR 5 TH STREAM ALUMINA REFINERY EXPANSION UNDER PHASE-3 EXPANSION OF M&R COMPLEX, DAMANJODI - 763 008, KORAPUT DISTRICT IN THE STATE OF ODISHA, INDIA.
ii)	LOCATION OF THE WORK	NALCO, DAMANJODI
iii)	TENDER REFERENCE & DATE	NALCO CGPP/2025/ MISC.MECH/01 DT.20.08.2025
iv)	CONTRACT PERIOD	TWELVE (12) MONTHS FROM THE DATE OF ISSUE OF LETTER/FAX OF ACCEPTANCE
v)	MODE OF E-TENDERING	LIMITED TENDER (LTE) (Single Stage two Part Bid) IN CPP PORTAL
vi)	NO OF AGENCY REQUIRED	01
vii)	E.M.D.	Rs.80,000/- (RUPEES EIGHTY THOUSAND ONLY) BY WAY OF BANK GUARANTEE OR NEFT/RTGS DIRECTLY TO NALCO ACCOUNT. <u>BANK ACCOUNT DETAILS:</u> SBI ACCOUNT NO. – 10044880013 SBI BRANCH CODE – 09817 SBI IFSC CODE - SBIN0009817
viii)	BIDDER QUALIFICATION CRITERIA (BQC)	NOT APPLICABLE
ix)	BID DOWNLOAD PERIOD DATE/TIME	20/08/2025

x)	SUBMISSION OF QUERY RELATED TO TENDER	23/08/2025
xi)	UPLOADING ADDENDA/ CORRIGENDA/ CLARIFICATION, if Any	26/08/2025
xii)	TENDER UPLOADING BY BIDDER AT CPP PORTAL DATE & TIME	03/09/2025
xiii)	BID OPENING DATE / TIME	04/09/2025
xiv)	VALIDITY OF OFFER	FOUR (4) MONTHS FROM THE DUE DATE OF UPLOADING OF BID OR EXTENDED DUE DATE OF UPLOADING OF BID, AS THE CASE MAY BE.
xv)	DEFECT LIABILITY PERIOD	TWELVE (12) MONTHS FROM THE DATE OF SUCCESSFUL COMPLETION OF WORK AND ISSUE OF COMPLETION CERTIFICATE.
xvi)	PRICE VARIATION CLAUSE	NOT APPLICABLE
xvii)	APPLICABILITY OF GST	APPLICABLE
xviii)	PRE-CONTRACT INTEGRITY PACT	APPLICABLE
xix)	DIVISIBILITY/SPLITTING OF WORK	NOT APPLICABLE
xx)	FREE ISSUE MATERIALS	AS DETAILED IN TECHNICAL SPECIFICATION (ANNEXURE-2)
xxi)	LOADING CRITERIA	NOT ENVISAGED IN THIS TENDER.
xxii)	PREBID MEETING	NOT APPLICABLE
xxiii)	APPLICABILITY OF INCOME TAX DEDUCTION AT SOURCE	APPLICABLE
xxiv)	APPLICABILITY OF ITC ON GST	APPLICABLE
xxv)	APPLICABILITY OF PRE CONTRACT AGREEMENT	APPLICABLE
xxvi)	MOBILISATION ADVANCE	NOT APPLICABLE

- 6.0** NALCO/DASTUR invites digitally signed bids on e-procure site of CPP Portal (www.eprocure.gov.in) under single stage two part bid system, electronic mode of tendering, on “Limited Tender (LTE)” basis Part-I: EMD, Pre Contract Integrity Pact, signed NIT document without deviation, documents as per check list of NIT and Part-II: Priced Bill of Quantity from the bidders will be able to download the bidding documents free of cost and upload their bids on CPP Portal (Central Public Procurement Portal) (www.eprocure.gov.in). Bids will be uploaded up to last date and time specified in para-5 (xii) above or extended due date, as the case may be through e-tendering portal at www.eprocure.gov.in
- 7.0** Amendment and/or clarification, if any issued for the NIT shall form part and parcel of the Tender Documents. Amendments and/or Clarifications will be hosted on CPP Portal website (www.eprocure.gov.in). Bidders are requested to visit the website from time to time to note the amendments and/or clarifications before uploading/submission of their bids. NALCO/DASTUR shall not be responsible, if any bidder omits to notice any amendment and/or clarification before submission of their bids.
- 8.0** The bidders shall submit all their queries related to this tender well in advance to NALCO/DASTUR. Any addendum/corrigendum shall be hoisted as per NIT.
- 9.0** Bidders are expected not to take any deviations to the terms & conditions stipulated in the tender documents. However, NALCO reserves the right to cancel/reject any bid, if the deviation taken by the bidder.
- 10.0** Bidder shall download the Bidding Document and upload/submit the bid directly. The Bidding Document is non-transferable.
- 11.0** EMD as specified in para 5(vii) above shall be paid in favour of “National Aluminium Company Limited” in the form of Bank Guarantee (BG) or NEFT/RTGS directly to NALCO Account (For Bank Account details refer para 5 (vii) above). The Bank Guarantee will be as per the prescribed proforma provided in Tender Document, issued by a Bank listed in the Tender Document. The Bank Guarantee shall be valid for a period of eight (8) months from the due date of uploading of bid and to be extended on request of the Owner.
- 12.0** Bids not accompanied with EMD shall be rejected. The EMD of unsuccessful bidder shall be returned within fifteen (15) days from the date of issue of Letter/Fax of Acceptance (LOA/ FOA) by Owner. EMD of successful bidder shall be returned after submission of Initial Security Deposit/Security Deposit by the bidder and signs the Contract Agreement. However, the Public Sectors, Government agencies, MSEs registered with DIC, Start-ups registered with DIPP and firms registered with NSIC (for the service/work for which they are registered) are exempted from submission of EMD, subject to submission of attested documentary evidence in support of the same along with the offer.

- 13.0** Original EMD (BG or NEFT/RTGS receipt) and Integrity Pact Agreement will be received at the following address by Registered Post/Courier/submitting the same in person within three (3) working days counted from the last bid due date of uploading bid or extended bid due date of uploading bid, as the case may. The scanned copy of EMD (BG or NEFT/RTGS receipt) and Integrity Pact Agreement along with bid documents as per NIT and Priced Bill of Quantity in .xls format to be uploaded in CPP Portal website (www.eprocure.gov.in) within bid due date and time specified in Para 5 (xii) above or extended date, as the case may be.

Mr. Anirban Biswas
Project Manager (NALCO-CGPP Project),
M.N. Dastur & Company (P) Ltd.,
P-17, Mission Row Extension
Kolkata -700013
Tel. No : (033) 2225-0500/ (033) 2225-5420
Fax No: (033) 2225-1422
E-mail: Anirban.b@dastur.com

- 14.0** If it happens to be holiday on the date of opening of bids then the same shall be opened on next working day at the same time & at the same venue.
- 15.0** NALCO shall not be responsible for any expenses incurred by bidders in connection with the preparation & delivery of their bids, site visit and other expenses incurred during bidding process.
- 16.0** Bid shall remain valid for acceptance for a period of four (4) months from the due date of uploading of bid or extended due date of uploading of the bid, as the case may be.
- 17.0** The date of opening Bid shall as per NIT. The prospective bidder can see the bid opening from remote through CPP Portal.
- 18.0** Telex/ Telegraphic/ Fax/ E-mail bids shall not be accepted.
- 19.0** Download/issue of tender documents shall not construe that the Bidders would be automatically considered qualified.
- 20.0** NALCO reserves the right to accept or reject any or all bids without assigning any reason and without any liability.
- 21.0** Tender documents are not transferable.
- 22.0** The Bidders are advised to visit the site and get acquainted with the site conditions, local conditions, Laws, Rules and Regulations (Central & State), Plant & Equipment and different systems before submission of bids.

- 23.0** NALCO reserves the right to amend the scope of work, accept or reject any or all the offers, in part or in full or cancel/withdraw the Notice Invitation Tenders (NIT) without assigning any reasons whatsoever and in such case no bidder / intending bidder shall have any claim arising out of such action.
- 24.0** NALCO reserves the right to cancel/postpone the date of uploading and opening of the tenders without bearing any liability whatsoever consequent upon such decision.
- 25.0** EMD of unsuccessful bidder shall be returned within fifteen (15) days from the date of issue of Letter/Fax of Acceptance (LOA/ FOA) by Owner. EMD of successful bidder shall be returned after submission of Security Deposit by the bidder and signs the Contract Agreement.
- 26.0** Bidder is to note and understand that DASTUR is inviting tenders on behalf of M/s. National Aluminium Company Limited solely on their behalf and not on behalf of any other person or entity. In particular, it is to note & understand that the Government of India is not a party to this tendering process and has no liabilities, obligations or rights hereunder. It is to note & understand M/s National Aluminium Company Limited is an independent legal entity with power and authority to enter into contracts solely on its own behalf under the applicable Laws of India and general principles of Contract Law. It is to note & understand that M/s. National Aluminium Company Limited is not an agent, representative or delegate of the Government of India. It is to be further noted & understood that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the tendering process. Accordingly, Bidder shall have no rights, whatsoever, against the Government of India as to any manner, claims, cause of action or thing whatsoever arising of or under this tendering process.
- 27.0 Legal Status:**
- The bidder in the same name and style shall have appropriate legal status by virtue of a deed of incorporation, memorandum and articles of association etc. enabling him to execute relevant contract for the work.
- 28.0** NALCO/DASTUR reserves the right to make changes in the terms and conditions mentioned in Tender Documents and to reject any or all the Bids received including those received incomplete, telex/Fax bids, without assigning any reason(s) thereof.
- 29.0** The Bids should be unambiguous and complete in all respect. Incomplete and ambiguous Bids will be rejected outright.
- 30.0** No correspondence whatsoever until and unless called for by NALCO/DASTUR shall be entertained after Bid due date and time or extended due date and time, as the case may be. Any uncalled for communications received later from the bidders will be ignored.

- 31.0** Tender Inviting Authority (TIA) is the Nodal Officer for necessary coordination in this Tender. For clarification, if any, can be obtained from Mr. Anirban Biswas through Fax, Phone & E-mail as indicated below:

Contact Person:

Mr. Anirban Biswas
Project Manager (NALCO-CGPP Project),
M.N. Dastur & Company (P) Ltd.,
P-17, Mission Row Extension
Kolkata -700013
Tel. No : (033) 2225-0500/ (033) 2225-5420
Fax No: (033) 2225-1422
E-mail: Anirban.b@dastur.com

For and on behalf of M/s.NALCO

M. N. Dastur & Company (P) Ltd.

**NATIONAL ALUMINIUM COMPANY LIMITED
(NALCO)**

INSTRUCTION TO BIDDERS (ITB)

FOR

DISMANTLING, MODIFICATION AND ERECTION OF MISCELLANEOUS
MECHANICAL WORK FOR INSTALLATION OF STEAM AND POWER PLANT
FOR 5TH STREAM ALUMINA REFINERY EXPANSION UNDER
PHASE-3 EXPANSION OF M&R COMPLEX

AT

NALCO - MINES & REFINERY COMPLEX,
DAMANJODI - 763 008,
KORAPUT DISTRICT
ODISHA, INDIA.

August 2025



M.N. DASTUR & COMPANY (P) LTD
Consulting Engineers

A GENERAL

1.0 INTRODUCTION

- 1.1 National Aluminium Company Limited (NALCO), a Government of India undertaking and a Navaratna company owns and operates a large integrated Mines-Alumina-Aluminium complex in India. It has multi- location operation as follows:

a)	Mines & Alumina Refinery	Damanjodi, Odisha.
b)	Aluminium Smelter	Angul, Odisha
c)	Captive Power Plant	Angul, Odisha
d)	Port Handling Facilities (for alumina export & caustic soda import)	Visakhapatnam, Andhra Pradesh

In the initial plant of Alumina Refinery, there were 2 streams. During 1st and 2nd phase expansion, 3rd & 4th streams have been added. Co-generation steam & power plant(SPP) of capacity 4 x 200 tph + 1 x 250 tph steam generation along with 4 x 18.5 MW + 1 x19.5 MW back pressure TGs were installed for catering power & process steam requirement.

As a part of NALCO's growth plan, it is planned to set up of one more stream (5th stream) in its Alumina refinery under 3rd phase expansion at Damanjodi with stream capacity of 1.0MTPA and process technology based on medium pressure digestion.

For catering the supply of steam and power for above expansion facilities, it is being planned to add one (1) no. Pulverized Coal fired boiler of 300tph capacity and one (1) no. condensing cum extraction TG of 18.5 MW capacity as a part of SPP expansion at Mines & Refinery (M&R) Complex at Damanjodi in Odisha.

NALCO has appointed M/s M.N. Dastur & Company (P) Ltd. (DASTUR) as EPCM Consultant (hereafter referred as CONSULTANT) for implementation of this Project.

- 1.2 M/s M.N. Dastur & Company (P) Ltd., on behalf of NALCO, invites bids for Dismantling, Modification and Erection of Miscellaneous Mechanical work for Installation of Steam and Power Plant under single stage two part bid system, electronic mode of tendering, on "**Limited Tender (LTE)**" basis, Part-I : EMD, Pre Contract Integrity Pact, signed NIT document without deviation, documents as per check list of NIT and Part-II : Priced Bill of Quantity from the bidder.

2.0 COST OF BIDDING

- 2.1 All direct and indirect costs associated with the preparation and submission/uploading of bid (including clarification meetings and site visit, if any), shall be to Bidder's account and the OWNER/DASTUR will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process. The bidding documents will be downloaded from CPP portal by the bidder at free of cost.

3.0 SITE VISIT

- 3.1 Bidder is advised to visit and examine the site, its surroundings and familiarize himself of the existing facilities and environment and collect all other information which he may require for preparing and submitting/uploading the bid and entering into 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.
- 3.2 The Bidder and 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 and 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.
- 3.3 Name of Contact Persons for Site Visits is:

Mr. Rakesh Gangrade GM (Mech.), NALCO
M&R Complex, NALCO, Damanjodi,
District: Koraput, Odisha - 763 008
Mob:
E mail: rakesh.gangrade@nalcoindia.co.in

OR

Mr. Ratan Mitra, RCM, M.N. Dastur & Co. (P) Ltd.
M&R Complex, NALCO, Damanjodi,
District: Koraput, Odisha - 763 008
Mob: +91 9989374296
E mail: Ratan.M@dastur.com

- 4.0 Not used

B BIDDING DOCUMENT, CLARIFICATIONS AND AMENDMENT

5.0 BIDDING DOCUMENT

5.1 The Bidding Document shall in general consist of the following and should be read in conjunction with any amendment issued in accordance with Clause 7.0 below.

- i) Short Notice inviting tender (SNIT)
- ii) Detailed Notice Inviting Tender (DNIT)
- iii) Instruction to Bidder (ITB)
- iv) General Conditions of Contract (GCC)
- v) Special Conditions of Contract (SCC)
- vi) Bill of Quantity (BOQ)
- vii) Technical Specifications.
- viii) Drawings, if any.

5.2 Although all the details presented in this Bidding Document have been compiled with reasonable care, however, the Bidder is expected to examine the Bidding Document, including all instructions, forms, terms, specifications and drawings in the Bidding Document and Bidder to ensure that the information provided is adequate, clearly understood and it includes all documents as per the tender.

6.0 CLARIFICATION OF BIDDING DOCUMENT

6.1 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 cut off date as specified in Notice Inviting Tender (NIT) Such clarification requests shall be directed to the address given in clause 18.0 below.

6.2 Any failure by Bidder to comply with the aforesaid requirement shall not excuse the Bidder, after subsequent award of LOA/FOA, from performing the work in accordance with the Contract.

6.3 Response to queries/ clarifications raised will be sent as expeditiously as possible to all who have been issued the Bidding Documents. The response shall not form part of the Bidding Document unless issued as an Addendum/ Amendment.

6.4 Bidders are expected to resolve all their clarifications/ queries to the Bidding Document and submit their bid in total compliance to Bidding Document without any deviation/ stipulation/ clarification.

7.0 AMENDMENT OF BIDDING DOCUMENT

- 7.1 OWNER/DASTUR may, for any reason whether at his own initiative or in response to the clarification requested by the prospective bidder(s), issue amendment in the form of Addendum during the bidding period and subsequent to receiving the bids. Any Addendum thus issued shall become part of Bidding Document and Bidder shall submit/upload 'Original' Addendum/ Compliance letter duly signed and stamped in token of his acceptance.
- 7.2 For Addendum issued during the bidding period, Bidder shall consider the impact in his bid. For Addendum issued subsequent to receiving the bids, Bidder shall follow the instructions issued along with addendum with regard to submission/uploading of impact on quoted price/ revised price, if any.

8.0 CONFIDENTIALITY OF BIDDING DOCUMENT

- 8.1 Bidders shall treat the bidding documents and contents therein as strictly confidential.
- 8.2 The Bidding 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.

C PREPARATION OF BID

9.0 LANGUAGE OF BID

- 9.1 The Bid and all correspondence incidentals to and concerning the Bid shall be in the English language. For supporting documents and printed literature submitted in any other language, an equivalent English translation shall also be submitted. Responsibility for correctness in translation shall lie with the Bidder. In case of any conflict, for the purpose of interpretation of the Bid, the English translation shall govern.

10.0 COMPLIANCE TO BID REQUIREMENT

- 10.1 OWNER/ DASTUR expect Bidder's compliance to requirement of Bidding Document without any deviation and submit substantially responsive bid.
- 10.2 Bidders are advised to quote strictly as per terms and conditions of the bidding documents.

10.3 In any case, no exception or deviation shall be accepted to the Bidding Document and bids containing deviations/ exceptions may result in rejection of their bid:

11.0 DOCUMENTS COMPRISING BID

11.1 The offer must be complete in all respects, leaving no scope for ambiguity. Bidder is fully responsible for the bid submitted/uploaded and no relief or consideration can be given for errors and omissions.

11.2 The Bid shall be submitted/uploaded under single stage two part bid system, Part – I: EMD, Pre Contract Integrity Pact, signed NIT document without deviation, documents as per check list of NIT and Part-II : Priced Bill of Quantity as per details given in Detailed Notice Inviting Tender:

11.3 PART-I & PART-II shall contain the following documents:

- i) Submission/uploading of bid letter
- ii) Submission/uploading of bid document signed and stamped all pages by the Bidder in token of acceptance and considered the same in preparing and submitting the Bid.
- iii) EMD as per DNIT and Performa for BG for EMD will be as per Annex-8
- iv) Power of attorney in favour of signatory (ies) of the bid.
- v) Submission of EPF code, ESI code, PAN Certificate and GSTIN Certificate documents.
- vi) Copy of Proprietorship deed /Partnership Deed in case of partnership firm or Memorandum & Article of Association in case of limited company.
- vii) Compliance to Bid requirement as per Annex-1
- viii) Check List duly filled in as per Annex-2.
- ix) Reply to Commercial Questionnaire as per Annex-3.
- x) Bidders Queries as per Annex-4
- xi) Submission/uploading of Declaration by Bidder as per Annex-5.
- xii) Submission/uploading of Declaration regarding PF as per Annex-6.
- xiii) Pre Contract Integrity Pact as per Annex-7
- xiv) Social Accountability 8000 (SA 8000) as per Appendix-IV of Special Conditions of Contract (SCC) and submission/uploading will be as per DNIT.
- xv) Undertaking towards restrictions on procurement from a bidder of a country which shares a land border with India as per the format Annex-12
- xxi) Local Content Declaration under preference to “Make in India” policy as per Annex-11
- xxii) Any other information required in the Bidding Documents or considered relevant by the bidder.
- xxiii) Priced Bill of Quantity in .xls format (PART-II)

12.0 BID PRICES

- 12.1 Bidder shall quote price after careful analysis of cost involved for the performance of the work considering all parts of the Bidding Document. In case any activity though specifically not covered in description of item under Bill of Quantity but is required to complete the work which could be reasonably implied/ inferred from the contents of the Bidding Document, the prices quoted shall be deemed to be inclusive of the cost incurred for such activity.
- 12.2 The prices shall be based on conditions specified in General Conditions of Contract, Special Conditions of Contract, Scope of Work, Technical Specifications and other contents of Bidding Document.
- 12.3 The rates quoted in the Bill of Quantity by the bidder, shall remain firm, fixed and valid till the completion of work in all respect and will not be subject to variation on any account except as otherwise specifically provided in the Contract documents.
- 12.4 Bidder shall quote/fill the rate up to two decimal digits only. Decimal digits beyond two will be ignored for all purposes.

13.0 BID VALIDITY

- 13.1 Bid shall remain valid for a period as detailed in the Notice inviting tender. During the above period, bidders shall not be entitled to revoke or cancel their Bid or to vary the Bid given or any term thereof without written consent of the OWNER. In case, bidders are revoking or cancelling their Bid or varying any terms in regard thereof without the written consent of OWNER, the OWNER shall forfeit EMD and reject their bids. Such Bidder also may be put on Holiday list.
- 13.2 OWNER may request the bidders for extension of the period of validity of bid. If the Bidder agrees to the extension request, the validity of Bank Guarantee towards EMD shall also be suitably extended. Bidders may refuse the request of extension of bid validity without forfeiting his EMD. However, bidders agreeing to the request for extension of validity of bid shall not be permitted to modify the bid because of extension, unless specifically invited to do so.

14.0 EARNEST MONEY DEPOSIT (EMD)

- 14.1 Bidder shall furnish, as part of its Bid, EMD for an amount as indicated in the Detailed Notice Inviting Tender. The Bids not accompanied with EMD or EMD not as per Proforma given in the Bidding Document shall be considered as non-responsive and such Bids shall be rejected. OWNER shall not pay any interest on EMD furnished. Further, in case Bank Guarantee (BG) submitted is found to be fake, bid of such bidder shall be rejected and blacklisted for future work. The Public Sectors, Government agencies, MSEs registered with DIC, Start-ups registered with DIPP and firms registered with NSIC (for the service/work for which they are registered) are exempted from submission of EMD, subject to submission of attested documentary evidence in support of the same along with the offer.

- 14.2 The Bank Guarantees for submission of EMD shall be from any Nationalized Bank/ Scheduled bank listed in Special Condition of Contract (Appendix-III) of the Tender Document and same shall be as per the format given in Annex-8. EMD through RTGS/NEFT mode directly to NALCO's account shall also be acceptable. Bids not accompanied with EMD shall be rejected. and such Bidder shall not be allowed to attend Bid opening.
- 14.3 The Bank Guarantee shall remain valid for eight (8) months from the due date of uploading of Bid and to be extended on the request of the Owner.
- 14.4 The EMD of unsuccessful bidder shall be returned within fifteen (15) days from the date of issue of Letter/Fax of Acceptance (LOA/ FOA) by the Owner. However, the EMD of successful bidder shall be returned after submission of Initial Security Deposit/Security Deposit by the bidder and signs the Contract Agreement.
- 14.5 The EMD may be forfeited:
- i) if a Bidder withdraws or varies its bid suo motto during the period of Bid validity or does any breach of tendering terms and conditions, or
 - ii) If the bidder / his representatives commit any fraud while competing for this contract pursuant to Fraud Prevention Policy of Owner.
 - iii) In case the bidder / contractor is disqualified from the bidding process in terms of sections of Integrity pact.

15.0 MULTIPLE/ ALTERNATIVE BID

- 15.1 A bidder shall not submit more than one bid either directly or indirectly.

16.0 FORMAT AND SIGNING OF BID

- 16.1 The bidder shall prepare bid and upload their bids) on CPP Portal (Central Public Procurement Portal) (www.eprocure.gov.in) .
- 16.2 The bid shall be typed or written in indelible ink and shall be signed by the bidder or person(s) authorised to sign on behalf of the bidder. All pages of the bid shall be stamped, initialed, numbered and tender reference.
- 16.3 The bid shall contain no interlineations, erasures or overwriting. In case any corrections are required, the original writings shall be neatly cut/penned through and re-written nearby. No overwriting or erasure of original writings is permitted. All corrections/ cuttings/ alterations shall be signed in full by the Bidder with date. Numerical figures shall be written both in figures as well in words.

17.0 CHECK LIST FOR SUBMISSION/UPLOADING OF BID

- 17.1 To assist Bidder in ensuring the completeness of bid, a checklist for submission/uploading of various documents/details, has been enclosed.
- 17.2 Bidder is required to fill the checklist and submit/upload along with the bid for ready reference. All documents shall be submitted / uploaded under various sections as per this Check List.

D BID SUBMISSION / UPLOADING

18.0 MARKING OF BID

- 18.0 Bids shall be submitted / uploaded in two part, Part-I: EMD, Pre Contract Integrity Pact, signed NIT document without deviation, documents as per check list of NIT and Part-II : Priced Bill of Quantity. The Priced Bill of Quantity will be uploaded on e-procure site of CPP Portal (www.eprocure.gov.in) in **.xls** format only. All pages of bid shall be stamped, initialed, numbered and tender reference shall be uploaded on e-procure site of CPP Portal (www.eprocure.gov.in).
- 18.1 Original EMD (BG or NEFT/RTGS receipt) and Integrity Pact Agreement will be received at the following address by Registered Post/Courier/submitting the same in person within three (3) working days counted from the last bid due date of uploading bid or extended bid due date of uploading bid, as the case may. The scanned copy of EMD (BG or NEFT/RTGS receipt) and Integrity Pact Agreement along with bid documents as per NIT and Priced Bill of Quantity in **.xls** format to be uploaded in CPP Portal website (www.eprocure.gov.in) within bid due date and time specified in Para 5 (xii) above or extended date, as the case may be.

Mr. Anirban Biswas
Project Manager (NALCO-CGPP Project),
M.N. Dastur & Company (P) Ltd.,
P-17, Mission Row Extension
Kolkata -700013
Tel. No : (033) 2225-0500/ (033) 2225-5420
Fax No: (033) 2225-1422
E-mail: Anirban.b@dastur.com

- 18.2 Instructions to the Bidders for the e-submission of the bids will be as per Annex-10

19.0 DATE, TIME AND SUBMISSION/UPLOADING OF BID

- 19.1 Bid must be submitted / uploaded by the due date and time mentioned in the Notice Inviting Tender or any extension thereof as duly notified in writing by OWNER/DASTUR.

20.0 MODIFICATION AND WITHDRAWAL OF BIDS

- 20.1 The Bidder may modify or withdraw its bid after the bid's submission/upload prior to the deadline prescribed for submission / upload of bids as per the procedure of e-submission of bid.

E BID OPENING AND EVALUATION

21.0 OPENING OF BIDS

- 21.1 The bid will be opened at CPP portal by the Owner. The prospective bidder can see the bid opening from remote through CPP portal.

22.0 CLARIFICATION OF BIDS

- 22.1 OWNER/DASTUR, if necessary, will obtain clarifications on the Bid from any or all Bidders, either in writing or through personal contact. All responses shall be in writing, and no change in the price or substance of the bid shall be permitted unless specifically sought by OWNER/DASTUR.
- 22.2 After submission/uploading of bid, if asked for, Bidder shall submit all additional documents in one original and two copies.

23.0 EVALUATION OF BIDS

- 23.1 The OWNER/ DASTUR will determine whether each bid
- i) Is accompanied by required EMD
 - ii) Is accompanied by Priced Bill of Quantity
 - iii) totally compliance with the requirement of the Bidding Document
 - iv) provides any clarifications and/ or requirement pursuant to clause 22.0 above

24.0 Not Used

25.0 EVALUATION/ REJECTION CRITERIA

- 25.1 The rates quoted by the Bidder shall be checked for arithmetic correction, if any, based on price filled by the Bidder in the Priced Bill of Quantity.
- 25.2 The rates should be quoted by bidder up to two decimal digits only. Decimal digits beyond two will be ignored for all purposes.
- 25.3 Conditional discount, if offered, shall not be considered for evaluation.
- 25.4 Any uncalled for lump-sum/ percentage or adhoc reduction/ increase in prices, offered by the Bidders after opening of the prices, shall not be considered.
- 25.5 Deviation to terms & conditions of the bid documents is not allowed. Further non acceptance of clauses of Bidding documents shall lead to rejection of bid.

26.0 NOT USED

27.0 PREFERENCE TO “Make in India”

Government of India guideline on procurement policy for “Make in India” shall be as per the details given at Annex-11.

28.0 RESTRICTIONS ON PROCUREMENT FROM A BIDDER OF A COUNTRY WHICH SHARES A LAND BORDER WITH INDIA UNDER RULE 144(XI) OF THE GENERAL FINANCIAL RULES (GFRS) 2017

- 28.1 Any bidder from a country which shares land border with India will be eligible to bid in any procurement whether goods, services or works only, if the bidder is registered with the specified Competent authority. Bidders shall must submit along with the Part-1 bid an undertaking duly sealed & signed as per the format Annex-12.

29.0 CONTACTING THE OWNER/ DASTUR

- 29.1 Bidders are advised not to contact OWNER/ DASTUR on any matter relating to its bid from the time of Bid opening to the time CONTRACT is awarded, unless requested to in writing. Any effort by a Bidder to influence the OWNER/ DASTUR in any of the decision in respect of Bid evaluations or award of CONTRACT will result in the rejection of Bid.

F AWARD OF CONTRACT

30.0 OWNER'S RIGHT TO ACCEPT OR REJECT ANY BID

- 30.1 The OWNER reserves the right to accept or reject any Bid and to annul the Bidding

process and reject all Bids at any time prior to the date of issue of Letter/Fax of Acceptance (LOA/ FOA) by OWNER, without thereby incurring any liability to the affected Bidder or Bidders or without any obligation to inform the affected Bidder or Bidders of the grounds or the reasons for the OWNER'S action.

31.0 NOTIFICATION OF AWARD

- 31.1 The Bidder, whose bid is accepted by OWNER, shall be issued Letter/Fax of Acceptance (LOA/ FOA) prior to expiry of bid validity. Bidder shall confirm acceptance by acknowledging the receipt.
- 31.2 OWNER/DASTUR shall not be obliged to furnish any information/clarification/ explanation to the unsuccessful Bidders as regards non-acceptance of their bids. OWNER/DASTUR shall correspond only with the successful Bidder.

32.0 CONTRACT AGREEMENT

- 32.1 The successful bidder shall execute a formal contract with the OWNER within specified period from the date of issue of Detailed Letter of Acceptance on a non-judicial stamp paper of Odisha State (India) and of appropriate value. The cost of non-judicial stamp paper shall be borne by the successful bidder.
- 32.2 Contract documents for agreement shall be prepared after the acceptance of bid. Until the final contract documents are prepared and executed, this Bidding Document together with the annexed documents, modifications, deletions agreed upon by the OWNER and bidders acceptance thereof shall constitute a binding contract between the successful Bidder and the OWNER based on terms contained in the aforesaid documents and the finally submitted and accepted prices.
- 32.3 The Contract document shall consist of the following:
- i) Bidding Document.
 - ii) Amendment/ Corrigendum to Bidding Document issued, if any.
 - iii) Post bid Clarifications, MOMs, and Correspondences etc., if any
 - iv) Fax/ Letter of Intent/ Acceptance.
 - v) Detailed letter of Award/ Acceptance along with enclosures.
 - vi) Pre Contract Integrity Pact
- 32.4 If conflicts between documents, comprising the Contract arise, the following shall prevail in the order as below;
- FOA/ LOA including any agreed variation.
 - Bill of Quantity (BOQ)
 - Technical Specifications
 - Drawings, if any

- Special Conditions of Contract (SCC)
- Instruction to Bidders (ITB)
- General Conditions of Contract (GCC)
- Relevant Indian Standards

33.0 MODIFICATION OF GENERAL INSTRUCTIONS TO BIDDERS

33.1 General Instructions to Bidders of General Conditions of Contract (GCC) are modified to the extent as specified in this Instruction to bidders.

34.0 CONFIDENTIALITY:

A. Integrity Pact:

Bidders are required to unconditionally accept the “Integrity Pact (IP)” (executed on plain paper), as per format attached at Annex-7, and submit the same duly signed on all pages by the Bidder’s Authorised Signatory in a separate sealed envelope along with EMD and other documents at the address specified. Bidder and its Subsidiary (ies) and /or Holding Company and/or Subsidiary (ies) of its Holding Company/Consortium members shall individually sign Integrity Pact (IP) and shall be submitted in a separate sealed envelope before stipulated proposal submission time at the address specified. Bidder’s failure to comply with the aforesaid requirement regarding submission of Integrity Pact (IP) shall lead to outright rejection of their offer as being non-responsive and shall not be opened.

B. Independent External Monitors (IEM)

1. The tenderer must sign the Pre-Contract Integrity Pact duly filled in, signed and stamped as per Annexure attached & submit the same along with un priced bid, failing which offer shall be liable for rejection. At present, there are three Independent External Monitors (IEM) in NALCO. Their contact details are given as below.

Smt. Deepa Krishan IRS (Retd.) Mail ID: deepakrishan@gmail.com	Dr. Meeran C Borwankar IPS (Retd.) Mail ID: mcborwankar@gmail.com	Mr. Hare Krushna Dash IAS (Retd.) Mail ID: hkdash184@hotmail.com
-------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------

The above nominated panel of Independent External Monitors (IEM) will oversee the compliance to Integrity Pact Program. Bidder may write to the nominated panel of IEMs for their grievances related to Integrity pact, if any, giving details of the tender, name of the tender issuing officer etc. for quick identification of the tender

by the IEM to resolve their grievances.

Note:

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

2. IEM is authorized to examine /consider all references made to it under this tender. The bidder(s), in case of any dispute(s) / complaint(s) pertaining to this package may raise the issue either with the designated 'Nodal Officer' of OWNER or directly with the IEMs at above Address:
3. The Independent External Monitors (IEMs) have the right to access without restriction to all Project documentations of the OWNER including that provided by the Bidder. The Bidder will also grant the Monitor, upon its request and demonstration of a valid interest, unrestricted and unconditional access to its Project Documentations. The same is applicable to Sub-contractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder / Subsidiary (ies) and/or Holding Company and/or Subsidiary (ies) of its Holding Company / Consortium members/Sub Contractors with confidentiality.
4. The Nodal Officer of OWNER will be assigned for necessary co-ordination in this regard. Any clarifications regarding tender terms and conditions should be addressed to Nodal Officer of Owner.
5. If the OWNER has terminated the Contract pursuant to Section-3 of the Integrity Pact (IP), OWNER shall encash the Bank Guarantee, in accordance with Section 5 of Integrity Pact.'

35.0 SECURITY DEPOSIT:

- 35.1 A sum of 10% of the accepted value of the tender or actual value of the work done whichever is higher for contracts shall have to be deposited by the person/ persons (hereinafter called as contractor) as security deposit with the owner until the expiry of defect liability period.
- 35.2 This may be deposited initially at 2.5% of the value of the contract (referred as initial Security deposit) **within a period of 21 days from the date of issue of work order/ FOI/ LOA** and the balance will be recovered in installments through the deduction @ 10% of the gross value of the each running account bill till total security deposit is collected. No further deduction from the bills will be made on this account subject to clause 19.6 of GCC.
- 35.3 Alternatively the contractor may at his option deposit the full amount as mentioned at 35.1 above towards deposit within a period of 21 days from the date of issue of work order/ FOI/ LOA. This amount will have to be suitably enhanced to the tune of above percentage of the executed value. The Bank Guarantee for SD shall be as per the format given below in Annex-9.

- 35.4 In case the successful bidder fails to submit the ISD /SD, with in a period of 21 days from the date of issue of work order/ FOI/ LOA , the ISD amount along with a simple interest @10% per annum as penalty, applicable from the date of issue of LOA/work order till the date of submission of ISD or submission of 1st RA bill, shall be recovered starting from 1st RA bill.
- 35.5 The bid security deposited (EMD) with the tender, by the successful bidder **if paid in the form of electronic mode** shall be adjusted towards Initial Security Deposit.
- 35.6 The security deposit will be released after successful completion of the defect liability period on certification of Manager-in-charge / Engineer-in-Charge.
- 35.7 In case the DLP is NIL, the Security Deposit will be released to the successful bidder within three months of the submission of full and final bill to the EIC.

36.0 CONTRACTOR'S DEFAULT:

Any forfeiture /deduction/recovery/reduction from contract price under contract by invoking Initial Security Deposit/Security Deposit or otherwise shall be done. For such a transaction debit note to that effect will be issued by the owner.

37.0 ANTI-PROFITEERING PROVISIONS:

In compliance to GST Act, anti-profiteering provisions mandates that any reduction in tax rates or benefits of input tax credits shall be passed on to the consumer by way of commensurate reduction in prices. Bidders to take note of the same and pass on such benefits to OWNER while quoting their price as well as during execution of the Contract.

COMPLIANCE TO BID REQUIREMENT

We hereby agree to fully comply with, abide by and accept without variation, deviation or reservation all technical, commercial and other conditions whatsoever of the Bidding Documents and Addendum to the Bidding Documents, if any, for subject work issued by OWNER.

We hereby further confirm that any terms and conditions if mentioned in our bid, shall not be recognized and shall be treated as null and void.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

CHECK LIST FOR SUBMISSION OF BID

Bidder is requested to fill this check list and ensure that all details/documents have been furnished as called for in the Bidding Document along with duly filled in, signed & stamped checklist.

Please tick the box and ensure compliance:

SI No	Description	Submitted/ Not Submitted/Not Applicable
(A) UNDER SECTION –I		
1	Bid Letter	
2	<p>EMD</p> <p>(Bidder to confirm that EMD has been submitted by them as per Tender Performa).</p> <p>Original EMD (BG or NEFT/RTGS receipt) shall be submitted to Tender Inviting Authority (TIA) as indicated in Detailed Notice Inviting Tender (DNIT) and its scanned copy in CPP Portal (www.eprocure.gov.in).</p>	
(B) UNDER SECTION -2		

SI No	Description	Submitted/ Not Submitted/Not Applicable
1	Power of Attorney in Favour of the person who has signed the bid on stamp paper of Appropriate value.	
2	Partnership Deed in case of partnership firm and Article of Association in case of limited Company.	
5	Declaration regarding PF as per Annex-6	
C) UNDER SECTION - 3		
1	Compliance to Bid Requirement as per Annex-1	

SI No	Description	Submitted/ Not Submitted/Not Applicable
2	Reply to commercial questionnaire as per Annex-3 with Bidder's reply/ confirmation for each SI. No.	
3	Reply to Technical questionnaire (if enclosed in technical part) with Bidder's Reply/ Confirmation for each SI. No.	
4	Declaration by Bidder as per Annex-5	
5	Integrity Pact Agreement as per Annex-7	
6	Proforma for EMD Bank Guarantee as per Annex -8	
7	Proforma for Security Deposit Bank Guarantee as per Annex-9	
8	Undertaking towards restrictions on procurement from a bidder of a country which shares a land border with India as per the format Annex-12	
(D) UNDER SECTION – 4		
1	Technical Details/ Documents specified in Technical part.	
(E) CONFIRM THE FOLLOWING		
1	All pages of the bid have been page numbered in sequential manner and tender reference	
2	The bid has been uploaded and submitted in requisite number of copies as specified in Instructions to Bidders	

SI No	Description	Submitted/ Not Submitted/Not Applicable
3	Bidding Document, Compliance Letter for Addendum/ Amendment, if any, has been submitted along with offer, duly signed and stamped on each page.	
4	Undertaking that price quoted as per the format of Priced Bill of Quantity/BOQ of tender enquiry.	

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

COMMERCIAL QUESTIONNAIRE

Bidder's reply/ confirmation as furnished in the Commercial Questionnaire (CQ) shall supersede the stipulations mentioned elsewhere in their bid.

SL.NO.	QUERY	BIDDER'S REPLY/ CONFIRMATION
1	Confirm that your Bid is valid for Four (4) months from the due date of uploading of bid or extended due date of uploading of bid, as the case may be.	
2	Confirm that Earnest Money Deposit (EMD) as per bid stipulations have been furnished along with bid.	
3	Confirm that the following documents are uploaded/submitted: <ul style="list-style-type: none"> a) All documents as per CHECK LIST. b) Bidding Document is submitted/ uploaded duly signed and stamped on each page. c) Compliance letter for Addendum/ Amendments as a token of acceptance (Applicable, if issued). 	
4	Confirm that price has been uploaded in .xls format as per Detailed Notice Inviting Tender (DNIT	
5	Priced Bill of Quantity <ul style="list-style-type: none"> a) Price must be filled in the soft copy of the Bill of Quantity furnished along with the Bidding Document. Please note that the format including columns of Item No., Description, Unit, Quantity, name of file or worksheet etc. are not to be edited by the bidder. 	

SL.NO.	QUERY	BIDDER'S REPLY/ CONFIRMATION
	<p>Confirm that price part submitted e-tendering CPP Portal (www.eprocure.gov.in) in .xls format.</p> <p>b) Confirm that rate/ price has been quoted for all terms of Bill of Quantity.</p> <p>c) Confirm that deviation/terms & conditions are not mentioned in the priced Bill of Quantity. In case any terms and conditions are mentioned in the priced Bill of Quantity, the same shall be treated as null and void.</p>	
6	Confirm your compliance to stipulations of bidding document as mentioned in ITB.	
7	Confirm that you have studied complete Bidding Document including Technical and commercial part and your Bid are in accordance with the requirements of the Bidding Document.	
8	Confirm your compliance to total Scope of Work mentioned in the Bidding Document.	
9	Confirm your acceptance for 'Scope of Work' mentioned in the Bidding Document and confirm that all materials shall be supplied as per Standards and Specification.	
10	Confirm your acceptance for Time Schedule as mentioned in Bidding Document.	
11	Confirm that your quoted price includes all taxes, duties as applicable for this WORK in accordance with the provision of General Conditions of Contract and Special Conditions of Contract.	
12	Confirm that your quoted price includes all types of insurance as per the provisions of General Conditions of Contract and Special Conditions of Contract.	

SL.NO.	QUERY	BIDDER'S REPLY/ CONFIRMATION
13	Confirm that all costs resulting from safe Execution of WORK, such as safety induction, use of protective clothing, safety glasses and helmet, safety precaution taken during monsoon, or any other safety measures to be undertaken by the Contractor for execution of work are included in the quoted rates.	
14	Confirm that adequate numbers of Erection equipment, tools, tackles etc. have been proposed which will be sufficient to complete the work as per the time schedule.	
15	Confirm that the bidder have proposed adequate project/site organisation with qualified supervisory personnel having requisite experience including personnel responsible for safety, planning, stores, QA/QC etc.	
16	Confirm that while submitting the price, you have taken consideration of scope of supplies, scope of work and technical requirement mentioned in Bidding Document.	
17	Confirm that the bidder have their own QA/QC programme for executing this work. In case of award of work the bidder will submit all QA/QC documents as per specification.	
18	Confirm that the Bidder will follow NALCO's standard contract closing procedure.	
19	Confirm the following:	

SL.NO.	QUERY	BIDDER'S REPLY/ CONFIRMATION
	<p>a) Detailed planning schedule developed by bidder after contract award may be subject to fluctuations depending upon actual progress of the project and available work front.</p> <p>b) Co-ordination and making available by Contractor of all staff, manpower, erection equipment, tools, cranes, etc. and materials as required for a timely completion of all WORK as per Owner's erection and priority schedule and in accordance with the available work front are included in the quoted rates.</p>	

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

BIDDER'S QUERIES

SL. NO.	BIDDING DOCUMENT		SUBJECT	BIDDER'S QUERY	OWNER'S REPLY
	PAGE NO.	CLAUSE NO.			

NOTE : Bidder's Queries may be sent by:

Fax No: (033) 2225-1422

E-mail: Anirban.b@dastur.com

DECLARATION BY THE BIDDER

We _____ (Name of the Bidder) hereby represent that, we have gone through and understood the Bidding Document (in two parts), PART-I (EMD, Pre-Contract Integrity Pact, signed NIT document without deviation) and PART-II (Priced Bill of Quantity) and that our Bid has been prepared accordingly in compliance with the requirement stipulated in the said documents.

We are submitting Bidding Document as part of our Bid duly signed and stamped on each page in token of our acceptance to the above mentioned bid document.

We undertake that the Bidding Document shall be deemed to form part of our bid and in the event of award of work to us, the same shall be considered for constitution of Contract Agreement.

We further confirm that we have indicated prices in Bill of Quantity, considering detailed description of items given in Bill of Quantity and uploaded CPP Portal (www.eprocure.gov.in) in .xls format.

We confirm that rate quoted by us includes price for all works/ activities/ supply etc. as mentioned in item description of the items in Bill of Quantity (with detailed item description) which has been part of the Tender Document.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

NOTE: This declaration should be signed by the Bidder's representative who is signing the Bid.

DETAILS OF P.F. REGISTRATION

Bidder to furnish details of Provident Fund Registration:

PF REGISTRATION NO. :

DISTRICT & STATE :

We hereby confirm that the above PF Account is under operation presently and shall be used for all PF related activities for the labour engaged by us in the present work (if awarded to us).

(SIGNATURE OF BIDDER)

PRE CONTRACT INTEGRITY PACT

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on _____ day of the month of _____ 2025, between, on one hand, the National Aluminium Company Limited (NALCO), a company registered under the Companies Act 1956 and a Government of India Enterprise, having its Registered Office at NALCO Bhawan, P/1, Nayapalli, Bhubaneswar-751013, Odisha, India (referred to as NALCO) acting through Shri A. K. Panda, GGM(T&C) (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 service and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company / public company /Government undertaking/ partnership /registered export agency, constituted in accordance with the relevant law in the matter and the BUYER is a Company under the administrative control of the Ministry of Mines, Govt. of India.

NOW THEREFORE

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

Enabling the BUYER to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will comment to prevent corruption, in any form, by its officials by following transparent procedures.

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



Commitments of the BUYER

- 1.1 The BUYER undertakes that no official of the BUYER, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person or organisation or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.
- 1.2 The BUYER will, during the pre-contract stage, treat all BIDDERS alike and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERS.
- 1.3 All the officials of the BUYER will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
2. In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the BUYER with full and verifiable facts and the same is prima facie found to be correct by the BUYER, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the BUYER and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the BUYER the proceedings under the contract would not be stalled.

Commitments of BIDDERS

3. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following :-
 - 3.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER, connected directly or indirectly with the bidding process, or to any person, organisation or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.
 - 3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or

- immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the Government.
- 3.3 BIDDERS shall disclose the name and address of agents and representatives and Indian BIDDERS shall disclose their foreign principals or associates.
- 3.4 BIDDERS shall disclose the payment to be made by them to agents / brokers or any other Intermediary, in connection with this bid / contract.
- 3.5 The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the BUYER or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.
- 3.6 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.7 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.8 The BIDDER shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the BUYER as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.9 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable fact.
- 3.10 The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.11. If the Bidder or any employee of the Bidder or any person acting on the behalf of the Bidder, either directly or indirectly, is a relative of any of the officers of the Buyer, or alternatively, if any relative of an officer of the Buyer has financial interest/stake in the Bidder's firm, the same shall be disclosed by the Bidder at the time of filing of tender. The term "relative" for this purpose would be as defined in Section 6 of the Companies Act 1956.

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

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

4. Previous Transgression

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

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

5. Sanctions for Violations:

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

- (i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER(s) would continue.
- (ii) The Earnest Money Deposit (in pre-contract stage) and/or Security Deposit / Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the BUYER and the BUYER shall not be required to assign any reason therefore.
- (iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
- (iv) To recover all sums already paid by the BUYER, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the BUYER in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

- (v) To en-cash the advance bank guarantee and performance bond / warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.
- (vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation / rescission and the BUYER shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.
- (vii) To debar the BIDDER from participating in future bidding processes of NALCO for a minimum period of five years, which may be further extended at the discretion of the BUYER.
- (viii) To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.
- (ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the BUYER with the BIDDER, the same shall not be opened.
- (x) Forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

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

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

6. Independent External Monitors (IEMs):

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

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

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

- 6.4 Both the parties accept that the IEMs have the right to access all the documents relating to the project / procurement including minutes of meetings.
- 6.5 As soon as the IEM notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the BUYER.
- 6.6 The BIDDER(s) accepts that the IEM has the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the IEM, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The IEM shall be under contractual obligation to treat the information and documents of the BIDDER / Subcontractor(s) with confidentiality.
- 6.7 The BUYER will provide to the IEM sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the IEM the option to participate in such meetings.
- 6.8 The IEM will submit a written report to the designated Authority of BUYER / Secretary in the Department / within 8 to 10 weeks from the date of reference or intimation to him by the BUYER / BIDDER and should be occasion arise, submit proposals for correcting problematic situations.

7. Facilitation of Investigation:

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

8. Law and Place of Jurisdiction:

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

9. Other Legal Actions:

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

10. Validity:

- 10.1 This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. If any claim is made/lodged during this time, the same

- shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by CMD, NALCO.
- 10.2 Should one or several provisions of this Pact turn out to be invalid, the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.
11. If the bidder/ Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members
12. The parties hereby sign this Integrity Pact at _____ on _____.



For & on behalf of

For & on behalf of

BUYER

BIDDER

Name of the Officer:

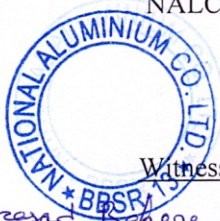
Designation:

Company:

Official Seal

SUNIL KUMAR MISHRA
GENERAL MANAGER (CIVIL)

NALCO



Witness

Witness

1. Matruprasad Behere

1. _____

2. Debarshi Mohr

2. _____

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 - 751 061, Orissa (hereinafter referred as "The Owner/ 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. _____ 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 owner shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However our liability under this guarantee shall be restricted to an amount not exceeding Rs. (Rupees Only).
3. We undertake to pay to the Company any money so demanded notwithstanding any dispute or disputes raised by the 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 owner 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.

6. 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.
7. That the Owner/Company will have full liberty without reference to us and without affecting this guarantee to postpone for any time or from time to time, the exercise of any of the power of the owner under the tender.
8. 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.
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 Persons Issuing the BG:

Name-----

Address for Correspondence: -----

Telephone & Fax No.

E-mail:

IFSC code:

BG is to be furnished from any of NALCO approved Banks, listed as per Appendix - III of Special Conditions of Contract.

PROFORMA FOR BANK GUARANTEE FOR SECURITY DEPOSIT

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

A. G. No. _____

Date: _____

1. In consideration of National Aluminium Company Limited (A Government of India Enterprise), having its UNIT/Office at _____ (UNIT/OFFICE ADDRESS WHERE THE WORK IS EXECUTED) (hereinafter called "The Company" which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) having agreed to exempt M/s. (Hereinafter called "the said Contractor(s)/ Seller(s)"), which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns) from the demand under the terms and conditions of Contract(s)/ Order(s) No. dt. for (work/assignment description) of cash security deposit for the due fulfillment by the said contractor(s)/seller(s) of the terms and conditions contained in the said Contract(s)/Order(s), on production of Bank Guarantee for Rs. (Rupees only).
2. We Bank having its branch office at do hereby agree and undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Company stating that in the opinion of the company which is final and binding, the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of any breach by the said Contractor(s)/seller(s) of any of the terms and conditions contained in the said contract(s)/orders(s) or by reasons of the said Contractor(s)/ Seller(s) failure to perform the said Contract(s)/ Order(s) including defect liability obligations or that the amount covered under this guarantee is forfeited. Any such demand made on the Bank by the 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 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 dependent or conditional on the Company proceeding against the Contractor(s)/Seller(s).
4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said Contractor(s)/Seller(s)

but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said contract(s)/ Order(s) are fulfilled.

5. We.....Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract(s)/ Order(s) and that it shall continue to be enforceable till all the dues of the company under or by virtue of the said Contract(s)/Order(s) have been fully paid and its claims satisfied or discharged or till a duly Authorised officer of the company certifies that the terms and conditions of the said Contract(s)/Order(s) have been fully and properly carried out by the said contractor(s) and accordingly discharges the guarantee.
6. We.....Bank further agree with the Company that the company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract(s)/Order(s) or to extend the time of performance by the said Contractor(s)/Seller(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Contractor(s)/Seller(s) and to forbear or enforce any of the terms and conditions relating to the said Contract(s)/Order(s) and we shall not be relieved from our liability by reason of any such variations, or extension being granted to the said Contractor (s)/ Seller(s) or for any forbearance, act or omissions on the part of the Company or any indulgence by the Company to the said Contractor(s)/Seller(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have affect of so relieving us.
7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry, we shall be discharged from all the liabilities under this guarantee.
8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time at the request of Contractor(s)/ Sellers(s).
9. We _____ Bank further agree that this Guarantee shall be invocable at our place of business at _____ (Bank name), _____ (Branch Name and address of the Branch), Bhubaneswar, Odisha 751xxx.

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

Detail of Persons Issuing the BG:

Name-----

Address for Correspondence:

Telephone & Fax No:

E-mail :

IFSC code:

BG is to be furnished from any of NALCO approved Banks, listed as per Appendix - III of
Special Conditions of Contract.

INSTRUCTIONS TO THE BIDDERS FOR THE E-SUBMISSION OF THE BIDS

1. Bidder should do the registration in the tender site <http://eprocure.gov.in> using the option available. Then the Digital Signature registration has to be done with the e-token, after logging into the site.
2. Bidder then login to the site through giving user id / password chosen during registration. The e-token that is registered should be used by the bidder and should not be misused by others.
3. Please go to the CPP portal (www.eprocure.gov.in). Search for the e-procurement tender, for document No. NALCO CGPP/2025/MISC. MECH/01
4. The Bidders can update well in advance, the documents such as certificates, purchase order details etc., under **My Documents** option and these can be selected as per tender requirements and then send along with bid documents during bid submission.
5. After downloading / getting the tender schedules, the Bidder should go through them carefully and then submit the documents as asked, otherwise, the bid will be rejected.
6. If there are any clarifications, this may be obtained online through the tender site, or through the contact details. Bidder should take into account of the corrigendum/addendum published before submitting the bids online.
7. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender schedule and they should be in PDF/xls/rar/dwf formats. If there is more than one document, they can be clubbed together.
8. Bidder should get ready with the EMD as specified in the tender. Scan copy of the EMD instrument to be uploaded along with other documents as requested. The original instrument along with all other specified hard copy documents should be posted/couriered/given in person so as to reach the Tender Inviting Authority, within due date as indicated in notice inviting e-tender.
9. The bidder reads the terms & conditions and accepts the same to proceed further to submit the bids .
10. The bidder has to submit the tender document online well in advance before the prescribed time to avoid any delay or problem during the submission process.
11. After the bid submission, the acknowledgement number, given by the e-tendering system should be printed by the bidder and kept as a record of evidence for online submission of bid for the particular tender.
12. The Tender Inviting Authority (TIA) will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders.

13. The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the bid is liable to be rejected.
14. The time settings fixed in the server side & displayed at the top of the tender site, will be valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system. The bidders should follow this time during bid submission.
15. All the data being entered by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission & not be viewable by any one until the time of bid opening. Overall, the submitted tender documents become readable only after the tender opening by the authorized individual.
16. The confidentiality of the bids is maintained since the secured Socket Layer 128 bit encryption technology is used. Data storage encryption of sensitive fields is done.
17. The bidders are requested to submit the bids through online e-tendering system to the TIA well before the bid submission end date & time (as per Server System Clock).
18. The bidder should logout of the tendering system using the normal logout option available at the top right hand corner and not by selecting the (X) option in the browser.
19. If the bidder submits the bid in manual form (if permitted categorically in the tender), he should have already registered in the tender site and he has to inform the registration ID in the bid submitted otherwise his tender will not be considered.

Subject: - Procedure to provide preference to “Make in India” in Public Procurement.

1. Definitions:

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

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

‘Class-II local supplier’ means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for ‘Class-II local supplier’ but less than that prescribed for ‘Class-I local supplier’ under this Order.

‘Non - Local supplier’ means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for ‘Class-II local supplier’ under this Order.

‘L1’ means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

‘Margin of purchase preference’ means the maximum extent to which the price quoted by a “Class-I local supplier” may be above the L1 for the purpose of purchase preference.

‘Nodal Ministry’ means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services or works.

‘Procuring entity’ means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

‘Works’ means all works as per Rule 130 of GFR- 2017, and will also include *‘turnkey works’*.

1.

Eligibility of 'Class-I local supplier'/ 'Class-II local supplier'/ 'Non-local suppliers' for different types of procurement

(a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.

(b) Only 'Class-I local supplier' and 'Class-II local supplier', as defined under the Order, shall be eligible to bid in procurements undertaken by procuring entities, except when Global tender enquiry has been issued. In global tender enquiries, 'Non-local suppliers' shall also be eligible to bid along with 'Class-I local suppliers' and 'Class-II local suppliers'. In procurement of all goods, services or works, not covered by sub-para 3(a) above, and with estimated value of purchases less than Rs. 200 Crore, in accordance with Rule 161(iv) of GFR, 2017, Global tender enquiry shall not be issued except with the approval of competent authority as designated by Department of Expenditure.

(c) For the purpose of this Order, works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.

3A. Purchase Preference

(a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to 'Class-I local supplier' in procurements undertaken by procuring entities in the manner specified here under.

(b) In the procurements of goods or works, which are covered by para 3(b) above and which are divisible in nature, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

1. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.
- ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L1 bidder.

(c) In the procurements of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.
- ii. If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
- iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.

- (d) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by procuring entities.

3B. Applicability in tenders where contract is to be awarded to multiple bidders -

In tenders where contract is awarded to multiple bidders subject to matching of L1 rates or otherwise, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- a) In case there is sufficient local capacity and competition for the item to be procured, as notified by the nodal Ministry, only Class I local suppliers shall be eligible to bid. As such, the multiple suppliers, who would be awarded the contract, should be all and only 'Class I Local suppliers'.
- b) In other cases, 'Class II local suppliers' and 'Non local suppliers' may also participate in the bidding process along with 'Class I Local suppliers' as per provisions of this Order.
- c) If 'Class I Local suppliers' qualify for award of contract for at least 50% of the tendered quantity in any tender, the contract may be awarded to all the qualified bidders as per award criteria stipulated in the bid documents. However, in case 'Class I Local suppliers' do not qualify for award of contract for at least 50% of the tendered quantity, purchase preference should be given to the 'Class I local supplier' over 'Class II local suppliers' / 'Non local suppliers' provided that their quoted rate falls within 20% margin of purchase preference of the highest quoted bidder considered for award of contract so as to ensure that the 'Class I Local suppliers' taken in totality are considered for award of contract for at least 50% of the tendered quantity.
- d) First purchase preference has to be given to the lowest quoting 'Class-I local supplier', whose quoted rates fall within 20% margin of purchase preference, subject to its meeting the prescribed criteria for award of contract as also the constraint of maximum quantity that can be sourced from any single supplier. If the lowest quoting 'Class-I local supplier', does not qualify for purchase preference because of aforesaid constraints or does not accept the offered quantity, an opportunity may be given to next higher 'Class-I local supplier', falling within 20% margin of purchase preference, and so on.
- e) To avoid any ambiguity during bid evaluation process, the procuring entities may stipulate its own tender specific criteria for award of contract amongst different bidders including the procedure for purchase preference to 'Class-I local supplier' within the broad policy guidelines stipulated in sub-paras above.

4. **Exemption of small purchases:** Notwithstanding anything contained in paragraph 3, procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.
5. **Minimum local content:** The 'local content' requirement to categorize a supplier as 'Class-I local supplier' is minimum 50%. For 'Class-II local supplier', the 'local content' requirement is minimum 20%. Nodal Ministry/ Department may prescribe only a higher

percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier'/ 'Class-II local supplier'. For the items, for which Nodal Ministry/ Department has not prescribed higher minimum local content notification under the Order, it shall be 50% and 20% for 'Class-I local supplier'/ 'Class-II local supplier' respectively.

6. **Margin of Purchase Preference:** The margin of purchase preference shall be 20%.
7. **Requirement for specification in advance:** The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.
8. **Government E-marketplace:** In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.
9. **Verification of local content:**
 - a. The 'Class-I local supplier'/ 'Class-II local supplier' at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier'/ 'Class-II local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made.
 - b. In cases of procurement for a value in excess of Rs. 10 crores, the 'Class-I local supplier'/ 'Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
 - c. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.
 - d. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.
 - e. Nodal Ministries and procuring entities may prescribe fees for such complaints.
 - f. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

- g. A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9h below.
- h. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:
 - i. The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner;
 - ii. on a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s);
 - iii. in respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted.

10. Specifications in Tenders and other procurement solicitations:

- a. Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.
- b. Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of 'Class-I local supplier'/ 'Class-II local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.
- c. Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above.

d. Reciprocity Clause

- i. When a Nodal Ministry/Department identifies that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, due to restrictive tender conditions which have direct or indirect effect of barring Indian companies such as registration in the procuring country, execution of projects of specific value in the procuring country etc., it shall provide such details to all its procuring entities including CMDs/CEOs of PSEs/PSUs, State Governments and other procurement agencies under their administrative control and GeM for appropriate reciprocal action.

- ii. Entities of countries which have been identified by the nodal Ministry/Department as not allowing Indian companies to participate in their Government procurement for any item related to that nodal Ministry shall not be allowed to participate in Government procurement in India for all items related to that nodal Ministry/ Department, except for the list of items published by the Ministry/ Department permitting their participation.
 - iii. The stipulation in (ii) above shall be part of all tenders invited by the Central Government procuring entities stated in (i) above. All purchases on GeM shall also necessarily have the above provisions for items identified by nodal Ministry/ Department.
 - iv. State Governments should be encouraged to incorporate similar provisions in their respective tenders.
 - v. The term 'entity' of a country shall have the same meaning as under the FOi Policy of DPIIT as amended from time to time.
- e. Specifying foreign certifications/ unreasonable technical specifications/ brands/ models in the bid document is restrictive and discriminatory practice against local suppliers. If foreign certification is required to be stipulated because of non-availability of Indian Standards and/or for any other reason, the same shall be done only after written approval of Secretary of the Department concerned or any other Authority having been designated such power by the Secretary of the Department concerned.
- f. "All administrative Ministries/Departments whose procurement exceeds Rs. 1000 Crore per annum shall notify/ update their procurement projections every year, including those of the PSEs/PSUs, for the next 5 years on their respective website."

10A. Action for non-compliance of the Provisions of the Order: In case restrictive or discriminatory conditions against domestic suppliers are included in bid documents, an inquiry shall be conducted by the Administrative Department undertaking the procurement (including procurement by any entity under its administrative control) to fix responsibility for the same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such actions shall be sent to the Standing Committee.

11 Assessment of supply base by Nodal Ministries: The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing the higher minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.

12. Increase in minimum local content: The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.

13. Manufacture under license/ technology collaboration agreements with phased indigenization: While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content.

13A. In procurement of all goods, services or works in respect of which there is substantial quantity of public procurement and for which the nodal ministry has not notified that there is sufficient local capacity and local competition, the concerned nodal ministry shall notify an upper threshold value of procurement beyond which foreign companies shall enter into a joint venture with an Indian company to participate in the tender. Procuring entities, while procuring such items beyond the notified threshold value, shall prescribe in their respective tenders that foreign companies may enter into a joint venture with an Indian company to participate in the tender. The procuring Ministries/Departments shall also make special provisions for exempting such joint ventures from meeting the stipulated minimum local content requirement, which shall be increased in a phased manner.

14. Powers to grant exemption and to reduce minimum local content: The administrative Department undertaking the procurement (including procurement by any entity under its administrative control), with the approval of their Minister-in-charge, may by written order, for reasons to be recorded in writing,

- a. reduce the minimum local content below the prescribed level; or
- b. reduce the margin of purchase preference below 20%; or
- c. exempt any particular item or supplying entities from the operation of this Order or any part of the Order.

A copy of every such order shall be provided to the Standing Committee and concerned Nodal Ministry / Department. The Nodal Ministry / Department concerned will continue to have the power to vary its notification on Minimum Local Content.

15. Directions to Government companies: In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order.

UNDERTAKING BY BIDDER

(To be typed on the letterhead of the bidder)

Ref. No : _____

Date : _____

Tender No. _____

NATIONAL ALUMINIUM COMPANY LIMITED (NALCO)
NALCO BHAWAN,
P/1, NAYAPALLI,
BHUBANESWAR

Dear Sirs,

We have read the clause regarding restrictions on procurement from a bidder or a country which shares a land border with India; We certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. We hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. [Where evidence of valid registration by the Competent Authority shall be attached.]”

We also agree that, during any stage of the tender/contract agreement, in case the above information/documents submitted by us are found to be false, NALCO has the right to immediately reject our bid/terminate contract at any stage and carry out further legal action on us in accordance with law.

Yours faithfully,
For (type name of the firm here)

Signature of Authorised Signatory

Name :

Designation :

Phone No.

Place :

Date :

(Affix Seal of the Organization here)

**NATIONAL ALUMINIUM COMPANY LIMITED
(NALCO)**

SPECIAL CONDITIONS OF CONTRACT (SCC)

FOR

**DISMANTLING, MODIFICATION AND ERECTION OF MISCELLANEOUS
MECHANICAL WORK FOR INSTALLATION OF STEAM AND POWER PLANT
FOR 5TH STREAM ALUMINA REFINERY EXPANSION UNDER PHASE-3
EXPANSION OF M&R COMPLEX**

AT

**NALCO - MINES & REFINERY COMPLEX,
DAMANJODI - 763 008,
KORAPUT DISTRICT
ODISHA, INDIA.**

August 2025



**M.N. DASTUR & COMPANY (P) LTD
Consulting Engineers**

SPECIAL CONDITION OF CONTRACT (SCC)

Name of the work: Dismantling, Modification and Erection of Miscellaneous Mechanical Work for Installation of Steam and Power Plant for 5th Stream Alumina Refinery Expansion under Phase-3 Expansion of M&R Complex, Damanjodi-763008, Koraput District in the State of Odisha, India.

1.0 GENERAL

The Special Conditions of Contract shall be read in conjunction with the Notice Inviting Tender, Instruction to Bidder, General Conditions of Contract, Technical Specifications, Bill of Quantity, Drawings, if any and/or other supplementary documents detailing the work.

Provided that, where any provision of the General Conditions of Contract is repugnant to or at variance, unless a different intention appears, the provision of the Special Conditions of Contract shall be deemed to override the provision of the General Conditions of Contract and shall to the extent of such repugnance or variation prevail.

The bidder must carefully examine the tender documents, terms & conditions, drawings, specifications etc. and must satisfy himself on technical and commercial aspects and make themselves acquainted with the site and surroundings and consider all other matters including nature, magnitude of work, requirements of materials, labours, conditions and things, probable contingencies including delays, hindrances and interferences and generally all matters incidental thereto and ancillary thereof, affecting the execution and completion of the work. In case the tender wishes to visit the site, they may contact at the following address:-

Mr. Rakesh Gangrade GM (Mech.), NALCO
M&R Complex, NALCO, Damanjodi, District: Koraput, Odisha - 763 008
Mob: -----
E mail: rakesh.gangrade@nalcoindia.co.in

OR

Mr. Ratan Mitra, RCM, (M. N. Dastur & Co. (P) Ltd.)
M&R Complex, NALCO, Damanjodi, District: Koraput, Odisha - 763 008
Mob: +91 9989374296
E mail: Ratan.M@dastur.com

2.0 SUPPLY OF MATERIALS

Materials to be supplied by Bidder:

- 2.1 The Bidder shall supply and provide all items, equipment, and materials required for the completion of miscellaneous mechanical works, unless specifically excluded from the Bidder's scope. However, certain materials will be issued by the Owner as Free Issue Items for execution of the work, as detailed in the Technical Specification (Annexure-2). The Bidder shall also arrange for transportation of all materials, items & equipment required for the work. The owner will insist on the procurement of materials which has the approval of Indian Standards Institution having ISI stamp and/or which are supplied by reputed suppliers as per owner's approved vendor list.
- 2.2 The Bidder shall properly store all materials either issued to him or brought by him to the worksite to prevent damages due to rain, wind, direct exposure to sun etc. and also from theft, pilferage, etc. for proper and speedy execution of

his works. The Bidder shall maintain sufficient stocks of all materials required by him.

- 2.3 No material shall be despatched from the Bidder's stores before obtaining the approval in writing of the Engineer-in-Charge.
- 2.4 All equipments/items, tools and other materials brought by the Bidder to the site must be declared at the time of bringing the same to the site.
- 2.5 All materials, equipment/items as required to complete the work in all respects according to the Contract, shall be supplied by the Bidder at his own cost. The Bidder's price is inclusive of all freights, taxes, duties, royalties, levies, loading and unloading, transporting, handling, multiple handling due to shortage of working or storage space at site, storage charges, watch and guard etc.
- 2.6 All the vehicles carrying Equipment, Items, materials etc. need to produce & record all the relevant details with the authorities posted at the plant entrance gate/ material gate or any other designated security gate.
- 2.7 The vehicles carrying bulk materials need to be weighed in the weigh bridge located inside the plant premises to record both the Tare & laden weight .

3.0 FACILITIES AND CONDITIONS AT WORK SITE

3.1 Land for Bidder's Field Office, Go-down and Workshop

- 3.1.1 The Owner will at his discretion and convenience and for the duration of the execution of the work shall provide the land to the Bidder for their offices, go- down and workshop for the execution of the contract nearer to the owner's Plant premises.

The Bidder shall at his cost construct all these temporary buildings, structures and provide suitable water supply and sanitary arrangement as approved by the Engineer-in-Charge and the inspectorates.

- 3.1.2 On completion of the works undertaken by the Bidder, he shall remove all temporary works erected by him and have the site cleared as directed by Engineer-in-Charge. If the Bidder fails to comply with these requirements, the Engineer-in-Charge has the right to remove any structure, such surplus, rubbish materials and depose off the same as he deems fit and get the site cleared and the Bidder shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such surplus materials disposed as aforesaid. The Owner reserves the right to ask the Bidder at any time during the pendency of the contract, to vacate the land by giving 7 (seven) days notice on security reasons or on national interest or otherwise.
- 3.1.3 Land for residential accommodation for Bidder's staff and labour, if available, may be made available to Bidder outside plant boundary limit at the discretion of the Engineer-in-Charge and rent for the same will be as decided by the Engineer-in-Charge according to location and the area occupied by the Bidder.

- 3.2 All materials brought by the Bidder for execution of work inside Owner's plant premises shall be with proper challan & documents and records shall be maintained. The Bidder may have to be required to produce the documents for authenticity. It will be advisable for the Bidder to store the materials separately for proper identification.

3.3 Construction Water

- 3.3.1 Unless other wise provided in the Contract, the Bidder shall be responsible for the arrangements to obtain supply of water necessary for the works, his labour colony, his workshops, his offices etc. All pumping Erections, pipe network and distribution system will have to be carried out by the Bidder at his own cost.
- 3.3.2 The Owner may agree to supply water at a single point to the Bidder for use in the Owner's works on specified terms and conditions as shall be determined by the Owner, which shall be binding on the Bidders. The bidder is however required to exercise his option to receive such water supply from Owner's main at the time of submission of his tender.
- 3.3.3 When the water is supplied by the Owner, the Owner's main supply point will be within 500 metres from the Bidder's Site. The Bidder shall make necessary arrangements to take the water from that point at his own cost, and shall provide all necessary ferrules, piping, fitting, couplings and tanks and temporary works required and he shall maintain all such works in satisfactory condition and all costs towards the same shall be included in the price. The Bidder shall remove all such works and shall re-instate and make good any work disturbed, to the satisfaction of the Engineer-in-Charge.
- 3.3.4 In the event of the Bidder's drawing water from the Owner's main/source, he shall not claim any compensation for interruption or failure of Owner's water supply caused due to any reasons beyond the control of the owner.
- 3.3.5 The water so supplied by the Owner shall be free of cost for the work only.

3.4 Construction Power

- 3.4.1 Subject to availability, Owner will supply power at 415 V at only one point at the nearest substation on chargeable basis, the present Rate is Rs.4.30/kWh and any change in power tariff shall be intimated to the bidder, The bidder will make his own arrangement for temporary distribution of power from the nearest substation. All the works will be done as per IEA regulations and passed by the Engineer-in-Charge. The temporary line will be removed forthwith after the completion of work or if there is any hindrance caused to the other works due to the alignment of these lines; the Bidder will re-route or remove the temporary lines at his own cost. The Bidder at his cost will also provide suitable electric meters, fuses, switches, etc. for purposes of payment to the Owner, which should be in the custody and control of the Owner. The cost of power supply shall be payable to the owner at every month at the rate specified by the Owner, which will be deducted from the running bills. The owner shall not, however, guarantee the supply of electricity and no compensation for any failure or short supply of electricity will be entertained and this does not relieve the Bidder of his responsibility for timely completion of this works as stipulated in the contract.

- 3.4.2 It shall be the responsibility of the Bidder to provide and maintain the complete Erection of the load side of the supply with due regard to safety requirement at site. All cabling, equipment, Erections etc. shall comply in all respects with the latest statutory requirements and safety provisions i.e. as per and the Central/ State Electricity Acts and Rules etc. The Bidder will ensure that his equipment and Electrical wiring etc. are installed modified, maintained by a licensed Electrician/ Supervisor. A test certificate is to be produced to the Engineer-in- Charge for his approval, before power is made available.
- 3.4.3 At all times, IEA regulations shall be followed failing which the Owner has a right to disconnect the power supply without any reference to the Bidder. No claim shall be entertained for such disconnection by the Engineer-in-Charge. Power supply will be reconnected only after production of fresh certificate from authorised electrical supervisors.
- 3.4.4 The Owner is not liable for any loss or damage to the Bidder's equipment as a result of variation in voltage or frequency or interruption in power supply or other loss to the Bidder arising there from.
- 3.4.5 The Bidder shall ensure that the Electrical equipment installed by him are such that average power factor does not fall below 0.90 at his premises. In case power factor falls below 0.90 in any month, he will reimburse to the Owner at the penal rate determined by the Owner for all units consumed during the month.
- 3.4.6 The Bidder will have to provide and install his own light and power meters, which will be governed as per Central/ State Government Electricity Rules. The meters shall be sealed by the Owner.
- 3.4.7 In case of damage to any of the Owner's equipment on account of fault, intentional or unintentional on the part of the Bidder the Owner reserves the right to recover the cost of such damage from the Bidder's bill. Cost of HRC Fuses replaced at the Owner's terminals due to any fault in the Bidder's Erection shall be to Bidder's account at the rates decided by the Engineer-in- Charge.
- 3.4.9 Only motors upto 3 HP will be allowed to be started direct on line. For motors above 3 HP and up to 100 HP, a suitable starting devices approved by the Engineer-in-Charge shall be provided by the Bidder. For Motors above 100 HP slipping induction motors with suitable starting devices as approved by the Engineer-in-Charge shall be provided by the Bidder.
- 3.4.10 The Bidder shall ensure at his cost that all electric lines and equipment and all Erections are approved by the Central Electricity Authority before power can be supplied by the Owner.
- 3.4.11 The total requirement of power shall be indicated by the bidder along with his tender.
- 3.4.12 The Bidder shall make contingency arrangement for adequate power required for construction by providing mobile DG set along with distribution board, cable, switch, fuse and necessary accessories at his own cost. Sufficient number of DG sets with adequate capacity shall be arranged by the Bidder so as not to impede the progress of the work due to shortage of power, outages etc. in order to complete the project within the contractual time schedule.

The owner shall not be responsible and shall not entertain any claim of the Bidder on account of outages, power shortage, non-availability of adequate power, any failure of electricity etc. and this does not relieve the Bidder of his responsibility for timely completion of this works as stipulated in the contract.

- 3.4.13 It shall be the responsibility of the Bidder to provide and maintain the safety requirement at site. All cabling, equipment, Erections etc. shall comply in all respects with the latest statutory requirements and safety provisions i.e. as per and the Central/ State Electricity Acts and Rules etc. The Bidder will ensure that his equipment and Electrical wiring etc. are installed modified, maintained by a licensed Electrician/ Supervisor.
- 3.4.14 At all times, IEA regulations shall be followed by the Bidder. The site area shall be sufficiently illuminated to avoid accidents.

4.0 NUMBER OF INTERIM CERTIFICATE FOR PAYMENT

- 4.1 Bills shall generally be raised in line with the TERMS OF PAYMENT indicated herein below and as per the details given in General Conditions of Contract irrespective of amount.

4.2 COMPUTERISED CONTRACTOR'S BILLING SYSTEM:

Without prejudice to stipulation in General Conditions of Contract, the bidder shall follow the following Computerised Billing System:

The bills will be prepared by the bidder on his own PCs as per the standard formats and codification scheme proposed by the Owner. The bidder will be provided with data entry software to capture the relevant billing data for subsequent processing. The bidder shall submit the monthly bills in two hard copies and one CD incorporating all jointly accepted measurements of work done in the previous month. Engineer In-charge (EIC)/DASTUR shall verify and forward the same to Owner for further scrutiny at their end and for release of payment. If any differences in computer entry and jointly accepted measurements are found by EIC/DASTUR, the relevant pages shall be marked by flagging in hard copy and such bill shall be returned to the bidder. The date of re-submission of the same after incorporating all such corrections only shall be reckoned as date of submission of the bill. The bidder shall also ensure the correctness and consistency of data so entered with the hard copy of the bill, submitted for payment. The bidder shall arrange necessary infrastructure facilities for following this Computerised Billing System within his quoted prices. No additional payment on account of computer hire or peripherals of consumables shall be made.

5.0 DEPLOYMENT OF MANPOWER & CONSTRUCTION AND ERECTION EQUIPMENT AND TOOLS

- 5.1 The Bidder shall make his own arrangements to procure all plant, equipment for execution of the work within the stipulated time of completion. The type and number of erection equipment in good working condition, with their capacities, which the Bidder proposes to bring to the site and use to ensure the completion of the work in the specified time shall be indicated by him. The Bidder will provide all equipment as required to complete the work in time. The Bidder will also indicate the manpower deployment in Appendix-I.

- 5.2 All erection plant and equipment once brought by the Bidder on the Site are not to be removed from there without the written permission of the Engineer. Also, the Bidder shall promptly arrange spare parts, consumables, fuel, lubricants etc. for the erection plant and equipment brought to the Site, at his own cost, as and when necessary.

6.0 SAFETY CODE

6.1 General

Bidder shall adhere to safe dismantling/ modification/erection practice and guard against hazardous and unsafe working conditions and shall comply with Owner's safety rules as set forth herein. Prior to start of work, Bidder will be furnished copies of Owner's 'Safety Code' for information and guidance, if it has been prepared.

6.2 Safety Regulations

- 6.2.1 In respect of all labour, directly or indirectly employed in the work for the performance of Bidder's part of this agreement, the Bidder shall at his own expense arrange for all the safety provisions as per (i) Safety codes of CPWD & Indian Standards Instructions (ii) The electricity Act, (iii) The Mines Act, and (iv) Regulations. Rules and orders made there under and such other acts as applicable.
- 6.2.2 The Bidder shall observe and abide by all fire and safety regulations of the Owner. Before starting dismantling, modification and erection of Miscellaneous Mechanical work, Bidder shall consult Owner's safety Engineer or Engineer-in-Charge and must make good to the satisfaction of the Owner any loss or damage due to fire to any portion of the work done under this contract or to any of the Owner's existing property.

6.3 First Aid and Industrial Injuries

- i) Bidder shall maintain first aid facilities for his employees and those of his sub-Contractors.
- ii) Bidders shall make outside arrangements for ambulance service and for treatment of industrial injuries. Name of those providing these services shall be furnished to Owner prior to start of constructions & erections and their telephone numbers shall be prominently posted in Bidder's field office.
- iii) All critical industrial injuries shall be reported promptly to owner, and a copy of Bidder's report covering each personal injury requiring the attention of a physical shall be furnished to the Owner.

6.4 General Rules

Smoking, consumption of alcohol etc., within the Battery Areas is strictly prohibited. Violators shall be discharged immediately.

6.5 Bidder's Barricades

- i) Bidder shall erect and maintain barricades required in connection with his operation to guard or protect.
 - a) Hosting Areas/ Dismantling Areas
 - b) Areas adjudged hazardous by Bidder's or Owner's Inspectors.
 - c) Owner's existing property subject to damage by Bidder's operation.
 - d) Rail road unloading spots.
- ii) Bidder's employees and those of his sub-contractors shall become acquainted with Owner's barricading practice and shall respect the provisions thereof.
- iii) Barricades and hazardous areas adjacent to but not located in normal routes travel shall be marked by red flasher lanterns at nights.

6.6 Scaffolding

- i) Suitable scaffoldings should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period works as can be done safely from ladders. When a ladder is used a Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal and vertical).
- ii) Scaffolding or staging more than 4 metres above the ground or floor swing suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise retarded at least one metre high above the floor or platform of such scaffolding or staging and extending along with entire length of the outside and ends thereof with only such openings may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
- iii) Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally and if the height of the platform of gangway or the stairway is more than 4 metres above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened described in (ii) above.
- iv) Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 metre.
- v) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length. The width between the side rails in run ladder shall in no case be less than 30 cm. For ladder up to and including 3 metres in length; for longer ladders this width should be increased at least 15 mm for each additional metre of length. Uniform step spacing shall not exceed 30 cms. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience.

to any person or public. The Bidder shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defence of every suit, action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may with the consent of the Bidder be paid to compromise any claim by any such person.

6.7 Excavation and Trenching

All trenches 1.2 metres or more in depth, shall at all times be supplied with at least one ladder for each 50 M length or fraction thereof.

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

6.8 General Safety

- i) Before any dismantling or demolition work is commenced and also during the process of the demolition work.
 - a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - b) No electric cable or apparatus which is liable to be a source of danger shall remain electrically charged.
 - c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
- ii) All necessary personal safety equipment as considered adequate by the Engineer-in-Charge, should be kept available for the use of the persons employed at the site and maintained in condition suitable for immediate use and the Bidder should take adequate steps to ensure proper use of equipment by persons concerned as outlined below:
 - a) Workers employed on mixing asphalt materials, cement and lime mortars shall be provided with protective footwear and protective gloves.
 - b) Those engaged in white washing and mixing or stacking of cements bags or any materials which are injurious to the eyes shall be provided with protective goggles.

- c) Those engaged in welding and cutting works, shall be provided with protective face and eye –shields, hand gloves etc.
- d) Stone breakers shall be provided with protective goggle and protective clothing and seated at sufficiently safe intervals.
- e) When workers are employed in sewers and manholes which are in use, the Bidder shall ensure that the manhole cover are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or board to prevent accident to the public.
- f) The Bidder shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken :
 - 1. No paint containing lead or lead products shall be used except in the form paste or readymade paint.
 - 2. Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
 - 3. Overalls shall be provided to enable the working painters to wash them on cessation or work.
- iii) When the work is done near any place where there is a risk of drowning all necessary safety equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
- iv) Use of hoisting machines and tackles including their attachments anchorage and supports shall conform to the following standard or conditions:-
 - a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defect and shall be kept in good working order.
 - b) Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.
 - c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding which or give signals to the operator.
 - d) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be marked with the safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working

load except for the purpose of testing.

- e) In case of department machines, the safe working load shall be notified by the Engineer-in-Charge. As regards Bidder's machines, the Bidder shall notify the safe working load of the machine to the Engineer-in-Charge, whenever he brings any machinery to site of work and get it verified by the Engineer-in-Charge.
- v) Motors, gears, transmission lines, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safe- guards. Hoisting appliances should be provided with such means as to reduce to the minimum the accidental descent of the load, adequate precaution should be taken to reduce to the minimum the risk of any part or parts of a suspended load becoming accidentally displaced. When workers are employed on electrical Erections which are already energized, insulating mats, wearing apparel such as gloves sleeves and boots as may be necessary should be provided. The workers shall not wear any rings, watches and carry keys or other materials which are good conductors or electricity.
- vi) All scaffolding, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffoldings, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of works.
- vii) These safety provisions should be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work spot. The person responsible for compliance of the safety code shall be named therein by the Bidder.
- viii) To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the Bidder shall be open to inspection by the welfare officer Engineer-in-Charge or safety Engineer of the Administration or their representatives.
- ix) Notwithstanding the above clauses there is nothing in these to exempt the Bidder from the operations of any other Act or rules in force in the Republic of India. The works throughout, including any temporary works, shall be carried out in such a manner as not to interfere in any way whatsoever with the traffic on any roads or footpaths at the site or in vicinity thereto or any existing works whether the property of the Administrations or of a third party.

6.9 Preservation of Peace

The Bidder shall taken requisite precautions and use his best endeavours to prevent any riotous or unlawful behaviour by or amongst his workmen and other employed on the works and for the preservation of peace and protection of the inhabitants and Security of property in the neighbourhood of the work. In the event of the Owner requiring the maintenance of a special Police force at or in the vicinity of the site during the tenure of works, the expenses thereof shall be borne by the Bidder and if paid by the Owner shall be recoverable from the Bidder.

6.10 Treatment of Bidder's Staff in Company's Hospital

The Bidder and his staff, other than labourers and their families requiring medical aid from the Owner's hospitals and dispensaries will be treated as private patients and charged accordingly. The Bidder's labourers and their families will be granted from treatment in the Owner's hospitals and dispensaries where no other hospitals or dispensaries are available provided the Bidder pays the cost of medicines dressing and money accordingly to the normal scale as also additional charges if any for special examination e.g. X- Ray etc.

6.11 Safety Training

No person shall be deployed at work place/Site without Safety Induction Training. The safety card given by Safety and Environment Management Department should be with the workmen at all the time and same should be produced on demand at any time.

6.12 OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEM :

6.12.1 SAFETY:

The bidder shall have to take necessary safety arrangements / precautions for the workmen engaged by him and shall be responsible for any First Aid/ Emergency treatment for his labourers/ workmen. In addition, the bidder shall have to abide by all fire & safety regulations of the owner. The contractor has to execute the works after taking necessary instruction & clearance from the safety officer, available at site.

6.12.2 All lifting/handling tools & tackles should be load-tested as required by law. Mobile equipments such as Truck, Tractors, Tippers, Dumpers etc. shall have valid fitness certificate with due insurance required as per law.

6.12.3 PERSONAL PROTECTIVE EQUIPMENTS (PPEs):

The bidder shall have to provide all necessary PERSONAL PROTECTIVE EQUIPMENTS (PPEs) like safety shoes, gum boots, helmets, safety goggles, nose masks etc as applicable to the workmen engaged by them as per the requirement. Safety aprons and Masks should also be provided to all workmen engaged in caustic / chemicals working areas. The bidder should ensure use of the above by his workmen during the contract period. In case the bidder fails to provide PPEs as per requirement, at the time of starting the job, they will not be allowed to carry out the assigned job.

- I. The bidder should be aware that the workers engaged by them shall not be allowed to enter into the site at the NALCO plant gate unless they wear the safety helmet and safety shoe. The bidder shall take all necessary steps/actions so that his workmen enter into the NALCO site premises with safety helmet and safety shoe.
- II. The bidder to follow NALCO's occupational health & safety policy. The bidder has to ensure attendance in a training programme for all his contract workers

conducted by safety department and obtain a certificate before putting the workers to work front.

- III. The bidder has to adhere to "NALCO's safety code for contractors" while executing the work and the same has to be collected from NALCO's T & C department.
 - IV. In case the bidder shows negligence in adherence to the above conditions and results in causing loss to the company properties or causing obstruction for normal movement inside the site, NALCO may take suitable action as deemed fit and NALCO may sever the business relation with the party.
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- 6.12.4 **Medical Check-up:** The bidder will have to submit medical certificate from a Govt. Hospital or registered medical practitioner in the prescribed format for the workmen engaged by him along with application for gate pass and for annual renewal. No gate pass will be issued / renewed unless the medical certificate is enclosed along with the application.
 - 6.12.5 The Engineer in-charge executing the contract upon his satisfaction that the bidder is not performing as per the safety requirements may direct stoppage of work. The bidder shall not proceed with the work until he has complied with such directions to the satisfaction of concerned Engineer in-charge.
 - 6.12.6 The bidder shall be fully responsible for accidents caused due to him or his agents workmen's negligence or carelessness in regard to the observance of the safety requirements and shall be liable to pay compensations for injuries.
 - 6.12.7 Without prejudice to the right conferred by the Clause 6.12.5 above for stoppage of work for violating of safety requirements, the bidder shall be liable for penalty up to Rs. 3,000/- for the first violation and up to Rs.5,000/- for the second violation. For the third violation, he shall be liable to be debarred from further contracts up to a period of one year minimum from the date of completion of jobs in hand.
 - 6.12.8 The Engineer in-charge executing the contract will assess the penalty amount having regarded to all the circumstances, in particular the nature and the gravity of the violation & will issue a show-cause notice specifying therein the proposed penalty. Considering the cause shown by the Contractor, if any the Engineer in-charge executing the contract shall pass final orders which shall then be final and binding on the bidder. The penalty amount shall be recoverable from any bill and / or EMD / SD of the bidder without any further reference to him.
 - 6.12.9 Whenever work at height is involved, bidder must obtain working at height permit from concerned Dept. for the persons required to work at height.

7.0 NON-COMPLIANCE OF THE SHE AND SAFETY NORMS

Penalty may be imposed on successful bidder and their sub-contractors/sub-vendors working in the Project for non-compliance to the SHE (Safety, Health & Environment) requirements working in the Project as per The National Aluminium Company Limited (NALCO)'s norms.

8.0 ENVIRONMENTAL CLAUSE (ISO-14000)

In line with the requirement of ISO – 14001, all Bidders shall comply with the following:

- i) Each and every Bidder engaged inside the Works shall maintain the up-to-date training certificate of their employees of Environment. The training shall be provided during safety & Environment training prior to start of the job.
- ii) Any earth excavated during the job shall be disposed off in a pre-assigned area. The Bidder shall take preventive steps to avoid spillage of earth/debris during transport/dumping.
- iii) Maintain a clear work area in and around the work place.
- iv) Ensure optimum use of water and avoid misuse/ wastage.
- v) Ensure that the vehicles used by them meet the emission norms. These are being checked by Owner's Safety department.

9.0 SECURITY REGULATIONS

9.1 The Bidder shall abide by all the security regulations of the Owner in force and promulgated from time to time. All construction material like sand, ballast gravel etc shall be brought with mining challans etc. No material once brought in shall be permitted to be taken outside until the completion of the work and thereafter only with the express sanction of the Engineer. Therefore, in order to facilitate the issue of exit gate permits for equipment and materials, the Bidder shall fill in Owner's prescribed entry challans as per the Owner's rules and obtain countersignature on all the copies from Owner's security staff at the entry gate furnishing all the details of such materials and equipment which the Bidder intends to take in or take out from the Site. Copies of such certified entry challans shall be submitted by the Bidder to the Owner and Engineer respectively upon entry for their information and record. No exit gate permit shall be issued for any materials or equipment which have not been entered into the said entry challans and have not been signed by the Owner's security staff at the entry gate at the time of entry.

9.2 It will be the responsibility of the Bidder to obtain the necessary licence as required under the Contract Labour (Regulation & Abolition) Act 1970 with latest amendments, for all the labour engaged by or through him.

9.3 Gate Pass for Bidder's Labour

The Bidder shall arrange to obtain from the Owner the required gate pass for entry to the Owner's Works for each one of his workmen and staff as per the Owner's prescribed procedure and format. Each gate pass shall contain the photograph of the person concerned. In the event of loss and/or damage to the gate pass the Bidder shall pay to the Owner the prescribed penalty before a new gate pass can be issued.

- 9.4 All gate passes, for the entry of labour inside the Works, engaged by or through the Bidder and all material gate passes will be issued only in the name of the Bidder, and he will be directly responsible for the same. All gate passes issued as aforesaid to the Bidder shall be returned by the Bidder to the Owner on completion of the Works or on termination of the Contract.

10.0 WITHHOLDING PAYMENT

The Owner shall have full liberty to withhold and set off at any time all sums due or to become due to the Bidder, whether under this or any other contract, against any sum due or to become due to the Owner from the Bidder under this or any other Contract.

11.0 DISMANTLING, MODIFICATION AND ERECTION WORK AND GST REGISTRATION NUMBER

- 11.1 Bidder is required to quote rate for Dismantling, Modification and Erection of Miscellaneous Mechanical work in strict conformity to the Bill of Quantity attached with the tender document.
- 11.2 In this tender the Bidder must indicate his GSTIN. In case the bidder fails to furnish this information, it will be presumed that the bidder is not registered and his tender will be treated accordingly. The bidder is also required to furnish his Income Tax Permanent Account Number, Provident Fund Account Number & ESI Registration No.
- 11.3 The Bidders rates shall be inclusive of all taxes, duties, levies, cess and royalties etc. but exclusive of GST (Goods and Service Tax). In no case shall any extra be allowed by NALCO on account of these. Only GST, if any for the work shall be borne by the Owner at actual against documentary evidence to be furnished by the Bidder

12.0 PRICE BASIS:

- 12.1 The Bill of Quantity shall be read in conjunction with Special Conditions of Contract, General Conditions of Contract, Scope of Work, Technical Specification, Drawings, if any and any other documents forming a part of this Contract.
- 12.2 All expenses towards mobilisation at site including bringing in equipment, machine, work force, materials, and demobilization PAYMENT like dismantling the equipment, machine, cleaning the site etc. shall be deemed to be included in the rates quoted and no separate payments on account of such expenses shall be entertained.
- 12.3 All expenses towards prevention of area site, filling area (mound) and haulage roads shall be deemed to be included in the rates quoted and no separate payments on account of such expenses shall be entertained.
- 12.4 The prices / rates quoted by the bidder shall remain firm till the issue of final completion certificate. The quoted rates shall be deemed to include and cover all costs, expenses and liabilities of every description and all risks of every kind including all type of local/ villagers interference / obstruction / interruption / pollution problems in the air, or any other problems which may likely to occur from time to time to be taken in executing, completion and handing over the work to the Owner by the bidder. The bidder shall be deemed to have known the nature, scope, magnitude and the extent of the works and

materials required though the contract document may not fully and precisely furnish them. The bidder shall make such provision in their quoted rates as he may consider necessary to cover the cost of such items of work and materials as may be reasonable and necessary to complete the work. The opinion of the Engineer-in-Charge/DASTUR as to the items of work which are necessary and reasonable for completion of work shall be final and binding on the bidder although the same may not be shown on or described specifically in contract documents:

Generally of this present provision shall not be deemed to cut down or limited in any way because in certain cases it may and in other cases it may not be expressly stated that the bidder shall do or perform a work or supply articles or perform with services at his own cost or without addition of payment or without extra charge of works to the same effect or that it may be stated or not stated that the same are included in and covered by their quoted rates.

12.5 Bill of Quantity to cover Erection plant, Materials, Labour etc.

Without in any way limiting the provisions of other sub clauses the quoted rates shall be deemed to include and cover the cost of all erectopm plant, machine, temporary works (except as provided for, herein), pumps, materials, labour, insurance, fuel, stores, and appliances to be supplied by the bidder and all other matters in connection with each item in the Bill of Quantities and the execution of the work or any portion thereof finished complete in every respect and maintained as shown or described in the contract document or as may be ordered in writing during the continuance of the contract.

12.6 Bill of Quantity to cover Royalties, Rents and Claims

The quoted rates shall be deemed to include and cover the cost of all royalties and fees for the article, processes, protected by letters, patent or otherwise incorporated in or use in connection with the works, also all royalties, rents and other payments in connection with obtaining materials of whatsoever kind for the works and shall include and indemnity to the owner which the bidder hereby gives against all actions, proceedings, claims, damages, costs and expenses arising from the incorporation in or use on the works of any such articles, process or charges if levied on materials, equipment or machinery to be brought to site for use on work, shall be borne by the bidder.

12.7 Bill of Quantity to cover taxes and duties

The quoted rates are inclusive of all taxes (except GST), duties, levies, any port duties, transport charges, stamp duties or Central or State Government or Local Body (or from any other body) or Municipal Taxes and charges whatsoever will be granted or obtained and all expenses of which shall be deemed to be included in and covered. Only Goods and Service Tax (GST), if any for the work shall be payable by the Owner extra at actual to the Bidder against the documentary evidence furnished by the Bidder. The bidder shall also obtain and pay for all permits or other privileges necessary to complete the work.

12.8 Bill of Quantity to cover Risk of Delay

The quoted rates shall be deemed to include and cover the risks of all possibilities of delay and interference with the bidder's conduct of work which occur from any cause including orders of owner in the exercise of his powers and on account of extension of time granted due to various reasons and for all other possible causes of delay.

12.9 Bill of Quantity can not be altered

For work under unit rate basis no alteration will be allowed in the quoted rates by reasons of works or any part of them being modified, altered, extended, diminished or omitted. The quoted rates are of fully inclusive rates which have been fixed by the bidder and agreed to by the Owner and cannot be altered.

12.10 The quoted rates to cover for working in operating plant/site. Bidder's rates shall be deemed to include taking into account that he has to work in operating plant/site and shall take sufficient care in moving the plants, equipment and materials from one place to another, so that they do not cause any damage to any person or to the property of the owner or to third party including over head and underground cables/pipe lines. In the event of such damages including eventual loss of production and operation of the plant or services in any plant or establishment as estimated by the owner or ascertained or by the third party shall be borne by the contractor.

12.11 Total Contract Value/ Total Order Value will be inclusive of all taxes, duties, levies, royalties etc. as per tender documents except GST.

12.12 ESCALATION: NOT APPLICABLE

12.13 Royalty Clearance:

As per Mines and Minerals Act of Govt. of Odisha the bidder is required to pay royalty for various types of construction materials (minor minerals) used in the work. The royalty charges shall have to be deposited in the office of Tahsildar from whose jurisdiction the minerals have been lifted. The party should submit the statutory payment of royalty for minor minerals used for the work up to date along with R.A. Bills. No bills will process for payment without statutory dues.

12.14 Adjustment for Increase/Decrease in Contract value:

12.14.1 The quantity of the various items mentioned in the Bill of Quantity is approximate and may vary up to any extent or be deleted altogether. The quoted rates of each item shall remain firm as long as the variation in the total value of the work executed under this tender specification, including extra items, if any, remain within +50% and -25% of the total value of the contract. The bidder in his own interest should get an indication of the probable extend of the work to be executed under any particular item in the schedule, before undertaking any preliminary and enabling work or purchasing bought out components related to the work.

The above-mentioned variation limits shall not apply to quantities of the individual items, which can vary to any extent. No compensation shall be paid to the bidder on this account.

12.14.2 However if due to variation/ amendments by Owner/DASTUR, the gross value of work actually performed by the bidder is less than 75% of awarded contract

value, then the bidder shall be entitled for an additional 5% on the amount by which the contract value falls short of 75% of total contract value which the bidder may have anticipated towards profit for due execution of the total contract value. Similarly if due to variation/ amendments by Owner/DASTUR, the gross value of work actually performed by the bidder is more than 150% of awarded contract value, then a discount of 5% shall be considered on the amount by which the contract value exceeds beyond 150% of awarded contract value.

12.15 TAXES AND DUTIES

- 12.15.1 Only GST, if any for the work shall be borne by Owner at actual against documentary evidence to be furnished by the Bidder. The Bidder shall be responsible to obtain all statutory clearances, approvals and registration as required for execution of its scope of work under the Contract. All other taxes, duties, levies, royalties etc. and impost will be to the Bidder's account.

It would be the responsibility of the bidder to get the registration with the respective Tax authorities under provision of GST. Any taxes being charged by the bidder 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 Owner's GSTN number as applicable for particular supply on all invoices raised on Owner under GST Regime.

The Bidder accepts full and exclusive liability for the payment of any and all applicable taxes (CGST, SGST, IGST, UTGST), levies and statutory payments payable under all or any of the prevailing Central/ State statutes.

The Bidder shall comply with all the provisions of the GST Act/ Rules/ requirements like providing of tax invoices, payment of taxes to the authorities within the due dates, filing of returns within the due dates etc. to enable Owner to take Input Tax Credit. The bidder shall also comply any modification in the prescribed rules by GST council/ appropriate authority from time to time during execution of the contract.

In case, Owner is not able to take Input Tax Credit (ITC) due to any non-compliance/ default/negligence of the bidder, the same shall be recovered from the pending bills/dues (including Initial Security Deposit/ Security Deposit etc.).

In case, Owner'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 bidder is liable to make good the loss suffered by Owner by issuance of suitable credit note to Owner. In case, bidder does not issue credit note to Owner, Owner would be constrained to recover the amount including interest payable along with statutory levy, if any, payable on such recovery.

Bidder shall be responsible to indemnify Owner for any loss, direct or implied, accrued to Owner on account of bidder's failure to discharge his statutory liabilities like paying taxes on time, filing appropriate returns within the prescribed time etc

Bidder shall adjust taxes, duties, cess or levies wherever required, if the Owner furnishes exemption certificates even retrospectively.

Bidder hereby accepts exclusively liability for and agrees to Indemnify Owner against liability for the payment of any and all contributions or taxes for unemployment insurance, old age pensions or annuities or other purposes prevalent under the present legislation or hereafter imposed by the Govt. of India/or by any unit or sub-division or authority thereof, which are in whole or in part measured by and/or based upon the wages, salaries or other remuneration paid to persons employed by Bidder on work in connection with the Contract.

Tax element on any Debit Note / Supplementary invoice, raised by the bidder will be reimbursed by Owner 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. Bidders to ensure that such debit Notes are uploaded while filing the statutory returns as may be prescribed from time to time.

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

12.15.2 GST shall be payable extra at applicable rates subject to the fulfillment of following conditions:

1. Providing of GSTIN.
2. Providing proof of payment of GST and correct uploading of invoice into GSTN.
3. Compliance with other relevant GST provisions
4. Payment of GST is subject to reflection of the party's invoice in GSTR 2A/ Anx-2 (GST new return) of NALCO

12.15.3 Any statutory variation in GST, if applicable, or the introduction of new duties, levies or taxes, cess from the date of award of contract and limited to direct invoices of the Bidder shall be to the account of Owner, provided that the Bidder provides the necessary documentary evidence / supporting by way of gazetted notifications etc. to prove the change in such levies or taxes between the date of award of contract and the scheduled date of completion of work (including extension approved if any) to claim the difference and the Bidder ensures that he is fully complied with the GST Law to enable Owner to avail entire Input tax credit.

12.15.4 In the event of imposition of new taxes and duties after award of contract, but during the tenure of Contract (including extension approved if any), Owner shall reimburse the Bidder payment of new taxes and duties on the residual value of contract for the scope of work from the date of such imposition, against Bidder's submission of documentary evidence.

12.15.5 GST will be paid along with Invoice payment and the Bidder shall submit proof of submission of GST as per provision of GST Law as and when demanded by Owner. The HSN/SAC 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.

In case GST are payable on reimbursement model, GST will be reimbursed by Owner at actual to the Bidder against documentary evidence of payment of GST submitted by the Bidder.

- 12.15.6 The Bidder shall be solely responsible and liable for his wrong assumptions/ omissions/ consideration of all applicable taxes and duties in the Contract price except GST which is not included in the Contract Price. In addition to above, taxes and duties (except GST), if any, which are prevailing on the date of award of contract, but not considered by the Bidder in the Contract price, shall be borne and paid by the Bidder.
- 12.15.7 The Bidder agrees to provide all necessary support including providing invoices or other documentation in such form and detail that may be necessary to enable or assist Owner to claim or verify any input tax credit, set off, rebate or refund in relation to any GST payable under the Contract or in respect of the scope of work under the Contract. If the input tax credit cannot be availed by Owner and/or if the input tax credit availed is denied on the basis of such invoice solely for any acts, negligence, commission or omission of the Bidder, then Bidder shall indemnify Employer and it's officer(s) with respect to any or all liabilities, claims, demands, costs, charges, expenses, taxes and assessments, including penalties.
- 12.15.8 The Bidder shall support Owner with relevant information pertaining to the Bidder's scope of work on various aspects to comply with the transition provisions under GST Law. The Bidder shall also take reasonable steps to assist Owner in identifying the tax benefits or refunds as the case may be that may accrue on stocks, credits, taxes, etc. on the GST Implementation date and pass-on the same to Owner.
- 12.15.9 As required by GST Law, wherever identifiable cost savings are realised by virtue of the enactment of the GST Law, those cost savings will be passed on to Owner.
- 12.15.10 Income tax in India, if imposed on the Bidder or on his personnel, in connection with execution of the Contract, shall be borne by the Bidder. The Bidder shall be responsible to furnish the Income tax declaration and file returns with the Income tax authorities, as required under the Income Tax Act. Income Tax TDS, as applicable at the prevailing rate on gross billed shall be deducted from the Contractor's bills as per Income Tax Act. The amount so deducted shall be deposited by NALCO with the Income Tax Authorities as per Law. NALCO shall provide a TDS certificate to the Bidder in this regard.
- 12.15.11 Compliance with recent amendments to the provisions of Income Tax TDS/ TCS is applicable to vendors for supply of Services. Reference is invited to recent amendments in Finance Act 2021 sections 206AB & 206 CCA of Income Tax TDS /TCS. The newly introduced sections shall be effective from 01.07.2021. In compliance to the said provisions, all payments to the vendor's w.e.f 1.7.2021 for supply of services shall be subject to TDS/ TCS as per the newly introduced sections under Income Tax Act.

The provision mandates different rate of TDS depending upon the Compliance as detailed below:

- a) It mandates submission of Income Tax Return (ITR) filed by the bidder for supply of Services for two immediate previous years for which the due date of filing the return has been expired.
- b) It mandates updating of PAN (Permanent Account Number) of Income Tax of the bidder for supply of Services in the vendor master before processing of the Bill for payment.

With introduction of this section w.e.f 1.7.2021, the applicable TDS is 0.1% subject to compliance of (a) and (b) above. However in the event of non-compliance higher rate of TDS shall be

applicable as furnished below:

- i) If PAN No is not available, then TDS @ 5% shall be applicable on the amount paid/ credited to the vendor for supply of services.
- ii) If Income tax Return is not submitted as mentioned at (a) above the applicable TDS shall be higher of twice of rate of relevant TDS section or 20 % (for services).

In view of the same,

- (i) All the vendors are required to submit their PAN No with Copy of PAN Card along with the bid.
- (ii) All the vendors are required to submit the copy of Annual Income Tax Return for previous Year 2018-19 and 2019-20 along with invoice for processing the bills up to 30.9.2021. Thereafter, IT Return for next previous year 2020-21 may be submitted if the statutory period for filling the return is expired which shall suffice the release of payment up to 31.07.2022.
- (iii) In the event of non-compliance to the above, the bill shall be processed (after waiting for seven days of Bill submission) with applicable higher TDS as mentioned above.

Providing a Copy of Income Tax Return for each of the Two previous Financial Years for which due date for filling of Income Tax Return has expired with self-certification is a mandatory requirement else suitable provisions of the Act will be applicable.

12.15.12 TAX DEDUCTION AT SOURCE (TDS) UNDER GST

As per section 51 of CGST Act 2017, Owner shall deduct at source @ 1% CGST & @ 1% SGST for intra state transaction and @2% IGST in the case of interstate transaction from the payment made or credited to the supplier of taxable goods and/or services, provided if the contract value is more than Rs.2,50,000/-. This provision is applicable from the date to be notified by the Govt. However, no deduction shall be made if the location of the supplier & the place of supply are in a state or union territory, which is different from the recipient's registration state.

12.16 Dismantling, Modification and Erection of Miscellaneous Mechanical work:

The prices for Dismantling, Modification and Erection of Miscellaneous Mechanical work shall be quoted in Indian Rupees and inclusive of all taxes, duties, levies, royalties etc. but excluding of GST. Only GST for the work shall be borne by Owner at actual against documentary evidence to be furnished by the Bidder.

All payments shall be made direct to the Bidder on compliance of contractual terms & conditions.

12.17 General:

- 12.17.1 In case of shortage/missing/damage/ failure of any material identified at any point of time within the period specified by the Contract including defect liability period, the bidder shall supply/replace the same without any additional financial implication to the Owner.
- 12.17.2 The cost of all superintendence of labour, materials, tools, plant drawings, equipment, mobilising and demobilising equipment, fuel, lubricants, fixtures, transport charges, insurance charges (other than Owner's scope), BG charges, temporary and permanent works, testing, screening, washing, procession and handling of materials, stocking

and removal charges of any rejected materials, water and power arrangement and satisfactory maintenance of the same for the full and satisfactory completion of the works intended. The prices should also include complete requirement of all consumables materials, etc. required till the completion of work.

- 12.17.3 All fees, duties, royalties, rent and compensation to owner for surface damage or taxes and impositions payable to local authorities in respect of land and structures, for all materials supplied for the work or other duties or expenses for which the Bidder may become liable or may be put to under any provision of the law for the purpose of or in connection with the execution of the Contract including levies payable on all transactions.
- 12.17.4 Supply of samples, mould, cost of testing of materials, works etc. till the completion of work as specified in the Contract.
- 12.17.5 Working in all conditions including in/under water, liquid, mud, foul conditions, etc. and shall also include bailing or pumping out water from the foundations, basement or any other place of construction, collected from rains or any other source whatsoever, de-sludging and allied operation, at any state of work and at any time till completion of work including all suspension period and delays whatsoever, cost of curing including pumping curing water, wherever necessary.
- 12.17.6 Work at all depths in foundation below the ground level and in superstructure upto all the heights above ground level including all lifts and descents, work involved at any other place of work.
- 12.17.7 Unless otherwise specified in the specification schedule, cost of all leads.
- 12.17.8 Provision of centring, scaffolding, strutting, props, shoring, etc., if any.
- 12.17.9 All materials and labour required for fencing and protection against risk of accidents and fire and providing necessary planking, strutting, gangway with handrails, gumboots, helmets, safety belts, etc. during the progress of work.
- 12.17.10 Clearing the site after completion of work of all debris left out, construction materials, labour colonies including micro dressing the area in neat and clean shape.
- 12.17.11 Providing final painting as specified in the Contract.
- 12.17.12 Considering the progress of the works and in order to meet the Contract Schedule, the Bidder shall carry out the works on round the clock if required, duly complying the statutory and site requirements.
- 12.17.13 Any other activity necessary for the completion of the work as per the Scope of work, Technical Specification, Drawings, Special Conditions of Contract, and General Conditions of Contract.
- 12.18 All procedures required under statutes, for availing any concessions under relevant tax laws shall be adhered to by the Bidder.
- 12.19 E-way bill as per Rule-138 of CGST Rules 2017, in respect of inward supply of goods, shall be the responsibility of the bidder and accordingly, compliance with e-way bill provisions as per Rule 138 of the CGST Rules 2017, shall be the responsibility of the bidder.
- 12.20 The Bidder shall note that the prices quoted shall include all the items and scopes

listed at above.

13.0 TERMS OF PAYMENT:

13.1 All payments shall be made as specified herein directly by the Owner to the Bidder unless otherwise provided in the Contract.

13.2 Measurements

Quantities: The quantities set out in the Bill of Quantity are the estimated quantities of the work but they are not to be taken as the actual and correct quantities of the works to be executed by the Contractor in fulfilment of his obligation under the Contract. Any fluctuation in the quantity of the work from the estimated quantity as a result of measurement carried out after the actual execution of the work shall not entitle the Contractor to claim any compensation / loss of profit / damages for the shortfall in the estimated quantity of work or excess above the estimated quantity of the work as the case may be, besides the price due to him for the actual quantity or work executed at the rate contained in the Contract.

The quantity of the various items mentioned in the Bill of Quantity is estimated quantities only and may vary up to any extent or may be deleted altogether. The quoted rates of each item shall remain firm as long as the variation in the total value of the work executed under this tender specification, including extra items, if any, remain within + 50% (plus fifty percent) and (-) 25% (minus twenty five percent) of the total value of the contract. The above-mentioned variation limits shall not apply to quantities of the individual items, which can vary to any extent. No compensation shall be paid to the Contractor on this account.

13.3 **Works to be measured:** The OWNER shall, except as otherwise stated, ascertain and determine by measurement the value of work done in accordance with the Contract. He shall, when he requires any part or parts of the works to be measured, give notice to the Bidder who shall forthwith attend or send a qualified authorised engineer to assist the Engineer/ Consultant in making such measurement and shall furnish all particulars required by him. Should the Bidder not attend or neglect or omit to send such an authorised engineer on the date/s fixed by the Engineer/ Consultant for taking measurement as per notice given to the Bidder, the measurement certified by the Engineer/ Consultant shall be taken to be the correct measurement of the works.

13.4 **Methods of Measurement:** Except where any general or detailed description of the work in the Bill of Quantity expressly shows to the contrary, rates quoted shall be deemed to be comprehensive, be complete and measurements shall be made according to the procedure set forth in the Bureau of Indian Standard - Method of Measurement for "Building Work IS:1200" and any subsequent amendment or modification thereof notwithstanding any general or local custom. All dimensions and measurements shall be in metric units.

13.5 **Period of final Measurement:** The final measurements and valuations in respect of the Contract shall be completed within three (3) months from the date of completion of the Work as certified by the OWNER.

13.6 The Owner shall release the payment to the Bidder on or before the fifteenth (15th) day on receipt of Invoice along with relevant documents complete in all respects duly certified by Engineer/Consultant in respect of "On – Account Bills".

- 13.7 In accordance with the provisions of the Contract, the Owner shall pay the Bidder, on the basis of the price given in the Bill of Quantity.
- 13.8 The Bidder shall reimburse the Owner all costs, charges, damages or expenses which the Owner may have paid or incurred, if and to the extent to which the Bidder is liable under this Contract. Such payments shall be made by the Bidder within thirty (30) days upon written request of the Engineer, failing which such costs, charges, damages or expenses shall be deducted by the Owner from any money due or becoming due by the Owner to the Bidder under this Contract or any other Contract, failing which such amounts shall be considered as debt from the Bidder to the Owner and shall be recoverable accordingly.
- 13.9 Release of the payments as mentioned below shall not relieve the Bidder from all the obligations and responsibilities specified in the Contract.
- 13.10 All interim / progress payments shall be regarded as payments by way of "On- Account" against final payment only and not as payment for work completed and shall not preclude defective / imperfect / incomplete works to be removed. It will not be considered as an admission by the Owner of the due performance of the Contract, or any part thereof by the Bidder nor shall it preclude, determine or affect in any way the powers of the Owner under these conditions or in any way vary or affect the Contract.
- 13.11 Every RA bill/invoice/Final bill submitted to the OWNER for release of payment, the executing agency is required to submit a material reconciliation statement along with supporting documents as back up documents against the quantities certified for payment. This statement should be certified by the consultant & recommended to OWNER along with the RA bill/invoice/ Final bill.
- 13.12 The Contractor is required to obtain **Clearance from HRD Department** and submit the same along with RA/Final Bill to OWNER for processing of payment. For obtaining Clearance from HRD Department, the Contractor shall ensure that all the contract workmen engaged by him shall follow Bio-metric Punching system for marking their daily attendance. Contractors must ensure both IN and OUT punch of all its contract workmen. Payment of wages and other statutory dues of contract workmen shall be made by the contractor based on attendance through Bio- metric Punching system. Wages and other applicable dues of the individual workmen including any advance thereon should be credited to their respective bank account only, within the stipulated period as per statutory provisions. The copy of the payment sheet, bank statement/forwarding letter and attendance sheet are to be submitted to the HRD department along with each RA/Final Bill for necessary verification, record and issue of HRD clearance towards release of RA/Final Bills. The Final Bill will only be released subject to clearance of all terminal benefits including statutory dues such as EPF & ESI, etc of the contract workmen by way of bank transfer and obtaining a certificate to this effect from the contract labour cell of HRD dept.
- 13.13 **DEDUCTION OF CESS UNDER BUILDING & OTHER CONSTRUCTION WELFARE CESS Act.1996** : For any building or other construction work which are covered under section 2 (I) (d) of the Building & Other Construction worker (RE & CS) Act. 1996 and the Building & Other Construction Welfare Cess Act. 1996, 1% Cess shall be deducted from the RA & Final bill gross amount payable till the completion of the job. In addition, contractors having 10 or more workers in their establishment have to register themselves with the registering Officer under the Building & Other Construction worker (RE & CS) Act. 1996.
- 13.14 **PAYMENT TERMS:-**

Payment will be made through monthly running account (RA) bills based on joint measurements with Engineer-in-Charge/DASTUR against the work done during the preceding month on the basis of item rates as accepted in the contract after effecting necessary deductions/ recovery including interest charges accrued thereon and statutory deduction as applicable in the following manner:

- a) 90% pro-rata against monthly progressive bills duly certified by Engineer-in-Charge.
- b) 10% within 30 days of completion of work and Final Handing Over.

Note:

- 1) Goods & service Tax (GST) as applicable shall be payable extra. The vendor will have to raise invoice for the applicable GST amount as per approved format for claiming the GST paid. Payment of GST is subject to reflection of the party's invoice in GSTR 2A / Anx-2 (GST new return) of NALCO.
- 2) TDS will be deducted under 194Q and therefore no action be taken by the Vendor under section 206C(1H) of the act if applicable to them.

13.15 MODE OF PAYMENT:

Payment facility is available under INTERNET mode through company banker as well as in NEFT / RTGS (National Electronic Fund Transfer / Real Time Gross Settlement) mode through designated Branches. The Bidder shall submit duly filled bank mandate form (Appendix-V) in duplicate with due authentication from their Bankers to avail e-payment facility. All the payment shall be made only through e-mode.

14.0 CLAUSE 24.00: COMPENSATION FOR DELAY– GENERAL CONDITIONS OF CONTRACT

- 14.1 In partial modification to clause No.- 24.00 – Compensation for Delay – General Conditions of Contract, following is to be noted:

In case the contractor fails to complete the work within the stipulated period, he shall be liable to pay to the Owner as compensation, an amount equal to 1% of the value of contract per week of the delay or part thereof subject to a maximum of 10% of the of the value of contract.

- 14.2 The Compensation for Delay, liabilities or any Penalty will be recovered along with applicable taxes and duties.

- 14.3 All other provisions of the clause remain unaltered.

15.0 MINIMUM RATES OF WAGES OF THE CONTRACT LABOUR

Wages paid to the workmen by the Bidder should not be less than the rates specified by the Central Govt. as per Minimum Wages Act, 1948 and as adopted by NALCO from time to time. Circular indicating the applicable present rate is appended below.

Wages to the workmen should be paid on or before the 7th of the subsequent

month. If 7th falls on a holiday or weekly off day the payment should be made one day prior to that. The bidder shall take into account the following minimum rates of wages of the contract labour and consider the same in their price.

The Chief Labour Commissioner (Central), Ministry of Labour & Employment, Government of India has revised the rates of Variable Dearness allowance. Accordingly the rates of minimum wages for different categories of Bidder's labourers working in NALCO would be as under, w.e.f 01/04/2025.

SL NO	CATEGORY	MINIMUM RATES OF WAGES PAYABLE INCLUSIVE OF WAGES FOR WEEKLY OFF, VDA & CANTEEN SUBSIDY			
		MINIMUM WAGE (INCLUSIVE OF WEEKLY OFF & VDA) IN RS	ADDITIONAL ELEMENT RS	CANTEEN SUBSIDY RS	TOTAL IN RS
1	UNSKILLED WORKER	541	55.08	30.04	626.12
2	SEMI SKILLED WORKER	674	55.08	30.04	759.12
3	SKILLED WORKER	805	55.08	30.04	890.12
4	HIGHLY SKILLED WORKER	938	55.08	30.04	1023.12

The bidder to note that the Minimum wage as notified by the Chief Labour Commissioner (Central) has a variable component as Special allowance which is linked to average AICPI for Industrial workers, which keeps on changing every six months. The Bidder has to absorb all such variations due to increase in Minimum wage in their quoted price and no claim whatsoever on this account shall be entertained.

Where the Minimum wages notified by the concerned State Government are higher than the rates notified by the Central Government, the states Government rates should apply in concerned scheduled employment as long as the same remains higher than the Central Government rates. The classification on workers in different categories will be as per the notification issued by the Central Govt. fixing the minimum wages for the above scheduled appointment.

16.0 CONSTRUCTION, ERECTION OF PLANT AND MATERIAL

16.1 Bidder's Material brought on the Site

The Bidder shall bring to Site all construction/erection equipment, machine, 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 Bidder without the written permission of the Owner. The Bidder shall nevertheless be solely liable and responsible for any loss or destruction thereof and damage thereto.

16.2 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 specification 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 Bidder 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.

Bidder shall ensure that there is no wastage of water. On completion of the work, the Bidder 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.

16.3 Work and Services to be provided by the Bidder

The following work and services shall also be provided under the contract:

- i) Material transportation to Erection site at Bidder's risk and cost.
- ii) All activities as per the Technical specifications and as advised by the Owner.
- iii) Labour license for Bidder and sub-contractor's labour if required / applicable as per State Govt.

16.4 Owner's Lien on Equipments

The Owner shall have lien on all equipments including those of the Bidder brought to the Site for the purpose of 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 Bidder and / or his Sub-contractors without the prior written approval of the Owner.

16.5 Protection of Work

The Bidder 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 DASTUR for any damage or loss to the Bidder's Works and the Bidder 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 Bidder's Works occur because of other party not under his supervision or control, the Bidder shall make his claim directly with the party concerned. If disagreement or conflict or dispute develops between the Bidder and the party or parties concerned regarding the responsibility for damage to the Bidder's Works the same shall be resolved as per the provisions of the clause entitled 'Co-operation with other Bidders'. The Bidder shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The Bidder shall proceed to repair the work immediately and no cause thereof will be assigned pending resolution of such dispute.

16.6 Security

The Bidder shall have total responsibility for all equipments and materials in his custody stored, loose, semi-assembled and / or erected by him at Site. The Bidder 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 Bidder shall enter and leave the Project Site only with the written permission of the Owner in the prescribed manner. Bidder's employees shall wear identification badges while

on the work at Site.

16.7 Bidder's Area Limits

The Owner will mark-out the boundary limits of access road, parking spaces, storage and erection areas for the Bidder and the Bidder shall not trespass the areas not so marked out for him. The Bidder 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 Bidder'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.

16.8 Bidder's Co-operation with the Owner

In cases where the performance of the Site Work by the Bidder affects the operation of the system facilities of the Owner such Site Work of the Bidder 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 Bidder. The Owner may impose such restriction on the facilities provided to the Bidder such as electricity, water, etc. as he may think fit in the interest of the Owner and the Bidder shall strictly adhere to such restrictions and co-operate with the Owner. It will be responsibility of the Bidder 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 Bidder 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 Bidder shall be responsible for supplying such flushing oil and other lubricants unless otherwise specified elsewhere in these documents and specifications.

16.9 Protection of Property and Bidder's Liability

16.9.1 The Bidder 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 Bidders and Sub-contractors and all public and private property including structures, building, other plants and equipments and utilities either above or below the ground.

16.9.2 The Bidder 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 Bidder 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.

16.10 Painting

All exposed metal parts of the equipment including piping, structures railing, etc. wherever applicable, after Erection 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 a 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.

16.11 Unfavorable Working Conditions

The Bidder 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 unfavorable construction conditions. No field activities shall be performed by the Bidder under conditions which might adversely affect the quality and efficiency thereof unless special precautions or measures are taken by the Bidder in a proper and satisfactory manner in the performance of such works and with the concurrence of the Owner/DASTUR. Such unfavorable construction conditions will in no way relieve the Bidder of his responsibility to perform the works as per the schedule.

16.12 Protection of monuments and reference points

The Bidder 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 Bidder 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.

17.0 **DISMANTLING, MODIFICATION AND ERECTION OF MISC. MECHANICAL WORK**

17.1 Rules and Regulations

The Bidder 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 the same.

17.2 Safety

The Bidder 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 Bidder 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.

17.3 In case of death, the Bidder shall be responsible for immediately notifying the nearest Indian Police so that they can make the proper investigation in accordance

with the law.

18.0 SETTLEMENT OF DISPUTES & ARBITRATION – Attached as Annexure-A.

19.0 FORCE MAJEURE

Neither Bidder nor NALCO shall be considered in default in performance of their obligations under the CONTRACT, if such performance is prevented or delayed by events such of war, hostilities, revolutions, riots, civil commotion, strike/lockout (for period exceeding 15 days), epidemic, pandemic, fire wind, flood, draught, earthquake, because of any law and order proclamation, regulation or ordinance of any Government or of any sub-division thereof, or because of any Act of God, or for any other cause beyond the reasonable control of the party affected, provided notice of any such cause with necessary evidence that the obligation under the Agreement is thereby affected or prevented or delayed is given within 14 days from the happening of the event with sufficient documentary proof in regards to its existence and continuance thereafter. In case it is not possible to serve notice within the said 14 days period then, within the shortest possible period without delay. As soon as the cause of Force Majeure has been removed, the party whose ability to perform its obligations has been affected shall notify the other of such cessation and of the actual delay incurred in such affected activity adducing necessary evidence in support thereof. An event which is Force Majeure whosoever it occurs, provided that it prevents, affects or delays the parties in performing contractual obligations, will justify the affected party's claim of Force Majeure. From the date of occurrence of a case of Force Majeure, the obligation of the party affected shall be suspended during the continuance of any inability so caused until the case itself and inability resulting from there from have been removed and the agreed time schedule under the CONTRACT shall stand extended by a period equal to the period of delay occasioned by such events. Should one or both parties be prevented from fulfilling contractual obligations by a state of Force Majeure lasting a continuous period of three months, either party has the right to terminate the Agreement. However, prior to deciding on termination, the parties shall consult each other and decide regarding the future performance of the Agreement.

20.0 Social Accountability 8000 (SA 8000)

The Bidders may be aware that NALCO are installing and implementing Social Accountability 8000 (SA 8000). As a part of Implementation, it is necessary that all bidders, sub-contractors of NALCO make a written commitment to conform all requirements of SA 8000. Bidder to submit/upload with his Part-1 bid details of SA 8000 as per Appendix - IV.

21.0 Not Used

22.0 Black Listing:

22.1 Black listing of any agency / firm/ contractor working with the company may be resorted in following cases:-

- (i) If the Proprietor or Partner or Director of the Firm is convicted by a Court of Law, following prosecution under the normal process of Law for an offence involving moral turpitude in relations to business dealings;
- (ii) If security considerations including the question of loyalty to the State warrant as per recommendations of Ministry of Home Affairs.

- (iii) If there is justification for believing that the Proprietor or Partner or Director (or Employee) of the Firm has been guilty of malpractices such as bribery, corruption, cheating, fraud, substitution of bid or theft or any other illegal activities while carrying out the work etc.
- (iv) If the Firm refuses/fails to return the Company's dues without adequate cause;
- (v) If the Firm is blacklisted by any Department of the Central Government/ State Government.
- (vi) If the Firm is a confirmed evader of Central / State taxes/duties for which NALCO has received notice from the concerned department of Central / State Govt.
- (vii) Misbehavior/ threatening of departmental supervisory staff during work execution.
- (viii) Constant non-achievement of milestones on insufficient and imaginary grounds and non-adherence to quality specifications despite being pointed out.
- (ix) Persistent & intentional violation of important conditions of contract.
- (x) Submission of false/ fabricated/ forged documents for consideration of a bid.
- (xi) If declared bankrupt or insolvent.

23.0 TOTAL LIABILITY UNDER THE CONTRACT:

The total liability of the Bidder arising out of and/or in connection with this Contract including Compensation for Delay but excluding Patent Infringement and Indemnity shall be limited to 100% of the total Contract Price.

APPENDIX – I

DETAILS OF MINIMUM MANPOWER PROPOSED TO BE DEPLOYED ON THIS WORK

Sl. No.	Details of Manpower	No.	Remarks
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Notes : Please furnish the above details in two categories – To be deployed by (I) Bidder and (ii) Sub- Bidders.

Minimum manpower deployment shall be based broadly as above and will be modified as mutually agreed to suit the detailed construction programme jointly worked out; further if any additional man power is required for completion of work in time, the same shall be provided by you as directed by Engineer/DASTUR without any extra cost.

The manpower proposed to be deployed in the work needs to be given quarter wise separately for direct personnel of the Bidder and the manpower proposed to be deployed through the sub-Bidders.

APPENDIX -II

ORGANISATION CHART SHOWING NO. OF QUALIFIED ENGINEERS & SUPERVISORY PERSONNEL ETC.

Sl. No.	Details of personnel to be deployed on this work	No.
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Note: Names and short resume of their experiences may also be given for key personnel.

The tentative chart of your site organisation as above furnished by you shall be subject to variation to suit the construction programme/ requirement and as directed by Owner/ Engineer.

APPENDIX-III

LIST OF APPROVED BANKS

List of PSU Banks

Sl. No	Name of the Bank
1	Bank of Baroda
2	Bank of India
3	Bank of Maharashtra
4	Canara Bank
5	Central Bank of India
6	Indian Bank
7	Punjab & Sind Bank
8	Punjab National Bank
9	State Bank of India
10	UCO Bank
11	Union Bank of India

List of Private Banks

Sl. No	Name of the Bank
1	HDFC Bank Ltd.
2	ICICI Bank Ltd.
3	Axis Bank Ltd.
4	Kotak Mahindra Bank Ltd.
5	Yes Bank
6	IndusInd Bank Ltd.
7	The Federal Bank Ltd.
8	The Jammu & Kashmir Bank Ltd.
9	The South Indian Bank Ltd.
10	The Karur Vysya Bank Ltd.
11	The Karnataka Bank Ltd.
12	IDFC Bank
13	RBL Bank
14	Tamilnadu Mercantile Bank Ltd.
15	City Union Bank Ltd.
16	IDBI Bank

List of Foreign Banks

Sl. No	Name of the Bank	BIC
1	Abu Dhabi Commercial Bank Limited	ADCB AE AA
2	Australia & New Zealand Banking Group Limited	ANZB AU 3M
3	Bank of America NA	BOFA US 3N
4	Bank of Bahrain and Kuwait B.S.C.	BBKU BH BM
5	Bank of Ceylon	BCEY LK LX
6	Barclays Bank PLC	BARC GB 22
7	BNP Paribas	BNPA FR PP
8	Citibank N.A.	CITI US 33
9	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.	BSOI 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

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APPENDIX – IV

Social Accountability 8000 Compliance Format

A. Basic information

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

B. Information regarding Social Accountability

- ☐ What is the minimum age required to join 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
Yes/No
as per statutory requirement?
- ☐ If directly not provided by you, do you get health & safety benefits from NALCO? Yes/No
- Are you certified for SA 8000? Yes/No

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

Have you undergone Code of Conduct Audit (COC Audit)
Yes/No
in last 2 years ?

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

Have your sub-suppliers been certified for SA 8000? Yes/No

Have your sub-suppliers undergone Code of Conduct Audit
Yes/No
(COC Audit) in last 2 years?

☐ Do you provide personal protective equipment(s)
Yes/No
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?

☐ Do you allow trade union and collective bargaining in your organization? Yes/No

If no, how do you ensure freedom of expression?

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

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

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

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

☐ Do you maintain a disciplinary procedure?
Yes/No

☐ If no, how do you terminate your employee?

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

☐ How many shift you have? shifts _____

☐ What is the official working time? hours _____

☐ Which day is off day in your organization?

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

☐ Do you pay overtime to your employees as per law?
Yes/No

☐ What is the lowest amount (salary/wage) you pay to
Rs._____-/-
your employees?

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

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

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

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

☐ Do you have any international certification
Yes/No

☐ If yes, please specify

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

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

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

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

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

We declare that the above-mentioned information is correct.

Signature:

Designation:

Date

Seal of the organization

APPENDIX – V

INTERNET BANKING / R.T.G.S. BANKING MANDATE FORM

(To be submitted in Duplicate)

To

**National Aluminium Company Limited,
M&R Complex
Damanjodi-763008**

Dear Sir,

Sub: Authorisation for release of payment due from NALCO, M&R complex through Internet Banking (SBI) or through R.T.G.S. Banking.

Refer Order No..... dateand/ or Tender/ Enquiry/ Letter
No..... date.....

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

1. Name of the Party. :

2. Address of the Party.

CityPin Code

E-mail Id:

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 and code number)			
Account Type	Savings	Current	Cash Credit
Account Number (as appearing in the Cheque Book)			
R.T.G.S. IFSC Code.			

4. Date from which the mandate should be effective: Dt. / /20.....

I/WE 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 M/S NATIONAL ALUMINIUM COMPANY LIMITED RESPONSIBLE. I ALSO UNDERTAKE TO ADVISE ANY CHANGE IN THE PARTICULARS OF MY ACCOUNT TO FACILITATE UPDATING OF RECORDS FOR PURPOSE OF CREDIT OF AMOUNT THROUGH RBI ECS/ RBI EFT/SBI NET.

Place:

Signature of the party/ Authorized Signatory

Date:

Certified that particulars furnished above are correct as per our records.

Bank's Stamp:

Date:

(Signature of the Authorized Official from the Bank)

1.0 Settlement of Disputes

1.1 AMICABLE SETTLEMENT:-

If any commercial dispute, other than those where the decision of NALCO/EIC/MIC is final and binding as per the contractual terms, whatsoever arises between NALCO and the Contractor/Vendor in connection with or arising out of the Service Contract /Work Order/Purchase Order, as the case may be, including without prejudice to the generality of the foregoing, any question regarding its existence, interpretation, validity or termination, or the execution of the Contract, whether during the progress of the Contract or after its completion and whether before or after the termination, abandonment or breach of the Contract, the parties shall resolve such dispute or difference by amicable settlement. If the parties fail to resolve such dispute or difference by amicable settlement, then the dispute may be settled through Mediation by High Level Committee / Arbitration / other remedies available under the applicable laws.

1.2 Resolution of Dispute by Mediation through High Level Committee (HLC):-

If the parties fail to resolve a dispute or difference by amicable settlement, such dispute or difference, if the parties agree, may be referred to Mediation for settlement and the same shall be guided by the provisions of The Mediation Act, 2023 or any other applicable law for the time being in force & amendment thereof.

1.2.1 Invitation for Mediation:-

- (i) A party shall notify the other party in writing about the dispute or difference it wishes to refer for Mediation within a period of 30 days from the date of failure to resolve the same through amicable settlement . Such notice for Mediation shall contain sufficient information relating to the dispute and the precise claim (monetary and/or declaratory) to enable the other party to be fully informed as to the nature of the dispute, amount of the monetary claim, if any, and apparent cause of action.
- (ii) Upon the receipt of the notice for Mediation from a party, the other party shall intimate its stand and counter claim, if any, within a period of 30 days from the date receipt of such notice and both the claim and counter claim, if any, will be referred for Mediation.
- (iii) The parties shall file their claim and counterclaim in the following format;
 - a. Chronology of the dispute
 - b. Brief of the contract
 - c. Brief history of the dispute
 - d. Issues

Sl. No.	Description of Claims / Counter claims	Claim Amount in INR	Relevant Contract Clause

e. Details of Claim(s) / Counter Claim(s)

f. Basis / Ground of claim(s) / counter claim(s) along with relevant clause of contract.

Statement of claims shall be restricted to maximum limit of 20 pages.

- (iv) If no reply/response is issued within 30 days of the date of receipt of notice to refer the dispute or difference for Mediation, the Mediation shall be treated as stands failed.

1.2.2 Mediation:-

- (i) Subject to the provisions of The Mediation Act, 2023 or any other applicable law, where notice for Mediation has been issued and responded to under Clause 1.2.1 hereinabove, the dispute or difference will be referred to a High-Level Committee (HLC) to be constituted by CMD, NALCO, for settlement through Mediation. The constitution of the HLC by the CMD, NALCO will be as per the guidelines detailed in clauses 1.2.2 (ii) to 1.2.2 (iv).
- (ii) HLC will be a committee comprising of three members, who are eligible as per the clause 1.2.2 (iii). However, there will be single member HLC for disputes involving claim and counter claim (if any) up to INR. 1 crore. CMD will have authority to reconstitute an HLC filling any vacancy. The party invoking mediation shall propose names of mediators who are eligible as per clause 1.2.2 (iii) hereinbelow, for consideration by the CMD, NALCO. The number of names proposed should be twice the number of mediators in the HLC which will be formed.
- (iii) The persons eligible for consideration to be members of the HLC shall be either Retired High Court Judges, or, Retired Civil Servants of Govt. of India not below the rank of Additional Secretary, or, Retired Chairman / Chairman Cum Managing Directors / Managing Directors / Directors of any Maharatna / Navratna CPSEs in India other than NALCO Ltd., who is/are registered as mediator with the Mediation Council of India, or is/are empanelled as Arbitrator with the Delhi International Arbitration Centre / Orissa High Court Arbitration Centre / IAC / Indian Council of Arbitration.
- (iv) The persons selected as a mediator / member of the HLC shall disclose in writing to the parties regarding any circumstance or potential circumstance, personal, professional, financial, or otherwise, that may constitute any conflict of interest or that is likely to give rise to justifiable doubts as to his/her independence or impartiality as a mediator. The said disclosure is required to be given by the mediators prior to the conduct of mediation. Further, during the mediation, the mediator/ member of the HLC shall, without delay, disclose to the parties in writing any conflict of interest, that has newly arisen or has come to his/her knowledge that is likely to give rise to justifiable doubts as to his independence or impartiality as a mediator/ member of the HLC.
- (v) Upon disclosure under 1.2.2(iv), if either party desires to replace any member of the HLC or in the event of death/incapacity/withdrawal by any of the mediator from the HLC, then, the HLC will be reconstituted following the process as given above.

1.2.3 Proceedings before HLC:-

- (i) On constitution of the HLC, along with the intimation regarding the constitution of the HLC, its member/s will be furnished with the information relating to the dispute and the precise claim (monetary and/or declaratory) as well as stand and counter claim of the respective parties. The HLC will convene its meeting at the earliest, but not later than 30 days of its constitution. The HLC shall be provided with all necessary inputs, clarifications etc. by both the parties. Thereafter, the HLC shall assist the parties in an independent, neutral and impartial manner in their attempt to reach an amicable settlement of their dispute. The HLC shall at all times be guided by the principles of natural justice, objectivity and fairness and protect the voluntariness, confidentiality and self-determination of the parties, and maintain the standards for professional and ethical conduct as may be specified. The HLC shall be free to decide the process and procedure to be adopted for mediation and the same shall be subject to due consent of both the parties.
- (ii) In case of 3 members HLC, 2 members will constitute a valid quorum and the meeting can take place to proceed in the matter after seeking consent from the member who is not present.
- (iii) The HLC shall attempt to facilitate voluntary resolution of the dispute by the parties and communicate the view of each party to the other to the extent agreed to by them, assist them in identifying issues, advancing better understanding, clarifying priorities, exploring areas of settlement and generating options in an attempt to resolve the dispute expeditiously, emphasising that it is the responsibility of the parties to take decision regarding their claims. The HLC shall only facilitate the parties in arriving at a decision to resolve a dispute and shall not impose any settlement nor give any assurance that the mediation may result in a settlement.
- (iv) The parties shall be represented by their respective authorized representatives, who will produce proper Letters of Authority before the HLC. No party shall be allowed to bring any advocate or outside consultant/advisor/agent. However, subject to the discretion of the parties, the ex-employees of parties may represent their respective organizations if they were the Manager-in-Charge/Engineer-in-Charge/Dealing Officer of the contract at the time of dispute/cause of action. Parties shall not claim any interest on claims/counter-claims from the date of notice invoking Mediation till execution of settlement agreement, if so arrived. In case, parties are unable to reach a settlement, no interest shall be claimed by either party for the period from the date of notice invoking Mediation till the date HLC submits the non-settlement report and 30 days thereafter in any further proceeding.
- (v) HLC will conclude its proceedings in maximum 10 meetings, and give its recommendations within 120 days from the date fixed for the first appearance before the HLC. If required, the parties may agree to extend the period of mediation for a further maximum period of 60 days. HLC will submit draft settlement agreement containing its recommendations to both the parties on possible terms of settlement. If the parties accept the draft settlement agreement of the HLC, then the settlement agreement will be executed by both parties with all HLC members as witnesses. However, in case parties do not accept, then the HLC will submit the non-settlement report.
- (vi) If, the draft Settlement Agreement shared by the HLC is acceptable to both the parties, the same will be signed within 15 days of acceptance and the same shall be authenticated by all the HLC members as witnesses. The acceptance/rejection is to be communicated by each party to other and to the HLC within 45 days of the receipt of the draft settlement agreement from HLC. After signing, the

settlement agreement same shall be final and binding to both the parties and thereafter there shall be absolute bar for initiating arbitration. In case of non-agreement/non-acceptance of the draft settlement agreement, the HLC shall submit a non-settlement report to both the parties and the mediation proceedings shall stand terminated from the date of receipt of the said non-settlement report.

- (vii) The venue of the HLC meeting shall be at Bhubaneswar. All the expenditure incurred towards arrangement for the venue of the mediation proceedings and fee & expenses of the HLC members and expenses incurred towards venue shall be shared by the parties equally..

1.2.4 Fees & Facilities to the Members of the HLC:- The cost of Mediation proceedings including expenses towards arranging of venue of the mediation proceedings and fee & expenses of the HLC members shall be as provided herein below :

Sl. No.	Fees/ Facility	Entitlement
1	Fees	INR 20,000 per meeting to each Mediator. In addition, each Mediator to be paid INR 10,000 for attending meeting to authenticate the settlement agreement. However maximum fee shall be INR 2,10,000 per case per Mediator .
2	Secretarial expenses	INR 10,000 lump sum.
3	Transportation in the city of the meeting	Car as per entitlement or INR 2,000 per day
4	Expenses towards Venue for meeting	Venue will be NALCO conference rooms at Bhubaneswar with fooding expenses as per actuals.

Sl. No.	Fees/ Facility	Entitlement
Facilities to be provided to the out stationed member		
5	Travel from the city of residence to the city of meeting.	Economy class air tickets / first class AC train tickets/ Luxury car/ reimbursement of actual fare.
6	Transport to and from airport/railway	Car as per entitlement or INR 3,000

	station in the city of residence	
7	Stay for out stationed members	In NALCO Guest House or in hotel to be arranged by one of the parties.

Aforesaid fees is subject to government guidelines on austerity measures, if any. All the expenditure incurred in the HLC proceedings shall be shared by the parties in equal proportions. The Parties shall maintain the account of expenditure and present to the other for the purpose of sharing on conclusion of the HLC proceedings.

1.2.5 The parties shall keep confidential all matters relating to the Mediation proceedings. Parties shall not refer or rely upon them and/or not produce them as reference / material papers / evidence in arbitration or court or any other proceedings.

1.3 Arbitration:-

1.3.1 If the process of mediation by HLC fails to arrive at a settlement between the parties any of the party may, within Thirty (30) days of such failure, give notice to the other party of its intention to refer the dispute/difference for arbitration indicating the precise claim amount and/or relief sought, as per the conditions as stated hereinafter provided, as to the matter in dispute/difference, and no arbitration in respect of the matter may be commenced unless such notice is given. The mechanism of settling the disputes through arbitration can be resorted to only in cases where the disputed amount (i.e. total amount of Claims including claims of interest, cost etc.) does not exceed ₹10 crores and is not below ₹50.00 Lacs including all types of interest, cost etc.. In case the disputed amount exceeds Rs. 10 Crores or less than ₹50.00 Lacs, the parties shall be within their rights to take recourse to remedies as may be available to them under the applicable laws other than arbitration.

Since, mediation is a pre-condition for arbitration, any claim/dispute which has not been referred for mediation, shall not be referred for arbitration.

The parties at the time of invocation of arbitration shall submit all the details of the claims and the counter-claims including the Heads/Sub-heads of the Claims/Counter-Claims and the documents relied upon by the parties for their respective claims and counter-claims. The parties shall not file any documents/details of the claims and counter-claims thereafter.

(The party invoking arbitration, at the time of invocation of arbitration, along with the notice, shall submit all the details of its claims including the Heads/Sub-heads of the claims and the documents relied upon by it for its claims. On receipt of notice invoking arbitration as well as the details of the claims and the documents relied upon by the claimant for its claims, within 30 days of the receipt, the other party shall give its response to the said notice, and within 60 days shall submit its counter-claims including the Heads/Sub-heads of the counter-claims and the documents relied upon by it for its counter-claims. The parties shall not file any details of the claims and counter-claims and/or documents etc. thereafter.)

The parties hereby agree that the claims/counter-claims raised by them at the time as mentioned above shall be final and binding and no further change shall be allowed in the same at any stage during arbitration under any circumstances whatsoever. Where the dispute/claim is for the payment of money, no interest shall be payable on whole or any part of the money for any period between the date on which cause of action arose and the date on which the award is made.

1.3.2 Any dispute in respect of which, a notice of intention to commence arbitration has been given in accordance with Clause 1.3.1, shall be finally settled by arbitration .

1.3.3 Any dispute referred by a party to arbitration shall be adjudicated by a Sole Arbitrator appointed by CMD, NALCO in the following manner:-

- a) On receipt of a notice of intention to commence arbitration given in accordance with Clause 1.3.1, CMD, NALCO will send, within 30 days of receipt of the notice, to the party (other than NALCO) names of three persons from the panel of arbitrators of Orissa High Court Arbitration Centre and/or Delhi International Arbitration Centre and/or Indian Council of Arbitration and/or IIAC, for the said party to choose any one of them to be the Sole Arbitrator .
- b) The party other than NALCO on receipt of the names as mentioned at (b) above, shall select any one of the person names to be appointed as a Sole Arbitrator and communicate his name to CMD, NALCO within thirty days of receipt of the names along with written consent for agreeing to waive the applicability of Section 12 (5) of the Arbitration and Conciliation Act, 1996, conveying its agreement for appointment of Sole Arbitrator by CMD NALCO as provided under this arbitration clause.
- c) On receipt of communication as provided above, CMD, NALCO shall there upon appoint the said person as the sole Arbitrator within 30 days of receipt of the communications as mentioned at (b) above.
- d) If none of the names communicated by CMD, NALCO are acceptable to the party (other than NALCO) or the said party fails to communicate such selection as provided at (b) above within the period specified, any of the parties may approach Hon'ble High Court of Orissa at Cuttack for appointment of Sole Arbitrator under Section 11 (6) of the Arbitration and Conciliation Act, 1996.
- e) If the Arbitrator so appointed dies, resigns, becomes incapacitated or withdraws for any reason from the proceedings, it shall be lawful for CMD, NALCO to appoint another person in his place in the same manner as mentioned above. The person so appointed as Sole Arbitrator shall proceed with the reference from the stage where his predecessor had left.
- f) The seat and venue of arbitration shall be at Bhubaneswar. However, if the situation so warrants venue of arbitration may be at as and where required basis, and may be held at the place where the site of work is situated.
- g) The fees, expenses, if any, of the Arbitrator, expenses towards venue of arbitration shall be equally shared by the parties. The fee of the Sole Arbitrator shall be as under:
- h) The Arbitrators shall be paid fees as per the Fees prescribed in the Fourth Schedule of the Arbitration & Conciliation Act, 1996 and amendments, if any made thereof.

- i) If after commencement of the Arbitration proceedings, the parties agree to settle the dispute mutually or refer the dispute to Conciliation, the arbitrator shall put the proceedings in abeyance until such period as requested by the parties. Where the proceedings are put in abeyance or terminated on account of mutual settlement of dispute by the parties, the fees payable to the arbitrator shall be determined as under :
 - a) 40% of the fees if the Pleadings are complete
 - b) 60% of the fees if the Hearing has commenced
 - c) 80% of the fees if the Hearing is concluded but the Award is yet to be passed.
- j) Each party shall pay its share of arbitrator's fees in stages as under:
 - a) 40 % of the fees on Completion of Pleadings
 - b) 40% of the fees on conclusion of the Final Hearing
 - c) 20% at the time when arbitrator notifies the date of final award
- k) The Claimant shall be responsible for making all necessary arrangements for the travel / stay of the Arbitrator including venue of arbitration, hearings. The parties shall share the expenses for the same equally.
- l) The arbitration shall be conducted in the English language. Arbitration proceedings can also be conducted online, as per the discretion of the Arbitral Tribunal.
- m) The Arbitrator shall give reasoned and speaking award and it shall be final and binding on the parties and any future interest as awarded by the Arbitrator shall not be more than 5% per annum simple interest.
- n) Subject to the aforesaid conditions, provisions of the Arbitration and Conciliation Act, 1996 as amended by the Arbitration and Conciliation (Amendment) Act, 2015 and 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.

1.3.4 Notwithstanding the above, in the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between NALCO and any other Central Public Sector Enterprises (CPSEs) / Port Trusts and also between NALCO and Government Departments / Organizations or University under the Central Government (excluding disputes relating to Railways, Income Tax, Customs & Excise Departments), NALCO and State Governments/ State PSUs / Public authority / Organizations or University under any State Government, such dispute or difference shall be taken up by either party for its resolution through AMRCD as mentioned in DPE Office Memorandum No.05/0003/2019-FTS-10937 dated 14th December, 2022 read with DPE OM No. DPE-05/0002/2023-AMRCD dated 25th July, 2024 including further DPE OM's / clarifications and / or any amendments relating to Administrative Mechanism for Resolution of Disputes CPSEs Disputes [AMRCD]. The decision of AMRCD on the said dispute will be binding on the parties.

1.4 Notwithstanding any reference to the Mediation or Arbitration herein,

- a) the parties shall continue to perform their respective obligations under the Contract unless they other wise agree.
- b) NALCO shall pay the Contractor any monies due to the Contractor.

1.5 Jurisdiction/ Governing Laws:

(a) Jurisdiction:

For all disputes arising of this contract, the jurisdiction shall be lie under the jurisdiction of the courts at Bhubaneswar in the State of Odisha (India) only.

(b) Governing Laws:

The contract shall be governed by and constructed according to the laws in force in INDIA.



GENERAL CONDITIONS OF CONTRACT

**NATIONAL ALUMINIUM COMPANY LIMITED
NALCO BHAWAN, P-1 NAYAPALLI,
BHUBANESWAR – 751 013**

Web site: www.nalcoindia.com

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SECTION – 1

DEFINITIONS AND INTERPRETATION

1. DEFINITION & INTERPRETATION:

1.1 Definition:

In the contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires.

- 1.1.1 The ‘Owner’ shall mean the National Aluminium Company Limited (NALCO), a Company incorporated under the Companies Act, 1956 having its registered office at IDCO Tower, 8th Floor, Janapath, Bhubaneswar –751007 or any other place as modified subsequently and shall include its Chairman- cum-Managing Director or other Administrative Officers authorised to deal with these presents are concerned on his behalf posted in the any of the Offices of NALCO and shall also include Owner’s successors and assignees.

The Chairman-cum-Managing Director has nominated the following persons as the representative of the ‘Owner’ for the purpose of all contractual matters.

Smelter	-	General Manager (Smelter)	} Projects
CPP	-	General Manager (CPP)	
Mines	-	General Manager (Mines)	
Alumina	-	General Manager (Alumina)	

- 1.1.2 The ‘Tender’ shall mean the tender submitted by the tenderer for acceptance by the Owner.
- 1.1.3. The ‘Chairman-cum-Managing Director’ shall mean the Chairman-cum-Managing Director of National Aluminium Co. Ltd., or his successors in office as designated by the Owner.
- 1.1.4. The ‘Project Head’ shall mean General Manager/ Deputy General Manager of the Project of National Aluminium Company Ltd., or his successor in office or his authorised representative.
- 1.1.5. The ‘Contractor’ shall mean the person or persons, firm or company whose tender has been accepted by owner and includes the contractor’s legal representatives, his successors and permitted assigns.
- 1.1.6. The ‘Sub-contractor’ shall mean any person or firm or company (other than the contractor to whom any part of the work has been entrusted by the contractor, with the written consent of the owner or his representative and the legal representatives, successors and permitted assignee of such person, firm or company.

- 1.1.7. The 'Engineer-in-Charge' shall mean the person nominated by the Owner from time to time and shall include those who are expressly authorised by the Owner to act for and on his behalf for all function pertaining to operation of this contract. All functions pertaining to the operation of contract means all acts necessary for execution of the contract coordinating between the different agencies and final closing of the contract.
- 1.1.8. The 'Works' shall mean and include all works to be executed in accordance with the contract or part thereof as the case may and shall include all extras, addition, altered or substituted works as required for the purpose of the contract or as may be required to be executed by the owner/ engineer-in- charge.
- 1.1.9. The 'Contract' shall mean the agreement between the Owner and the contractor for the execution of the works including therein all documents such as the invitation to tender, instructions to Tenders, General Conditions of Contract, Special Conditions of Contract, Job Specifications, General Requirements, Time Schedule of Completion of Job, Drawings, Letter of Intent awarding the work, Agreed variations, if any etc.
- 1.1.10. The 'Contract Document' shall mean collectively the tender documents, designs, drawings specifications, agreed variations, if any and other documents constituting the tender and acceptance thereof.
- 1.1.11. 'Constitutional Plant' shall mean all appliances or things of whatsoever nature required in or about the execution, completion or maintenance of the works or temporary works (as hereinafter defined) but does not include materials or other things intended to form of forming part of the permanent work.
- 1.1.12. 'Temporary Works' shall mean all temporary works of every kind required in or about the execution, completion or maintenance of the works.
- 1.1.13. 'Specifications' shall mean all directions, various technical specification, provisions, and requirements, attached to the contract, which pertain to the method and manner of performing the work or works to the quantities and qualities of the work or works and the materials to be furnished under the contract for the work or works as may be amplified or modified by the Owner or the Engineer-in-charge during the performance of Contract in order to provide the unforeseen conditions or in the best interests of the work or works. It shall also include the latest edition including all addenda/ corrigenda or relevant Indian Standard Specifications and other relevant codes.
- 1.1.14. 'Plans' shall mean all maps, sketches, and layouts as are incorporated in the contract in order to define broadly the scope and specifications of the work or works, and all reproductions thereof.

- 1.1.15. 'Drawings' shall include maps, plans and tracings or prints thereof with any modifications approved in writing by the Engineer-in-Charge and such other drawings as may, from time to time, be furnished or approved in writing by the Engineer-in-charge.
- 1.1.16. 'Foreign consultant' shall mean a person, agency or firm including their successors and assigns, who are nonresidents of India and are responsible for supply of process Technology for expansion plant based on review of existing plant including material flow, energy balance, additional facilities and improvement on the basis of the recent experience.
- 1.1.17. 'Indian Consultant' shall mean a person, agency or firm including their successors and assign who are responsible for detailed engineering and construction management of the project.
- 1.1.18. 'Project manager' shall mean the authorised representative of the consultant posted at site. He shall be responsible for supervision of the work by the contractors as well as coordinate with different agencies within the organisation or otherwise.
- 1.1.19. 'Site' shall mean the lands and other places on, under in or through which the permanent works are to be carried out and any other lands or places provided by the owner for the purpose of the contract.
- 1.1.20. 'Notice in writing or written Notice' shall mean a notice in written, typed or printed characters sent (unless delivered personally or other wise proved to have been received) by registered post to the last known private or business address or registered office of the addressee and shall be deemed to have been received in the ordinary course of post it would have been delivered.
- 1.1.21. The 'Completion Certificate' shall mean the certificate to be issued by the owner or his representative when the works have been completed to his satisfaction.
- 1.1.22. The 'Final Certificate' in relation to the work shall mean the certificate regarding the satisfactory compliance of the various provisions of the contract to be issued by the owner or his representative after the period of liability is over.
- 1.1.23. 'Approved' shall mean approved in writing including subsequent written conformation of previous verbal approval and 'Approval' means approved in writing including as aforesaid.
- 1.1.24. The 'Period of Liability' in relation to a work means the specified period from the date of issue of completion certificate up to the date of issue of final certificate which the contractor stands responsible for rectifying all defects that may appear in the works.

- 1.1.25. The ‘Appointing Authority’ for the purpose of arbitration shall be the Chairman and managing Director or any other person so designated by him.
- 1.1.26. The ‘Alteration Variation Order’ means an order given in writing by the Engineer-in-Charge/ owner to effect additions to or deletions from or alteration in the works.
- 1.1.27. ‘Letter of Intent’ shall mean an intimation by a letter to tenderer that the tender has been accepted in accordance with the provisions contained in the letter.
- 1.1.28. ‘Days’ means a day of 24 hours from mid night irrespective of the number of hours worked in that day.
- 1.1.29. ‘Working Day’ mean any day which is not declared to be holiday or rest day by the Owner.
- 1.1.30. ‘Week’ means a period of any consecutive seven days.
- 1.1.31. ‘Metric System’: All technical documents regarding the construction of works are given in the metric system and all work in the project should be carried out accordingly to the metric system. All documents concerning the work shall also be maintained in the metric system.
- 1.1.32. ‘Value of Contract’ shall mean the sum accepted or the sum calculated in accordance with the prices accepted in tender and / or the contract rates as payable to the contractor for the entire execution and full completion of the work.
- 1.1.33. ‘Headings and Marginal Notes’ in these contract documents are given solely for facility of reference and are not part of the contract documents and are not to be taken into account in the interpretation of the provisions of the contract.
- 1.1.34. ‘Language for Drawings & Instruction’: All the drawings, titles, notes, instruction, dimensions etc. shall be in English Language.
- 1.1.35. ‘Singular and Plural’: The singular shall include the plural and vice versa wherever the context so requires.

SECTION - II

2. FACILITIES TO CONTRACTOR

2.1 Location of Sites and Access by Road:

2.1.1 Locations of Sites:

The general information about Mines Alumina, Aluminium Smelter and Captive power Plants furnished below is of indicative nature only and shall not be considered as binding in any way on the Owner and shall not govern either the scope of work or the nature of the respective rights and the obligations of the parties to such contract.

(a) Alumina Plant and Mines:

Alumina plant is on south-western side of the Panchpatmali hill near Damanjodi village in Koraput District, Orissa State. The site is situated at 12 Km from the national highway No. 43 off Semiliguda village. The Alumina Plant Site has the form of saddle between groups of low hills. The location of Red Mud Pond is in the natural basis of hills situated at a distance of 2 Km from the western side of the plant. The Bauxite mine is located at 14 Km away from the Alumina Plant Site.

(b) Smelter Plant:

Aluminium Smelter is on the Southern side of National Highway No. 42, with its approximate latitude and longitude as 20°51'N and 85°10'E respectively. The area, at a higher elevation in comparison with adjacent land, is not subjected to either normal or flash foods. The prevalent directions of wind are from North-West and West.

(c) Captive Power Plant:

Captive Power Plant is located at Angul, District Angul, Orissa on the south of Talcher Thermal Power Station of Orissa State Electricity Board the main plant site is about 3 Km on the north of the junction of the National Highway Nos. 42 and 23, between the villages Balaram Prasad Patna and Gotamara. The access roads to the main plant site may be taken from either of the highways.

2.1.2. Access by Road:

Contractor, if necessary, shall build other temporary access roads to the actual site of construction for his own work at his own cost. The Contractor shall be required to permit the use of the roads so constructed by him for vehicles of any other parties who may be engaged on the project site. The Contractor shall also facilitate the construction of the permanent roads should the construction thereof start while he is engaged on this work. He shall make due allowance in his tender for any inconvenience he anticipates on such account.

Non-availability of access roads, railway siding and railway wagons for the use of contractor shall in no case condone any delay in the execution of works not be the cause for any claim for compensation against the Owner.

2.2 Water Supply:

2.2.1. Unless other wise provided in the Contract, the Contractor shall be responsible for the arrangements to obtain supply of water necessary for the works, his labour colony, his workshops, his offices etc. All pumping installations, pipe network and distribution system will have to be carried out by the Contractor at his own cost.

2.2.2. The Owner may agree to supply water to the Contractor for use in the Owner's works on specified terms and conditions as shall be determined by the Owner, which shall be binding on the Contractors. The tenderer is however required to exercise his option to receive such water supply from Owner's main at the time of submission of his tender.

2.2.3. When the water is supplied by the Owner, the Owner's main will be within 500 metres form the site of work. The Contractor shall provide at his own cost, all necessary ferrules, pipes, fitting, couplings and tanks and temporary works required and he shall maintain all such works in satisfactory condition. The Contractor shall remove all such works and shall re-instate and make good any work disturbed, to the satisfaction of the Engineer-in-Charge.

2.2.4. In the event of the Contractor's drawing water from the Owner's main/ source, he shall not claim any compensation for interruption or failure of Owner's water supply caused due to any reasons beyond the control of the owner.

2.2.5. The water so supplied by the Owner shall be free of cost for the Constructional work only.

2.3. Power Supply:

2.3.1 Subject to availability, Owner will supply power at 400/440 V at only one point at the nearest substation, from where the contractor will make his own arrangement for temporary distribution. The point of supply will not be more than 500 Metres away from the Contractor's premises. All the works will be done as per IEA regulations and passed by the Engineer-in- Charge. The temporary line will be removed forthwith after the completion of work or if there is any hindrance caused to the other works due to the alignment of these lines, the contractor will re-route or remove the temporary lines at his own cost. The Contractor at his cost will also provide suitable electric metres, fuses, switches, etc. for purposes of payment to the Owner which should be in the custody and control of the Owner. The cost of power supply shall be payable to the owner every month. Rs. 1/- per kWh for power, which will be deducted from the running bills. The owner shall not, however, guarantee the supply of electricity and no compensation for any failure or short supply of electricity will be entertained and this does not relieve the contractor of his

responsibility for timely completion of this works as stipulated in the contract.

- 2.3.2 It shall be the responsibility of the contractor to provide and maintain the complete installation of the load side of the supply with due regard to safety requirement at site. All cabling, equipment, installations etc. shall comply in all respects with the latest statutory requirements and safety provisions i.e. as per and the Central/ State Electricity Acts and Rules etc. The Contractor will ensure that his equipment and Electrical wiring etc. are installed modified, maintained by a licensed Electrician/ Supervisor. A test certificate is to be produced to the Engineer-in-Charge for his approval, before power is made available.
- 2.3.3 At all times, IEA regulations shall be followed failing which the Owner has a right to disconnect the power supply without any reference to the contractor. No claim shall be entertained for such disconnection by the Engineer-in-Charge. Power supply will be reconnected only after production of fresh certificate from authorised electrical supervisors.
- 2.3.4 The Owner is not liable for any loss or damage to the Contractor's equipment as a result of variation in voltage or frequency or interruption in power supply or other loss to the Contractor arising there from.
- 2.3.5 The Contractor shall ensure that the Electrical equipment installed by him are such that average power factor does not fall below 0.90 at his premises. In case power factor falls below 0.90 in any month, he will reimburse to the Owner at the penal rate determined by the Owner for all units consumed during the month.
- 2.3.6 The Power supply required for Contractor's colony near the plant site will be determined by the Owner and shall as per state Electricity Board's Rules and other Statutory provisions applicable for such installations from time to time. In case of power supply to Contractor's colony, the power will be made available at a single point and the Contractor shall make his own arrangement at his own cost for distribution to the occupants of the colony as per Electricity Rules & Acts. The site area and colony shall be sufficiently illuminated to avoid accidents.
- 2.3.7 The Contractor will have to provide and install his own light and power meters, which will be governed as per Central/ State Government Electricity Rules. The meters shall be sealed by the Owner.
- 2.3.8 In case of damage to any of the Owner's equipment on account of fault, intentional or unintentional on the part of the Contractor the Owner reserves the right to recover the cost of such damage from the contractor's bill. Cost of HRC Fuses replaced at the Owner's terminals due to any fault

in the Contractor's installation shall be to contractor's account at the rates decided by the Engineer-in-Charge.

- 2.3.9 Only motors upto 3 HP will be allowed to be started direct on line. For motors above 3 HP and up to 100 HP a suitable starting devices approved by the Engineer-in-Charge shall be provided by the Contractor For Motor s above 100 HP slipping induction motors will suitable starting devices as approved by the Engineer-in-Charge shall be provided by the Contractor.
- 2.3.10 The Contractor shall ensure at his cost that all electric lines and equipment and all installations are approved by the State Electricity Inspector before power can be supplied by the Owner.
- 2.3.11 The total requirement of power shall be indicated by the tenderer along with his tender.

2.4. Land for Contractor's Filed Office, Godown and Workshop :

- 2.4.1. The Owner will at his discretion and convenience and for the duration of the execution of the work may provide the land for construction of Contractor's field office, godown, workshops and assembly yard required for the execution of the contract nearer to the site.

The Contractor shall at his cost construct all these temporary buildings structures and provide suitable water supply and sanitary arrangement as approved by the Engineer-in-Charge and other inspectorates.

- 2.4.2. On completion of the works undertaken by the Contractor, he shall remove all temporary works erected by him and have the site cleared as directed by Engineer-in-Charge. If the Contractor fails to comply with these requirements, the Engineer-in-Charge has the right to remove any structure, such surplus, rubbish materials and depose off the same as he deems fit and get the site cleared and the contractor shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such surplus materials disposed as aforesaid. The Owner reserves the right to ask the Contractor at any time during the pendancy of the contract, to vacate the land by giving 7 (seven) days notice on security reasons or on national interest or otherwise. A token rent of Rs. 100/- (Rupees One hundred only) per hectare or part thereof per annum or part thereof shall be charged for the land so made available.

Land provided shall be solely on licence basis which is terminable by at any time without notice or without assigning any reasons. In the event of any such termination or the termination of the contract/completion thereof, the contractor shall forthwith vacate the premises.

2.5. Land for Residential Accommodation:

Land for residential accommodation for staff and labour may be made available at the discretion of the Engineer-in-Charge and rent for the same will be as decided by the Engineer-in-Charge according to location and the area occupied by the Contractor.

SECTION - III

GENERAL INSTRUCTIONS TO TENDERERS

3. SUBMISSION OF TENDER:

3.1. The documents issued to the tenderers shall be as follows:

- (i) One complete set of tender documents as per index sheet and drawings marked 'ORIGINAL' (To be submitted along-with the quotation).
- (ii) One complete set of tender documents as per index sheet marked 'TENDERER'S COPY' (To be retained by the tenderer for reference).

3.1.1. The tender documents shall be in 2 parts viz. Technical Bid and Price Bid. Technical and Price Bid should be put in separate sealed cover and marked with the tender reference and name of the work. In addition, a note on the Price Bid "Quotation do not open" is to be superscribed. Both the sealed covers are to be put in a single sealed cover. The name of the work the tender reference and date of opening are to be superscribed on this sealed envelope also.

The technical Bid shall be opened in the first instance. Clarifications, confirmations, if any, shall be obtained with regard to technical specifications. After technical specifications are firmed up, if a tenderer revises his price bid, he is required to submit justification in support of the revision made. The price bid shall be opened thereafter.

3.2. If Addenda/ Corrigenda are issued to this tender document, they must be signed, submitted along-with the tender documents. The tenderer should write clearly the revised quantities in schedule of Rates of Tender Document and should price the work based on revised quantities when amendments on quantities are issued in addenda.

3.3. Tenderers are advised to submit quotations based strictly on the terms and conditions and specifications contained in the tender documents and not stipulate any deviations. Should it however become unavoidable, deviations should be stipulated in the prescribed proforma only, contained in the proposal form. Owner reserves the right to evaluate the quotations containing deviations having financial implications, by adding the cost for such deviations are determined by Owner.

3.4. Tenders should be submitted in double sealed envelope with the name of work superscribed thereon and with the note "QUOTATION DO NOT OPEN" written prominently. The full name, postal address and telegraphic address of the tenderer shall be written on the bottom left hand corner of the sealed cover.

4.0. DOCUMENTS:

4.1.1 Bidders shall submit with his bids the particular/ documents as envisaged from Appendix (i) to (x) along with tentative construction net work/ Bar chart for completion of work taking into account various intermediate completion milestones/ component milestones and the overall completion of work under the contract.

4.1.2. Details to be submitted along with tender:

The tenders, as submitted will consist of the following:

The technical Bid and Price Bid shall be submitted as stated in para 3.1.1 Documents to be attached with price bid.

- (i) Complete set of the tender document (marked ORIGINAL) as issued duly filled in by the tenderer as prescribed in different clauses of the tender document, signed and date affixed.

Documents to be attached with Technical Bid.

- (ii) Earnest money in the manner specified in Clause 6 hereof.
- (iii) The following proposal forms in FIVE copies
 - (a) Details of works of similar nature and magnitude carried out during last 5 years as per the Appendix – 1(A)
 - (b) Concurrent commitments of the tenderer as per the Appendix – 1(B).
 - (c) Details of equipments, tools and tackles proposed to be deployed for this work as per the Appendix – (II).
 - (d) Details of manpower proposed to be deployed for this work as per the Appendix – (III), indicating the qualification.
 - (e) Site organisation chart showing number of qualified engineers and supervisors etc. indicating their bio-data as per the Appendix – (IV), indicating the qualification.
 - (f) List of proposed sub-contractors to be deployed as per the Appendix – (V).
 - (g) Progress Billing as per the Appendix – (VI).
 - (h) Information about tenderers as per the Appendix – (VII).
 - (i) List of enclosures as per the Appendix – (VIII).
 - a) Power of attorney
 - b) Income tax & Sales tax clearance certificate.
 - c) Solvency certificate from nationalised Bank
 - d) Documents showing annual turnover.
 - (j) Exception and deviation which tenderer may desire to stipulate as per Appendix – (IX).

4.2 All pages to be initialled:

All signatures in tender documents shall be dated, as well as the pages of all sections of tender documents shall be initialled at the lower right hand corner or signed wherever required in the tender papers by the tenderer or by a person holding power of attorney authorising him to sign on behalf of the tenderer before submission of tender.

4.3. Rates to be in Figures and Words:

The tenderer shall quote in English, in figures and in words for the rates and amount tendered by him in the Schedule of Rates forming part of the documents, in such a way that interpolation is not possible. The amount of each item shall be worked out and entered and requisite total given of all items. The tendered amount for the work shall be entered in the tender and duly signed by the tenderer.

If some discrepancies are found between the rates given in works and figures or the amount shown in the tender, the following procedure shall be followed:-

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

4.4. Corrections and Erasures:

All corrections and alterations in the entries of tender papers shall be signed in full by the tenderer with date. No erasures or over writings are permissible.

4.5. Signature of Tenderer:

- 4.5.1. The tender shall contain the name, residence and place of business of person or persons making the tender and shall be signed by the tenderer with his usual signature. Partnership firms shall furnish the full names of the partners in the tender. It should be signed in the partnership's name by all the partners or by duly authorised representative followed by the name and designation of the person signing. Tender by a corporation shall be signed by an authorised representative and a power of attorney on the behalf shall accompany the tender. A copy of constitution of the firm with names of all partners shall be furnished.
- 4.5.2. When the tenderer signs a tender in a language other than English, the total amount tendered should in addition be written in the same language. The signature should be attested by at least one witness.

4.6 Witness: Witness and sureties shall be persons of status and property. Their name occupation and address shall be stated below their signature.

5. TRANSFER OF TENDER DOCUMENTS:

Transfer of tender document purchased by one intending tenderer to another is no permissible.

6. EARNEST MONEY:

6.1. The tenderer must pay earnest money as given in the Letter/ Notice Inviting Tenders. Tenders not accompanied with earnest money deposit will be rejected. The earnest money can be paid in cash or by crossed demand draft or fixed deposit or Bank Guarantee from any Nationalised/ Scheduled Bank or Insurance Guarantee in the prescribed proforma as indicated in the tender document in favour of National Aluminium Company Ltd.

6.2. The Bank Guarantee so furnished by the tenderer shall be only in the proforma prescribed by the Owner and valid for six months from the date of opening of the tender. No interest shall be paid by the Owner on the Earnest Money deposited by the tenderer.

7. **VALIDITY:** Tender submitted by tenderers shall remain valid for acceptance for a period of four months from the date of opening of the tender. The tenderers shall not be entitled during the said period of four months, without the consent in writing of the Owner, to revoke or cancel his tender or to vary the tender given or any term thereof. In case of tenderer revoking or canceling his tender or varying any terms in regard thereof without the consent a Owner in writing, the earnest money paid by him along-with the tender shall be forfeited.

8. ADDENDA/ CORRIGENDA:

8.1. Addenda/ Corrigenda to the tender documents may be issued prior to the date of opening of the tenders to clarify documents or to reflect modification in the design or contract terms.

8.2. The Addenda/ Corrigenda will be issued in duplicate to each person or organisation to whom a set of tender documents has been issued. Each recipient should acknowledge the receipt of the same and attach one copy of the addenda/ corrigenda along-with his offer. All addenda/ corrigenda issued shall become part of Tender Documents.

9. RIGHT OF OWNER TO ACCEPT OR REJECT TENDER:

9.1. The right to accept the tender will rest with the Owner. The Owner further does not bind himself to accept the lowest tender and reserves the authority to reject any or all the tenders received without assigning any reason whatsoever. The whole work may be split up between two or more contractors or accepted in part (not entirely) if considered expedient. The quoted rates would hold good for such eventualities. Tenders in which any of the particulars and prescribed information are missing or incomplete in any respect and / or the prescribed conditions are not

fulfilled are liable to be rejected. The decision for the owner in respect of the above shall be final and binding on the contractor.

- 9.2. Canvassing in connection with tenders is strictly prohibited. The submitted tenders of the tenderers who resort to canvassing are liable to rejection. Tenders containing uncalled remarks or any additional conditions are liable to be rejected.

10. THE SCHEDULE:

- 10.1. The work shall be executed strictly as per the Time Schedule given in Appendix –1. The period of construction given in time Schedule includes the time required for mobilisation as well as testing, rectification if any, re-testing and completion in all respects to entire satisfaction of the Engineer-in-Charge.
- 10.2. A joint programme of execution of the work will be prepared by the Engineer-in-Charge and contractor based on priority requirement of this project. This programme will take into account the time of completion mentioned in 19.1 above and the time allowed for the priority works by the Engineer-in-Charge.
- 10.3. Monthly/ weekly construction programme will be drawn up by the Engineer-in-Charge jointly with the Contractor, based on availability of work fronts and the joint construction programme as per 10.2 above. The contractor shall scrupulously adhere to these targets/ programs by deploying adequate personnel construction tools and tackles and he shall also supply himself materials of his scope of supply in good time to achieve the targets/ programmes. In all matters concerning the extents of targets set out in the weekly and monthly programmes and the degree of achievement, the decision of the Engineer-in-Charge will be final and binding on the contractor.

10.4. CONSTRUCTION SCHEDULE AND PRESENTATION:

The construction schedule shall be in the form of network of PERT CHART/ CPM or other suitable presentation for the programme of the work indicating therein the different components item of works and time required for completion of each components item wise/ month wise season wise so as to complete the work in all respects within the stipulated period. Before award of the work the contractor is also required to make the presentation to satisfy owner of their proposal for construction schedule in the form of BAR CHART and organizational resources, equipments, machinaries, manpower to be deployed for timely completion of the project.

11. TENDERER'S RESPONSIBILITY:

The intending tenderers shall be deemed to have visited the site and familiarised themselves thoroughly with the site conditions before submitting the tender. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the works in strict conformity with the drawings and specifications.

12. RETIRED GOVERNMENT OR COMPANY OFFICERS:

No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering department of the State/ Central Government or of the owner is allowed to work as a contractor for a period of two years after his retirement from Government service or from the employment of the Owner without the previous permission of the Owner. The contract if awarded, is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person, who had not obtained permission of the owner as aforesaid before submission of tender or engagement in the contractor's service as the case may be.

13. SIGNING OF THE CONTRACT:

The successful tenderer shall be required to execute an agreement with the Owner in the proforma attached with tender document within 10 days of the receipt by him of the notification of acceptance of the tender. In the event of failure on the part of the successful tenderer to sign the agreement within the above stipulated period, the earnest money or his initial security deposit will be forfeited and the acceptance of the tender shall be considered as cancelled. No bills shall be payable unless the agreement is executed.

14. FIELD MANagements AND CONTROLLING AUTHORITY:

14.1 The field management will be responsibility of the Project Manager posted at site by the consultant and nominated by the owner. The Project manager shall work in accordance with the directions given to him from time to time by the project head.

14.2. The Engineer-in-Charge shall only co-ordinate with the other agencies engaged to work at site, to ensure minimum disruption of work carried out by different agencies. It shall be the responsibility of the contractor to plan and execute the works strictly in accordance with site instructions and avoid hindrance to the works being executed by other agencies. The instructions of the Engineer-in-Charge shall be binding on the contractor.

15. NOTE TO SCHEDULE OF RATES:

15.1. The schedule of rates should be read in conjunction with all the other sections of the tender.

15.2. The tenderer shall be deemed to have studied the drawings, specifications and details of work to be done within time schedule and to have acquainted himself of the conditions prevailing at site.

15.3. Rates must be filled in the original tender document. If quoted in separate typed sheets, no variation in time description or specification shall be accepted. Any exceptions taken by the tenderer to the schedule of rates shall be brought out in the terms and conditions of offer.

15.4. The quantities shown against the various items are only approximate. Any increase or decrease in the quantities shall not form the basis of alternation of the rates quoted and accepted.

15.5. The owner reserves the right to interpolate the rates for such items of work falling between similar items of lower and higher magnitude.

SECTION - IV GENERAL OBLIGATIONS

16. INTERPRETATION OF CONTRACT DOCUMENTS:

- 16.1. Complete documents forming the contract are to be taken as mutually explanatory. Should there be any discrepancy, inconsistency, error or omission in the contracts or any of them the matter may be referred to Engineer-in-Charge who shall give decisions and Issue to the contractor instructions directing in what manner the work is to be carried out. The decision of Engineer-in-Charge shall be final and conclusive and the contractor shall carry out work in accordance with this decision.
- 16.2. Works shown in the drawing but not mentioned in the specification or described in specification but not shown in the drawings shall nevertheless be deemed to be included in the same manner as if they had been specifically shown upon the drawings as well as described in the specifications.
- 16.3. Unless otherwise stated specifically, the 'singular' shall also mean 'plural' and vice versa wherever the context so requires words implying 'persons' shall include relevant 'corporate companies or registered association' or 'body of individuals' or 'firm of partnership' as case may be.

17. SPECIAL CONDITIONS OF CONTRACT:

- 17.1. Special Conditions of Contract shall be read in conjunction with the General Condition of Contract Specifications of work, drawing and any other documents forming part of this contract wherever the context so requires.
- 17.2. Notwithstanding the sub-divisions of the documents into the separate sections and volumes each part shall be deemed to be supplementary to complementary of every other part and shall be read with and into the contract so far as it may be practicable to do so.
- 17.3. In case of any discrepancy between various sections of the contract, the following order of preference shall be observed.
 - (1) Schedule of quantities
 - (2) Technical specifications
 - (3) Special Conditions of Contract
 - (4) General Conditions of Contract
- 17.4. Wherever it is mentioned in the specifications that the Contractor shall perform certain work or provide certain facilities it is understood that the Contractor shall do so at his cost.
- 17.5. The materials, design and workmanship shall satisfy the relevant Indian Standard, the job specifications contained herein and codes referred to.

Where the job specifications stipulate the requirements in addition to those contained in the standard codes and specification, these additional requirements shall also be satisfied.

18. Tenderer to Obtain his Own Information:

- 18.1. The tenderer shall for all purposes and whatsoever reason may be, deemed to have himself independently obtained all necessary information for the purpose of preparing his tender. The correctness of the details given in the Tender Document as guideline information to help the tenderer but to make- up the tender is not guaranteed.
- 18.2. The tenderer shall be deemed to have examined the tender documents, to have obtained his own information in all matters whatsoever that might influence carrying out of the works at the scheduled rates and satisfied himself to the sufficiency of his tender. Any error in description or quantity or omission therefrom shall not vitiate the contract or release the contractor from executing the work comprised in the contract according to drawings and specifications at the scheduled rates. He is deemed to know the scope, nature and magnitude of the works, the requirements of materials and labour involved etc. and as what works he has to complete in accordance with the contract document whatever be the defects, omissions or errors that may be found in the Contract Document. The contractor shall be deemed to have visited site and surroundings areas, to have satisfied himself to the nature of all existing structures, and also as to the nature and the conditions of available facilities like Railways, roadways, bridges culverts, means of transport and communications like by land, water or air and possible interruptions thereto the access to and egress from site and to have made enquiries, examined satisfied himself of the sites for obtaining sand, stones, bricks and other materials, the sites for disposal of surplus materials, the available accommodation like depots, buildings as may be necessary for executing and completing the works, to have made local independent enquiries as to the sub-soil water and variations thereof, storms, prevailing winds and climatic conditions and all other similar matters affecting the works. He is deemed to have acquainted himself his liability for payment of Government Taxes, Customs Duties and other charges.
- 18.3. Any neglect or failure on the part of the tenderer in obtaining necessary and reliable information or issues stated at 18.2 or any other matters affecting the contract shall not relieve him from any risks or liabilities or the entire responsibility for completion of the works at the scheduled rates and time in strict accordance with the contract documents.
- 18.4. Any change in layout due to site conditions or technological requirement shall be binding on the contractor and no extra claim on this account shall be entertained.

- 18.5. No verbal agreement or inference from conversation with any officer or employee of the Owner either before, during or after the execution of the contract agreement shall in any way affect or modify and of the terms or obligations herein contained.

19. Security Deposit:

- 19.1. A sum of 10% of the accepted value of the tender or actual value of the work done whichever is higher for contracts not exceeding Rs. 1 Crore, 7 1/2 % for the value of contracts over Rs. 1 up to Rs. 5 crores and 5% for the value of contracts over Rs. 5 crores shall have to be deposited by the person/ persons (hereinafter called as contractor) as security deposit with the owner until the expiry of defect liability period.
- 19.2. This may be deposited initially at 2 1/2% of the value of the contract (referred as initial Security deposit) within 20 days of receipt by him of the notification of acceptance of tender and the balance will be recovered in installments through the deduction @ 10% of the gross value of the each running account bill for the contract upto Rs. 1 crore, 7 1/2 % for contract between Rs. 1 to Rs. 5 crores and 5% for contract over Rs. 5 crores, till total security deposit is collected. No further deduction from the bills will be made on this account subject to clause 19.6 below.
- 19.3. Alternatively the contractor may at his option to deposit the full amount percentage as mentioned 19.1 above towards deposit within 10 days of issue of notification accepting his tender. This amount will have to be suitably enhanced to the tune of above percentage of the executed value.
- 19.4. The earnest money deposited with the tender shall be adjusted towards security deposit.
- 19.5. Contractor can furnish the initial or total security deposit amount (a) in Demand Draft or (b) through a Bank Guarantee from any Scheduled bank in the prescribed proforma.
- 19.6. If contractor /sub-contractor or their employees damages, breaks, deface or destroy the property belonging to the owner or other during the execution of the contract, the same shall be made good by the contractor at his own expense and in default thereof; the Engineer-in-Charge may cause the same to be made good by other agencies and recover expenses from the contractor (for which the certificate of Engineer-in-Charge shall be final).
- 19.7. All compensation or other sums of money payable by the contractor to the Owner or recoveries to be made under terms of this contract may be deducted from or paid by the sale of a sufficient part of his security deposit or from any sums which may be due or may become due to the contractor by the Owner on any account whatsoever. In the event of his security being reduced by reasons of any such deduction or sale, the contractor shall within ten days

thereafter make good in cash, bank drafts, any sum or sums which may have fallen short of Security deposit amount or any part thereof. No interest shall be payable by the Owner for sum deposited as security deposit.

- 19.8. The security deposit will be refunded after the expiry of the period of liability as stipulated in the contract.

20. Forfeiture of Security Deposit:

Whenever any claim against the Contractor for the payment of a sum of money arises out of or under the contract, the Owner shall be entitled to recover such sum by appropriating in part or whole the security deposit of the contractor, and to sell any Government securities, etc. forming whole or part of such security deposit. In the event of security being insufficient or if no security has been taken from the contractor, then the balance or the total sum recoverable as the case may be, shall be deducted from any sum then due or which at any time thereafter may become due to the contractor. The contractor shall pay to the Owner on demand any balance remaining due.

In the event of any breach by the contractor or any loss or damage occasioned to the owner which in the opinion of the owner has arisen, the decision whereof shall be final and binding on the contractor or in the event of the termination of the contract for any such breach, the security deposit is liable to be forfeited. The decision of forfeiture by the Owner shall be final and binding on the contractor.

21. Time of performance:

The work covered by this contract shall be commenced within twenty one days after the issue of the letter of acceptance of tender and be completed in stages on or before the dates as mentioned in the time schedule of completion of works. The contractor should bear in mind that time is the essence of the contract, unless such time be extended pursuant to the provision of clause No.22 Request for Revision of Construction time after tenders are opened will not receive consideration. The above period of twenty one days is included within the overall completion schedule, not over and above the completion time.

22. Extension of Time.

- 22.0. The application for extension of time is to be given to project head through the engineer –in-charge and the project head may authorise extension of time after considering the due merits.

Whenever extension of time is granted by the project head, the same shall be on the existing terms and conditions of the contract and without any additional financial liability to the Owner. The contractor in any case shall have no claim whatsoever for any type of compensation on account of any delay attributable to any one.

23. Force Majeure:

- 23.1 Any delays in or failure of the performance of either parties thereto shall not constitute default hereunder or give rise to any claims for damages, if any, to the extent such delays or failure of performance caused by occurrences such as acts of God or the public enemy, expropriation or confiscation of facilities by Government authority, compliance with any order or request of any Governmental authorities, acts or war rebellion, sabotage, fire, floods, explosions riots or illegal strikes, provided always that such occurrences result in impossibility of performances of the contract.
- 23.2 Only events of Force Majeure which impedes the execution of the contract at the time of its occurrence shall be taken into cognizance.

24. Compensation For Delay:

- 24.1. Time is essence of the contract. In case the contractor fails to complete the work within the stipulated period, he shall be liable to pay to the Owner as compensation, an amount equal to 1% of the value of contract per week of the delay subject to a maximum of 10% of the value of the contract. This is a genuine pre-estimate of the loss/ damage which will be suffered on account of delay /breach on the part of the contractor and he agrees to pay the said amount on demand without going in for any proof of the actual loss or damages caused by such delay/ breach.
- 24.2. To ensure good progress during execution of work, the contractor shall be bound in all case in which the time allowed for any work exceeds by one month to complete one-fifth of the work before one-fourth of the time allowed under the contractor has elapsed, three-eighth of the work before the half of such time has elapsed and three-fourth of the work before three-fourth of such time has elapsed. In the event of the contractor failing to comply with this condition, he shall be liable to pay as compensation for delay an amount as stipulated above. The compensation for delay so paid shall not relieve the contractor from his obligations to complete the work or from any other obligations and liabilities under this contract.

25. Failure by the Contractor to Comply with the Provisions of the Contract:

- 25.1. If the contractor refuses or fails to execute the work or any separate part thereof with such diligence as will ensure its completion within the time specified in the contract or extension thereof or fails to perform any of his obligation under the Contract or in any manner commits a breach of any of the provisions of the contract it shall be open to the Owner at its option by written notice to the Contractor to: -
- (a) Determine the Contract: In which event the Contract shall stand terminated and shall cease to be in force and effect on and from the date appointed by the Owner on that behalf, whereupon the contractor shall stop forth with any of the contractor's work then in progress, except such work as the Owner may, in writing, requires to be done to safeguard any property or work, or

installations from damage, and the owner, for its part, may take over the work remaining unfinished by the Contractor and complete the same through fresh contractor or by other means, at the risk and cost of the Contractor, and any of his sureties if any, shall be liable to the owner for any excess cost occasioned by such work having to be so taken over and completed by the Owner over and above the cost at the rates specified in the schedule of quantities and rates.

(b) Without determining the Contract: To take over the work of the contractor or any part thereof and complete the same through a fresh contractor or by other means at the risk and cost of the Contractor. The contractor and any of his sureties are liable to the Owner for any excess cost over and above the cost at the rates specified in the schedule of quantities/ rates, occasioned by such works having been taken over and completed by the Owner. Besides, the contractor shall also be liable for any compensation accruing under clause 24.

(c) In other cases, the decision of the Owner is binding on the contractor.

25.2. In such events of clause 25.1 (a) or (b) above

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

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

25.3. Before determining the contract as per clause 25.1 (a) or (b) provided in the judgement of the Owner, the default or defaults committed by the Contractor is/are curable and can be cured by the Contract if an opportunity given to him, then the Owner may issue notice in writing calling the Contractor to cure the default within such time specified in the notice.

25.4. The Owner shall also have the right to proceed or take action as per 25.1 (a) or Clause 25.1(b) above, in the event that the contractor becomes bankrupt, insolvent, compounds with his creditors, assigns the contract in favour of his

creditors or any other person or persons or being a company or a corporation goes into liquidation, provided that in the said events it shall not be necessary for the Owner to give any prior notice to the contractor.

- 25.5. Termination of the Contract as provided for in sub-Clause 25.1 (a) above shall not prejudice or affect their rights of the Owner which may have accrued upto the date of such termination.

26. Contractor Remains Liable to Pay Compensation if Action Not Taken Under Clause 25.

In any case in which any of the powers conferred upon the owner by clause 25 hereof shall have become exercisable and the same had not been exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any further case of default by the contractor for which by any clause or clauses hereof he is declared liable to pay compensation amount to the whole of his security deposit and the liability of the contractor for past and future compensation shall remain unaffected. In the event of the Owner putting in force the powers vested in him under the proceeding clause no. 25 he may if he do so desires, take possession of all or any tools and plants, materials and stores in or upon the works of the site thereof belonging to the contractor or procured by him and intended to be used for the execution of the work or any part thereof paying or allowing for the same in account at the contract rates or in case of these not being applicable at current market rates to be certified by the Engineer-in-Charge whose certificate thereof shall be final, otherwise the Engineer-in-Charge may give notice in writing to the contractor or his clerk of the works, foremen or other authorised agent, requiring him to remove such tools, plant, materials or stores from the premises (within a time to be specified in such notice), and in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expenses or sell them by auction or private sale on account of the contract and at his risk in all respects without any further notice as to the date, time or place of sale and the certificate of the Engineer-in-Charge as to the expense of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

27. No Compensation For Alteration in or Restriction of Work:

At any time from the commencement of the work if the Owner decides for whatsoever reason, not to carryout the whole work or part thereof as specified in the tender, then owner shall give notice in writing of the fact to the contractor, who shall have no claim to any payment or compensation on whatsoever account (profit or advantage which he might have derived by executing the work in full) neither shall he have any claim for compensation by reason of any alterations having been made from the original specifications, drawings, designs and instructions which may involve any curtailment of the work as originally contemplated.

28. Change in Constitution:

When the contractor is a partnership firm the prior approval in writing from the Owner shall be obtained before any changes are made in the constitution of the firm, where the contractor is an individual or a Hindu undivided family business concern. Such approval as aforesaid shall, like wise be obtained before such contractor enters into any agreement with other parties, where under the reconstituted firm would have the right to carry out the work hereby undertaken by the contractor. In either case if prior approval is not obtained. The contractor shall be deemed to have been allotted in contravention of Clause - 34 hereof and the action and consequence shall ensure as provided in that clause.

29. Termination of Contract For Death:

If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies or if the contractor is a partnership concern and one of the partners dies then, unless the Owner is satisfied that the legal representative of the individual or the proprietary concern or the surviving partners are capable of carrying out and completing contract, he (the Owner) is entitled to cancel the contract for the uncompleted part without being in any way liable for any compensation payment to the estate of the deceased contractor and/or to the surviving partners of the contractor's firm on account of the cancellation of contract. The decision of the Owner in such assessment shall be final and binding on the parties. In the event of such cancellation, the Owner shall not hold the estate of the deceased contractor and / or the surviving partners of the contractor's firm liable for any damages for non- completion of contract.

30. Members of the Owner Not individually Liable:

No Director or official or employee of the Owner shall in any way be personally bound or liable for the acts or obligations of the Owner under the contract or answerable for any default or omission in the observance or performance of the acts, matters or things which are herein contained.

31. Owner Not Bound by Personal Representation:

The Contractor shall not be entitled to any increase on the scheduled rates or any other rights or claims whatsoever by reason of any representation, explanation, statement or alleged understanding promise or guarantees given or to have been given to him by any person.

32. Contractors Office at Site:

The Contractor shall provide and maintain an office at the site for the accommodation of his agent and staff and such office shall be open at all reasonable hours to receive instructions, notices or other communications. The contractor at all time shall maintain a site instruction book and compliance of these shall be communicated to the Engineer –in-Charge from time to time and the whole document to be preserved and handed over after completion of works.

33. Contractor's Sub-ordinate Staff and their conduct :

- 33.1. The contractor on award of the work shall name and depute a qualified engineer having sufficient experience in carrying out work of similar nature to whom the equipment, materials if any, shall be issued and instruction for works given. The contractor shall also provide to the satisfaction of the Engineer-in-charge sufficient and qualified staff to supervise the execution of the works, competent sub-agents, foremen and leading hands including those specially qualified by previous experience to supervise the types works comprised in the contract in such manner as will ensure the best quality and expeditious working. At any time of in the opinion of the Engineer-in- Charge any additional, qualified experienced staff is considered necessary, they shall be employed by the contractor without additional charge. The contractor shall ensure to the satisfaction of the Engineer-in-Charge that sub- contractors, if any, shall provide competent and efficient supervision over the work entrusted to them.
- 33.2. If any of the contractor's sub-contractor's, agents, sub-agents, assistants, foremen or any employee in the opinion of Engineer-in-Charge be guilty of any misconduct or be incompetent or insufficiently qualified or negligent in the performance of their duties or that in the opinion of the Owner Engineer-in-Charge, undesirable for administrative or any other reasons, for such or person (s) to be employed on the works, then at the directions of Engineer-in-Charge the Contractor shall at once remove such person (s) from employment with the works without the written permission of the Engineer –in-Charge. Vacancy so created shall be immediately filled at the expenses of the contractor by a qualified and competent substitute. Should the contractor be requested to repatriate any person removed from the works he shall do so and shall bear all costs in connection therewith.
- 33.3. The contractor shall be responsible for the proper behaviour of all the staff, foremen, workmen and others, shall exercise proper degree of control over them and in particular without prejudice to the said generality the contractor shall be bound to prohibit/ prevent any employees from trespassing or acting in any way detrimental or prejudicial to the interest of the community or the properties or the occupiers of land or properties in the neighborhood. In the event of such trespassing, the contractor shall be responsible for all consequent claims or actions for damages or injury or any other grounds whatsoever. The decision of the Engineer-in-Charge upon any matter arising under this clause shall be final.
- 33.4. If and when required by the Owner, all contractor's personnel entering upon the owner's premises shall be properly identified by badges of a type acceptable to the owner which must be worn at all times on Owner's premises.

33.5. It is made clear that no relationship of employer and employee is created between the owner and the contractor labourer and no claim for employment of any such labourer shall be tenable or entertained.

34. Sub-Letting Work:

34.1. No part of the contract nor any share or interest there in shall in any manner or degree be transferred, assigned or sublet by the contractor directly or indirectly to any person, firm or corporation whatsoever except as provided for in the succeeding sub-clauses without the consent in writing of the Owner.

34.2. Sub – Contracting of Works:

The Engineer-in-Charge may give written consent to sub-contract for the execution of any part of the works at the site, provided the contractor submits each individual sub-contract to the Engineer-in-Charge for approval of mode of operation and agency for the work. The contractor is advised not to enter into contract before the consent of Engineer-in-Charge.

34.3. List of sub-contracted works to be furnished:

At the commencement of each month, the contractor shall furnish to the Engineer-in-charge, a list of sub-contractors, persons or firms engaged by the contractor and worked at the site during the previous month with particulars like general nature of the sub-contract or works done by them.

34.4. Contractor's liability not Limited by Sub-Contractors:

Notwithstanding any sub-letting with such approval as aforesaid and notwithstanding that the Engineer-in-Charge shall have received copies of any sub-contracts, the contractors shall be and shall remain solely responsible for the quality and proper and expeditious execution of the works and the performance of all the conditions of the contract in all respects as if such sub-contract or sub-letting had not taken place, and as if such work had been done directly by the contractor.

34.5. Owner may terminate sub-contracts:

If any sub-contractor engaged upon the works at the site executes any work which in the opinion of the Engineer-in-Charge is not in accordance with the contract documents, the owner may by written notice to the contractor request him to terminate such sub-contract. The contractor upon the receipt of such notice shall terminate and dismiss the sub-contract and the sub-contractor. The owner shall have the right to remove such sub-contractor from the site if contractor fails to vacate the sub-contractor immediately.

34.6. No remedy for action taken under this clause:

For action taken by the owner under the clause shall not relieve the contractor of any of his liabilities under the contract or give rise to any right or compensation, extension of time or otherwise.

35. Power of Entry:

If the contractor shall not commence the work in the manner described in the contract documents or if he at any time in the opinion of the Engineer-in-Charge.

- (i) fail to carry on the works in conformity with the contract documents or
- (ii) fail to carry on the works in accordance with the contract schedule or
- (iii) substantially suspend work or the works for a period of fourteen days without authority from the Engineer-in-Charge or
- (iv) fail to carry on and execute the works to the satisfaction of Engineer-in-Charge or
- (v) fail to supply sufficient or suitable constructional plant, temporary works, labour materials or other things or
- (vi) Commit, suffer or permit any other breach of any of the provisions of the contract on his part to be performed or observed or persist in any of the above mentioned breaches of the contract for fourteen days, after notice in writing shall have been given to the contractor by the Engineer-in-Charge requiring such breach to be remedied or
- (vii) If the contractor abandons the works or
- (viii) If the contractor during the continuance of the contract shall become bankrupt, make any arrangement or composition with his creditors, or permit any execution to be levied or go into liquidation whether compulsory or voluntary not being merely a voluntary liquidation for the purpose of amalgamation or reconstruction then in any such case, the owner shall have the power to enter upon the works and take possession thereof and of the materials, temporary works, constructional plant, and stock thereon, and to revoke the contractor's licence to use the same, and to complete the works by his agents, other contractors, or workmen, or to relate the same upon any terms and to such other person, firm or corporation as the Owner in his absolute discretion may think proper to employ and for the purpose aforesaid to use or authorize the use of any materials, temporary works, constructional plant, and stock as aforesaid, without making payment or allowance to the contractor for the said materials other than such as may be certified in writing by the Engineer-in-Charge to be reasonable, and without making any payment or allowance to the contractor for the use of temporary said works, constructional plant and stock or being liable for any loss or damage thereto and if the Owner shall by reason or his taking possession of the work or of the works being completed by other contractor (due account being taken of any such extra work or works which may be omitted) than the amount of such excess as certified by the Engineer-in-Charge shall be deducted from any money which may be due for work done by the contractor under the contract and not paid for any deficiency shall forthwith be made good and paid to the Owner by the contractor and the Owner shall have power to sell in such manner and for such price as he may think fit all or any of the constructional plan, materials etc. constructed by or belonging to and

to recoup and retain the said deficiency or any part thereof out of the proceeds or the sale.

36. Contractor's Responsibility with other Agencies:

36.1 Without repugnance to any other condition, it shall be the responsibility of the contractor executing the work of civil construction to work in close cooperation and to coordinate in the works with the mechanical, electrical, air-conditioning and intercommunication contractors and other agencies or their authorised representatives, in providing the necessary grooves, recesses, cuts and opening etc. in wall, slabs beams and column etc. and making good the same to the desired finish as per specification, for the placement of electrical and intercommunication cables, conduits, air-conditioning inlets and outlets, grills and other equipment in the false ceiling and other partitions, the contractor before starting up the work shall in consultation, with the electrical, mechanical, inter-communication, air-conditioning contractors and other agencies prepare and put up a joint scheme, showing the necessary opening, grooves, recesses, cuts, the methods of fixing required for the works of the aforesaid, and the finishes therein, to the Engineer-in-Charge and get the approval. The contractor before finally submitting the scheme to the Engineer-in-Charge, shall have the written agreement of the other agencies. The Engineer-in-Charge, before communicating his approval to the scheme, with any required modifications shall get the final agreements of all the agencies, which shall be binding. No claim shall be entertained on account of the above.

36.2 The contractor shall conform in all respect with the provisions any statutory regulation, ordinance or bye-laws of any local or duly constituted authorities or public bodies which may be applicable from time to time to the works or any temporary works. The contractor shall keep the Owner indemnified against all penalties and liabilities of every kind, arising out of non-adherence to such statutes, ordinances, laws, rules, regulations, etc.

37. Other Agencies at Site:

The contractor shall have to execute the work in such place and condition where other agencies will also be engaged for other works such as site grading, filling and leveling, electrical and mechanical engineering works etc. No claim shall be entertained due to work being executed in the above circumstances.

38. Serving of Notices:

38.1. To the Contractor:

Any notice may be served on the contractor or his duly authorised representatives at the job site or by registered mail directly to the address furnished by the contractor. Proof of issue of such notice should be conclusive of the contractor having been duly informed of the contents.

38.2. To the Owner:

Any notice to be given to the Owner under the terms of the contract shall be served by sending the same by Registered mail to or delivering the same at the respective site offices of M/s. National Aluminium Co. Ltd. addressed to the head/ site in-charge.

38.3. Rights of various Interests:

- (i) The Owner reserves the right to distribute the work between more than one contractor. The contractor shall cooperate and afford the other contractors all reasonable opportunity for access to the works for the carriage and storage of materials and execution of their works.
- (ii) Wherever the work being done by any department of the Owner or by the contractor employed by the Owner as per the contingent upon work covered by this contract, the respective rights and various interests involved shall be determined by the Engineer-in-Charge to secure the completion of the various portions of the work in general harmony.

40. Patents, Royalties, Rent and Excavated Material:

- 40.1. The contractor, if licensed under any patent covering equipment, machinery, materials or compositions of matter to be used or supplied or methods and process to be practiced or employed in the performance of this contract, agrees to pay all royalties and licence fees which may be due with respect thereto. If any equipment, machinery, materials composition matters, to be used or supplied or methods and processes to be practiced or employed the performance of this contract, is covered by a patent under which the contractor is not licensed then the contractor before supplying or using the equipment, machinery, materials, composition, method or processes shall obtain such licenses and pay such royalties and license fees as may be necessary for performance of this contract. In the event the contractor fails to pay any royalty or obtain any such license, any suit for infringement of such patents which is brought against the contractor or the Owner as a result of such failure will be defended by the contractor at his Own expense and the contractor will pay damages and costs awarded in such suit. The contractor shall promptly notify the Owner if the contractor has acquired knowledge of any plant under which a suit for infringement could be reasonably brought because of the use by the owner of any equipment, machinery, materials, process, methods, to be supplied hereunder. The contractor agrees to and does hereby grant to Owner, together with the right to extent the same to any of the subsidiaries of the Owner as irrevocable, royalty-free licence to use in country, any invention made by the contractor or his employee in or as a result of the performance of the work under the contract.
- 40.2. All charges on account of royalty, tollage, rent octroi terminal or sales tax and/ or other duties or any other levy on materials obtained for the work or temporary work or part thereof (excluding materials provided by the Owner) shall be borne by the contractor.

- 40.3. The contractor shall not set or otherwise dispose of or remove except for the purpose of this contract, the sand stone, clay, ballast, earth, rock or other substances, or materials obtained from any excavation made for the purpose of the works or any building or produce upon the site at the time of delivery of the possession thereof, but all such substances, materials buildings and produce shall be the property of the Owner provided that contractor may with the permission of the Engineer-in-Charge, use the same for the purpose of the works by payment of cost of the same at such a rate as may be determined by the Engineer-in-Charge.

The Owner shall indemnify and save harmless the contractor from any loss on account of claims against contractor for the contributory infringement of patent rights arising out and based upon the claim that the use by the Owner of the process included in the design prepared by the Owner and used in the operation of the plant infringes on patent right. With respect of any sub- contract entered into by the contractor pursuant to the provisions on the respect to any sub-contract entered into by the contractor pursuant to the provisions of the relevant clause thereof, the contractor shall obtain from the sub contractor an undertaking to provide the Owner with the same patent protection that contractor is required to provide under the provisions of this clause.

41. Liens:

- 41.1. If at any time there should be evidence or any lien, claim for which the Owner might have become liable, which is chargeable to the contractor, then the Owner may pay and discharge the same and deduct the amount so paid from any amount which may be or may become due and payable to the contractor, if any lien or claim remain unsettled after all payments are made, the contractor shall refund or pay to the Owner the cost such lien or claim including all payment and reasonable expenses. Owner reserves the right to the same.

41.2. Nothing Extra for Adverse Sub-Soil Conditions:

The nature of sub-soil of the work site varies widely horizontally and vertically. The KI and KII values also vary widely from place to place. In addition the water bearing seems are also conspicuous with the water table at a depth of 0.75 to 3.0 metres from ground level. A number of cohesive and non-cohesive strata are available particularly everywhere. The contractor shall have to make cuts and resort to pumping with due care to avoid collapsing of sides and occurrence of 'Piping'. The Contractor shall also be careful to avoid occurrence of excessive 'heaving' by avoiding keeping the excavation proposed to atmosphere for a longer period.

- 41.3. Slips and falls in excavation shall be cleared by the contractor at his own cost.

Excessive heaving shall have to cut and refill with lean concrete by the contractor at his own cost. The contractor shall have to adopt under-water work in case of occurrence of piping/ quick condition without any additional cost to the Owner.

The contractor will be paid for the earthwork as per the drawing. The slopes etc. as required for the safety of the work has to be provided as per the decision of the Engineer-in-Charge at his own cost. All types of dewatering including seepage, rain water entering. The earthwork in excavation or from any other source is to be done by the contractor at his own cost till the completion of foundation upto ground level including back filling.

41.3. No Compensation in case of change of Location of site :

Change of location of site do not invalidate the contract and tenderer have no claim for any compensation for such changes.

SECTION – V

PERFORMANCE OF WORK

42. Execution of Works:

All the work shall be executed in strict conformity with the provisions of the contract documents explanatory detailed drawings, specifications and instructions by the Engineer-in-Charge whether mentioned in the contract or not. The contractor shall be responsible for ensuring that works are executed in the most substantial, proper and workman like manner using the quality materials and labour, through out the job Completion in strict accordance with the specifications and to the entire satisfaction of the Engineer-in-Charge.

43. Coordination and inspection of Works:

The coordination and inspection of the day-to-day work under the contract shall be the responsibility of the Engineer-in-Charge or his authorised representative. A work order book will be maintained by the contractor for each sector in which the aforesaid written instructions will be entered. These will be signed by the contractor or his authorised representative by way of acknowledgement within 12 hours.

44. Works in Monsoon and Dewatering:

44.1 The execution of work may entail working in the monsoon also. The contractor must maintain a minimum labour force as may be required for the job. And plan execute the construction and erection according to the prescribed schedule. No extra will be considered for such work in monsoon.

44.2 During monsoon and other period, it shall be the responsibility of the contractor to keep the construction work site free from water at his own cost.

45. Work on Sundays and Holidays:

For carrying out works on Sundays and holidays, the contractor will to keep Engineer-in-Charge or his representative at least two days in advance and obtain permission in writing. The contractor shall observe all labour laws and other statutory rules and regulations in force. In case of any violation of such laws, rules and regulations, consequence if any, including the cost thereto shall be exclusively borne by the contractor and the Owner shall have no liability whatsoever on his account.

46. General Conditions of Construction and Erection Work:

46.1 The working time at the time of work is 48 hours per week. Overtime work is permitted in case of need and the owner will not compensate the same. Shift-working at 2 or 3 shifts per day will become necessary and the contractor should take this aspect into consideration for formulating his rates for quotation. No extra claims will be entertained by the Owner on this account.

- 46.2 The contractor must arrange for the placement of workers in such a way that the delayed completion of the work or any part thereof or for any reason whatsoever will not affect their proper employment. The Owner will not entertain any claim for old time payment whatsoever.
- 46.3 The contractor shall submit to the Engineer-in-Charge reports at regular intervals regarding the state and progress of work. The contract shall provide display boards showing progress and labour strength at work site, as directed by the Engineer-in-Charge.
- 46.4 The site of work will be released progressively in stages and no claim for any compensation or damages will be tenable for non-release of the entire site at a time.
- 47. Drawings to be supplied by Owner:**
- 47.1 The drawings attached with tender are only for the general guidance to the contractor to enable him to visualise the type of work contemplated. The contractor will be deemed to have studied the drawings and formed an idea about the total work involved.
- 47.2 In the Course the progress of work detailed working drawings on the basis of which actual execution of the work has to proceed, shall be furnished in stages. The contractor shall be deemed to have gone through the drawings supplied to him thoroughly and carefully, in conjunction with all other connected drawings and discrepancies if any, shall be brought to the notice of the Engineer-in-Charge, before actually carrying out the works.
- 47.3 Copies of all detailed working drawings relating to the works shall be kept at the contractor's office on the site and shall be made available to the Engineer-in-Charge at any time during the contract period. The drawings and other documents issued shall be returned to the Owner on completion of the works.
- 48. Drawings to be supplied by the Contractor:**
- 48.1 The drawings/data which are to be furnished by the contractor are enumerated in the special conditions of contract and shall be furnished within the specified time.
- 48.2 Where approval of drawings for manufacture/construction/fabrication has been specified it shall be contractor's responsibility to have these drawings prepared as per the directions of Engineer-in-Charge and get them approved before proceeding with manufacture/construction/fabrication works as the case may be. Any changes that may have become necessary in these drawings during the execution of the work shall have to be carried out by the contractor to the satisfaction of Engineer-in-Charge at no extra cost. All final approved drawings shall bear the certification stamp duly signed by both the contractor and the Engineer-in-Charge as indicated below.

“Certified true for
(Name of work)

Agreement No

Signed
(Contractor) (Engineer-in-Charge)

48.3 A period of 3 weeks from the date of receipt shall be required for approval of drawings by the Engineer-in-Charge.

48.4 As built drawing showing all Corrections, adjustments etc. shall be furnished by the Contractor in five copies and one transparent to record purposes to the owner.

49 Setting Out Works:

49.1 The Engineer-in-Charge shall furnish to the contractor with only the four corners of the work site that is plant boundary limits, and a level bench mark only. The contractor shall set out the works, provide an efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.

49.2 The contractor shall provide, fix and be responsible for the maintenance of all stacks, templates, level marks, profiles and other similar things and shall take all necessary precautions to prevent their removal or disturbance. He shall be responsible for their consequences arising of such removals, disturbances corrections thereon and for their efficient and timely reinstatement. The contractor shall also be responsible for the maintenance of all existing survey marks, boundary marks, distance marks and centre line marks, either existing or supplied and fixed by the contractor. The work shall be set out to the satisfaction of the Engineer-in-Charge. The approval thereon or jointing with the contractor by the Engineer-in-Charge in setting out the work, shall not relieve the contractor of any of his responsibilities.

49.3 Before beginning the work the contractor shall at his own cost, provide all necessary reference and level posts-pegs, bamboos, flags, ranging rods, strings, and other materials for proper layout of the work in accordance with the scheme for bearing marks acceptable to the Engineer-in-Charge. The centre, longitudinal, face and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct mark at the centre to enable the theodolite to be set over it. No work shall be started until all these points are checked and approved by Engineer-in-Charge in writing, but such approval shall not relieve the contractor of any of his responsibilities. The contractor shall also provide all labour, materials and other facilities as necessary, for the proper checking or layout and inspection of the points during construction.

49.4 Pillars bearing geodetic marks located at the sites of units of works under construction should be protected and faced by the contractor.

49.5 On completion of work, the contractor must submit the geodetic documents according to which the work was carried out.

50. Responsibility for Level and Alignment:

50.1 The contractor shall be entirely and exclusively responsible for the horizontal and vertical alignment, the level and correctness of every part of the work shall rectify effectually any errors or imperfections therein. Such rectification shall be carried out by the contractor at his own cost, when instructions are issued to that effect by the Engineer-in-Charge.

50.2 Lighting, Watch & Ward:

The contractor shall in connection with works provide and maintain at his own cost all lightings, guards, fencing and watch and ward and the security of the entire work in progress including all the machineries, materials shall be the responsibility of the contractor till taken over by the owner by way of the written taking over certificate.

51. Materials to be Supplied by Contractor :

51.1 The contractor shall procure and provide the whole of the materials required for the construction including M.S. Rods, Cement and other building materials, tools, tackles, construction plant and equipment for the completion and maintenance of the work except the materials which will be issued by the Owner and shall make his own arrangement for procuring such materials and for the transport thereof. The owner may give necessary recommendation to the respective authorities, if so desired by the contractor, but assumes no further responsibility of any nature. The owner will insist on the procurement of materials which has the approval of Indian Standards Institution having ISI stamp and/or which are supplied by reputed suppliers borne on DGS & D list.

51.2 The contractor shall properly store all materials either issued to him or brought by him to the worksite to prevent damages due to rain, wind, direct exposure to sun etc. as also from theft, pilferage, etc. for proper and speedy execution of his works. The contractor shall maintain sufficient stocks of all materials required by him.

51.3 No material shall be despatched from the contractor's stores before obtaining the approval in writing of the Engineer-in-Charge.

51.4 All plants, tools and other materials brought by the contractor to the site must be declared at the time of bringing the same to the site.

52. Stores Supplied by the Owner:

52.1 If the specification of the work provides for the use of any material other than Steel & Cement of special description to be supplied from the Owner's stores or it is required that the contractor shall use certain stores to be provided by

the Engineer-in-Charge, such materials and stores, and price to be charged therefore as hereinafter mentioned being so far as practicable for the convenience of the contractor, but no so as in way to control the meaning or effect of the contract, the contract shall be bound to purchase and shall be supplied much materials and stores as are from time to time required to be used by him for the purpose of the contract only. The sums due from the contractor for the value of materials supplied by the Owner will be recovered from the Running Account Bill on the basis of actual consumption of materials (after taking into account any wastage allowance as may be provided for in the contract). The contractor should raise requisite copies of indents in a proforma as prescribed by the Engineer-in-Charge and no claim whatsoever will be entertained by the Engineer-in-Charge on this account. After completion of the works, the contractor is required to account as per relevant clauses in this document, for the full quantity of materials supplied to him.

52.2 The value of the stores/materials as may be supplied to the contractor by the Owner will be debited to the contractor's account at the rates shown in the schedule of materials and if they are not entered in the schedule, they will be debited at cost price, which for the purpose of the contract shall include the cost of carriage and all other expenses whatsoever such as normal storage supervision charges which shall have been incurred in obtaining the same at the Owner's stores. All materials so supplied to the contractor shall remain the absolute property of the Owner and shall not be removed on any account from the site of the work and shall be at all times open for inspection to the Engineer-in-Charge. Any such materials remaining unused at the time of the completion or termination of the contract shall be returned to the Owner's stores or at a place as directed by the Engineer-in-Charge in perfectly good condition at contractor's cost.

52.3 Steel & Cement:

52.3.1 If the specification of the work provides for the use of steel or cement such items of steel and cement to the extent required as per the specification of the works, shall be supplied at Owner's stores by the Owner for utilisation in the work on non-chargable basis from time to time depending upon the progress of the work. The tender rates shall be exclusive of the cost of steel and cement to be supplied as per the specification of the work, However, in case of flats and chequered plates the same have to be procured by the contractor at his own cost.

52.3.2 Such materials of steel and cement shall be issued only for permanent works and not for making other temporary works etc. Contractor shall bear all cost including lifting and loading carting from issue points to work site/contractor stores, custody and handling etc. and return of surplus serviceable/unserviceable materials to owner's store or other places to be designed by owner and no separate payment for such expenditure shall be made.

52.3.3 Items of steel as per specification of the work as mentioned above shall be supplied in the available length only. No claim on account of supply of non-standard length shall be entertained. Steel materials shall be issued on actual weight basis.

52.3.4 Cement as mentioned above will be supplied to the contractor a receive from the manufacturer/stockist. The theoretical weight of each bag of cement supplied will be considered as 50 Kg.

52.3.5 Scraps & Surplus Material:

The Contractor shall return all the surplus/unutilised as well as the scraps and wastages out of the materials supplied to him to the Owner's stores in a perfectly good condition at the contractor's cost. However, the following scraps allowances are permissible.

	<u>Unaccountable</u>	<u>Accountable</u>
(i) Cement	3%	Nil
(ii) Reinforcement Steel	1/2%	2.5%
(iii) Steel structural (Plates & Sections)	1/2%	4.5%
(iv) M.S. Plates for fabrication of Pipes	1/2%	As per cutting diagrams approved by Engineer-in-Charge before cutting and fabrication.

52.3.6 Return of unutilised/surplus materials and scrap/wastage:

In respect of any utilised/surplus quantities of cement and steel supplied by not accounted for and or returned by the contractor shall pay to the Owner amounts at the penal rate of twice the SAIL, Bhubaneswar Stock-yard rate of that particular section of steel and cement as the case may be as on the date of accountability. If the Contractor fails to return the scraps/wastage generated as per the above percentage, recovery of such scrap/wastage shall be made at the rate of Rs. 7000/- per tonne.

The charging of penal rate shall be without the prejudice to the other remedies or action available to the owner against the contractor including any criminal action.

52.3.7. Accounting for Materials:

Every month the Contractor shall submit a statement for all the materials supplied to him by the owner in the proforma prescribed by the Engineer-in-Charge.

52.3.8 On completion of the work, the Contractor shall submit material appropriation statement for the materials supplied to him by the Owner.

52.3.9 All materials supplied to the contractor shall remain the absolute property of the all times and title therein shall not pass to the contractor at any time. The possession of the materials in the hands of the contractor is only for the

purpose of incorporating the same in the Owner's work. The material supplied shall not be removed by the contractor on any account from the site of work and shall be at all times open for inspection by the Engineer-in-Charge or owners representative. The contractor shall not use the materials supplied to him for any purpose or work other than the work, which the said materials are supplied.

53. Conditions for issue of Materials:

- (i) Materials specified as to be issued by the Owner will be supplied to the contractor by the Owner from his stores. It shall be the responsibility of the contractor to take delivery of the materials and arrange for its loading, transport and unloading at the site work at his own cost. The material shall be issued during the working hours of his Stores and as per the rules of the Owner framed from time to time.
- (ii) The contractor shall bear all incidental charges for the storage and safe custody of materials at site after these have been issued to him.
- (iii) The contractor shall construct suitable godown at the site of work for storing the materials safe against damage by rain, dampness, fire, theft, etc. He shall also employ necessary watch and ward establishment for the purpose.
- (iv) Materials specified as to be issued by the Owner shall be issued in standard sizes as obtained from the manufacturers.
- (v) It shall be duty of the contractor to inspect the materials supplied to him at the time of taking delivery and satisfy himself that they are in good condition. After the materials have been delivered by the Owner, it shall be the responsibility of the contractor to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and/or replaced by him at his own cost according to the directions of the Engineer-in-Charge.
- (vi) The Owner shall not be liable for delay in supply or non-supply of any materials, which the Owner has undertaken to supply where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstances beyond the control of the Owner. In no case, the contractor shall be entitled to claim any compensation or loss suffered by him on his account.
- (vii) It shall be the responsibility of the contractor to arrange in time all materials required for the works other than those to be supplied by the Owner. If however in the opinion of the Engineer-in-Charge the execution of the work is likely to be delayed due to the contractor's inability to make arrangements for supply of materials which normally he has to arrange for, the Engineer-in-Charge shall have the right at his own discretion to issue such materials if available with the Owner or procure the materials from the market or elsewhere. The contractor will be bound to take such materials at the rates decided by the Engineer-in-Charge. This however, does not in anyway absolve the contractor from responsibility of making arrangement for the supply of such materials in part or in full, should such a situation occur nor shall this constitute a reason for the delay in the execution of the work.

- (viii) Non of the materials supplied to the contractor will be utilised by the contractor for manufacturing item which can be obtained as supplied from standard manufacturer in finished form unless approved by Engineer-in- Charge in writing.
- (ix) The contractor shall, if desired by the Engineer-in-Charge, be required to execute an indemnity bond in the prescribed form for safe custody, usage and accounting of all materials issued by the Owner.
- (x) The contractor shall furnish to Engineer-in-Charge sufficiently in advance a statement showing his requirements of the quantities of the materials to be supplied by the Owner and the time when the same will be required by him for the works, so as to enable the Engineer-in-Charge to make necessary arrangement for procurement and supply of material.
- (xi) Account of the materials to be issued by the Owner shall be maintained by the contractor indicating the daily receipt, consumption and balance in hand in a manner prescribed by the Enginner-in-Charge. All connected papers requisitions, issues returns etc. shall be always available for inspection in the contractor's office at site.
- (xii) The contractor should see that only the required quantities of materials are got issued. The contractor shall not be entitled to cartage and incidental charges for returning the surplus materials, if any, to the stores, place of issue or to the place as directed by the Engineer-in-Charge.
- (xiii) Materials/equipment supplied by Owner shall not be utilised for any other purpose (s) than issued for.
- (xiv) The owner may issue the material in phases at his discretion keeping in view the programmes of the work.
- (xv) In case of free issue of materials, the contractor shall submit an indemnity bond in the prescribed format for 80% (eighty) value of the materials and a bank guarantee for 20% (twenty) of the value of the materials. The indemnity bond and bank guarantee shall be valid till the material account is totally settled.

54. Return of Surplus:

Notwithstanding anything contained to the contrary in any or all the clauses of this contract where any materials for the execution of the contract are procured with the assistance of the Owner either by issue from Owner's stock or purchases made under orders, or permits or licences issued by government the contractor shall hold the said materials as trustee for the owner and use such materials economically and solely for the purpose of the contract and not dispose them off without the permission of the Owner and return, if required by the project head all surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination for any reason whatsoever on his being paid or credited such price as the Project head shall determine having due regard so the condition of the materials. The price allowed to the contractor however, shall not exceed the amount charged to him excluding the storage charges, if any. The decision of the project head shall be final and conclusive in such matter. In the event of breach of the aforesaid conditions, the contractor shall, in the terms of the licences, or permits and/ or

for criminal breach of trust, be liable to compensate the Owner at double rate or any higher, in the event of those materials at the time having higher rate or not being available in the market, then any other rate to be determined by the project head and his decision shall be final and conclusive.

55. Materials Obtained From Dismantling:

If the contractor in the course of execution of the work is called upon to dismantle any part for reasons other than those stipulated in clauses 57 and 65 hereunder, the materials obtained in the work of dismantling etc. will be considered as the Owner's property and will be disposed off to the best advantage of the Owner.

56. Articles of Value Found:

All gold silver and other materials of any descriptions, precious stones, coins, treasures, relics, antiques and other similar things which shall be found, in, under or upon the site, shall be property of the Owner and the contractor shall duly preserve the same to the satisfaction of the Engineer-in-Charge and shall from time to time delivery the same to such person or persons indicated by the Owner.

57. Inspection of Works:

57.1 The Engineer-in-Charge will have full power and authority to inspect the works in progress at any time wherever the premises/ workshops situated, of the Contractor, person, firm or corporation where works in connection with the contract may be or where materials are being or intended to be supplied.. The contractor shall afford or procure every facility and assistance to Engineer-in-Charge carry out such inspection. The contractor shall, at all time during the usual working hours and at all other times at which reasonable notice of the intention of the Engineer-in-Charge or his representative to visit the works shall have been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing be present for the purpose. Orders given to the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

57.2 The contractor shall give not less than seven days notice in writing to the Engineer-in-Charge before covering up or otherwise placing beyond reach of inspection and measurement any work in order that the same may be inspected and measured. In the event of failure of above the same shall be uncovered and all facilities made available again at contractor's expense for carrying out such measurement or inspection.

57.3 The contractor is to provide at all times during the progress of the work and maintenance period proper means at access with ladders gangways etc. and the necessary attendance to move and adopt as directed for inspection or measurement of the works by the Engineer-in-Charge.

58. Assistance to the Engineer:

The Contractor shall make available to the Engineer-in-Charge free of cost all necessary instructions and assistance in checking of settling out of works and

in the checking of any works made by the contractor for the purpose of setting out and taking measurements of work.

59. Discrepancies between instructions:

Should any discrepancy arise between the various instructions furnished to the contractor or his agents or staff or if any doubt arises on the meaning or implementation of any such instructions or should there be any difference of opinion on the issues, the contractor shall refer the matter immediately in writing to the Engineer-in-Charge whose decisions thereon shall be final and conclusive. No claim on losses alleged to have been caused by such discrepancies between instructions, doubts or misunderstanding shall in any event be admissible.

60. Alterations in Specifications and Designs and Extra Works:

(a) The Project Head shall have power to make any alterations, in omission from additions to or substitutions, for the schedule of rates, the original specifications, drawings and instructions that may appear to him to be necessary or advisable during the progress of the work, and the contractor shall be bound to carry out such altered/ extra/ new items of work in accordance with any instructions which may be given to him in writing signed by the Project Head and such alterations, omissions, additions or substitutions shall not invalidate the contract and any altered, additional or substituted work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work. The time of completion of work may be extended for the part of the particular job at the discretion of the Project Head for any such alterations, additions, or substitutions of the work, as he may consider as just and reasonable. The rates for such additional, altered or substituted work under the clause shall be worked out in accordance with the following provisions:-

(b) If the rates for the additional, altered or substituted work are specified in the contract for the work, the contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the contract.

(c) If the rates for the additional, altered or substituted work are not specifically provided in the contract for the work, the rates will be derived from rates for similar class of work as are specified in the contract for the work. The opinion of the Project head as to whether or not the rates can be reasonably so derived from the items in this contract will be final and binding on the contractor.

(d) If the rates for the additional, altered or substituted work can not be determined in the manner specified in sub-clause (a) & (b) above, then the contractor shall within 7 days of the date of receipt of order to carry out

the work, inform the Project Head of the rate which it is his intention to charge for such class of work, supported by analysis of the rate or rates claimed, and the project Head shall determine the rate or rates on the basis of the prevailing market rates of materials plus labour cost including equipment hire charge at schedule of hourly/ daily rates plus 15% to cover contractor's supervisions overhead and profit and pay to the contractor accordingly. The opinion of the Project Head to current market rates of the materials and the quantum of labour and equipment involved per unit of measurement will be final and binding on the contractor. The schedule of hourly/ daily rates shall be as enclosed.

61. Action Where no Specification is issued:

In case of any class of work for which there is no such specification supplied by the Owner as is mentioned in the tender document such work shall be carried out in accordance with the Indian Standard Specifications. If the Indian Standard Specifications do not cover the same, the work should carried out as per standard Engineer in Practice subject to the approval of the Engineer-in-Charge.

62 Abnormal Rates:

The contractor is expected to quote the rate for each item after careful analysis of cost involved for the satisfactory performance and completion of item work considering all specifications and conditions of contract. This will avoid loss of profit or gain in case of curtailment or change in specification for any other item. In case the rate quoted by the tenderer for any item are usually high or unusually low it will be sufficient cause of the rejection of the tender unless the Owner is convinced about the reasonableness of the analysis for such rate furnished by the tenderer (on demand) after scrutiny.

63. Tests For Quality Works:

63.1 All materials and workmanship shall be of the respective kinds described in the contract documents and in accordance with the instructions of the Engineer-in-Charge and shall be subjected from time to time to such tests at contractor's cost as the Engineer-in-Charge may direct at the place of manufacture or fabrication or at the site or at all or any such places. The contractor shall provide assistance, instruments, machines, labour and materials as are required for examining, measuring and testing any workmanship as may be selected and required by the Engineer-in-Charge.

63.2 All the tests that will be necessary in connection with the execution of the work as decided by Engineer-in-Charge shall be carried out at the field testing laboratory of this Owner if available by paying the charges as decided by the Owner from time to time. In case of non-availability of testing facilities with the Owner, the required laboratory as directed by Engineer-in-Charge.

63.3 If any tests are required to be carried out in connection with the work or materials or workmanship not supplied by the contractor, such tests shall be

carried out by the contractor as per the instructions of Engineer-in-Charge and cost of such tests shall be reimbursed by the Owner.

64. Samples:

The contractor shall furnish to the Engineer-in-Charge for approval when request or if required by the specifications, adequate samples of all materials and finished to be used in the work. Such samples shall be submitted before the work is commenced and in sample time to permit tests and examinations thereof. All materials furnished and finishes applied in actual work shall be fully equal to the approved samples.

65. Liabilities for Defect, Imperfections etc. and Rectifications Thereof:

If it shall appear to the Engineer-in-Charge that any work has been executed with unsound, imperfect or unskilled workmanship, or with materials of any inferior description, or that any materials or articles provided by the contractor for the execution of work are unsound or of quality inferior to that contracted for, or otherwise not in accordance with the contract, the contractor shall on demand in writing from the Engineer-in-Charge or his authorised representative specifying the work, materials or articles complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify or remove and reconstruct that work so specified and provide other proper and suitable materials or articles at his own charge and cost, and in the event of failure to do so within a period to be specified by the Engineer-in-Charge in his demand aforesaid, the Engineer-in-charge may on expiry of notice period rectify or remove, and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expense in all respects of the contract. The decision of the Engineer-in-Charge as to any question arising under this clause shall be final and conclusive.

66. Suspension of Works:

- (i) Subject to the provision of sub para (ii) of this clause, the contractor shall if ordered in writing by the Engineer-in-Charge., or his representative, temporarily suspend the works or any part thereof such period and such time as so ordered and shall not, after receiving such written orders, proceed with the work therein, ordered to be suspended until he shall have received a written order to proceed therewith. The contractor shall not be entitled to claim compensation for any loss or damage sustained by him by reason of temporary suspension of the works aforesaid. An extension of time for completion, corresponding with the delay caused by any such suspension of the works as aforesaid will be granted to the contractor should he apply for the same provided that the suspension was not consequent to any default or failure on the part of the contractor.
- (ii) In case of suspension of entire work, ordered in writing by the Engineer-in-Charge, for a period of more than two months, the contractor shall have the option to terminate contract.

67. Possession Prior to Completion:

The Engineer-in-Charge shall have the right to take possession of or any completed or partially completed work or part of the work. Such possession or use shall not be deemed to be an acceptance of any work completed in accordance with the contract. If such prior possession or use by the Engineer-in-Charge delay the progress of work, equitable adjustment in the time of completion will be made and the contract agreement shall be deemed to be modified accordingly.

68 Twelve months Period of Liability from the Date of Issue of Completion Certificate:

68.1 The contractor shall guarantee the installation/work for a period of 12 months from the date of completion of work as certified by the Engineer-in-Charge which is indicated in the completion certificate. Any damage or defect that may arise though remained undiscovered at the time of issue of completion certificate, connected in any way with the equipment or materials supplied by him or in the workmanship shall be rectified or replaced by the contractor at his own expenses as deemed necessary by the Engineer-in-Charge or in default the Engineer-in-Charge may cause the same to be made good by other agency and deduct expenses (of which the certificate or Engineer-in-Charge shall be final) from any sums that may be then or at any time thereafter become due to the contractor or from his security deposit, or the proceeds of sale thereof or of a sufficient portion thereof.

68.2 If the contractor feels that any variation in work or in quality of materials or proportions would be beneficial or necessary to fulfil the guarantees called for, he shall bring this in writing to the notice of the Engineer-in-Charge.

68.3 Care of works:

From the commencement of completion of the work, the contractor shall take full responsibility for the care of all works including all temporary works and in case any damage, loss or injury shall happen to the work or to any part thereof or to any temporary works from any cause whatsoever, shall at his own cost repair and make good the same so that on completion the work shall be in good order and in conformity in every respects with the requirements of the contract and the Engineer-in-Charge's Instructions.

68.4 Defects Prior to Taking Over:

If at any time before the work is taken over, the Engineer-in-Charge shall:

- (a) Decide that any work done or materials used by the contractor or any sub-contractor is defective or not in accordance with the contract, or that the works or any portion thereof are defective, or do not fulfil the requirements of contract (all such matter, being hereinafter, called 'Defects' in this clause) and
- (b) as soon as reasonably practicable gives to the contractor notice in writing of the said decision specifying particulars of the defects claimed to exist or to have occurred then the contractor shall at his own expenses and with all speed make good the defects so specified.

In case contractor shall fail to do so, the Owner may take, at the cost of contractor, such steps as may in all circumstances be reasonable to make good such defects. The expenditure so incurred by the owner be recovered from the amount due to the contractor. The decision of the Engineer-in-Charge with regard to the amount to be recovered from the contractor will be final and binding on the contractor. As soon as the works have been completed in accordance with the contract (except minor respects that do not affect their use for the purpose for which they are intended and except for maintenance thereof provided in clause 68.1 of General Conditions of Contract) and have passed the tests on completion, the Engineer-in-Charge shall issue a certificate (hereinafter called completion certificate) in which he shall certify the date on which the works have been so completed and have passed the said tests and the Owner shall be deemed to have taken over the works on the date so certified. If the works have been divided into various groups in the contract, the Owner shall be entitled to take over any group or groups before the other or others.

68.5 Defect After Taking Over:

In order that the contractor could obtain a completion certificate he shall make good with all possible speed, any defect arising from the defective materials supplied by the contractor or that may have been noticed or developed, after the works or group of the works has been taken over, the period allowed, for carrying out such work will be normally one month. If any defect be not remedied within a reasonable time, the owner may proceed to do the work at contractor's Risk and expenses and deduct from the final bill such amount as may be decided by the Owner.

If by reason of any default on the part of the contractor a completion certificate has not been issued in respect of every portion of the works within one month after date fixed by the contract for the completion of the works, the Owner shall be at liberty to use the work or any portion thereof in respect of which a completion certificate has not been issued, provided that the works or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completion of these works for the issue of completion certificate.

68.6 Guarantee/Transfer of Guarantee:

For works like water-proofing, acid & alkali resisting materials, pre-construction soil treatment against termite or any other specialized works etc. the contractor shall invariably engage sub-contractors who are specialists in the field and firms of repute and such a sub-contractor shall furnish guarantees for their workmanship to the Owner, through the contractor. In case such a sub-contractor/firm is not prepared to furnish a guarantee to the owner, the contractor shall give that guarantee to the Owner directly.

SECTION – VI CERTIFICATE AND PAYMENT

69. SCHEDULE OF RATE AND PAYMENTS:

69.1 Contractor's Remuneration:

The price to be paid by the Owner to the contractor for the whole of the work done and for the performance of all the obligations undertaken by the contractor under the contract document shall be ascertained by the application of the respective schedule of rates (the inclusive nature of which is more particularly defined by way of application but not of limitation, with clause No. 69.2) and payment to be made accordingly to the work actually executed and approved by the Engineer-in-Charge. The sum so ascertained shall (exception only as and to the extent expressly provided here in) constitute the sole and inclusive of remuneration of the contractor under the contract and no further or other payment whatsoever shall be or become due or payable to the contractor under the contract.

69.2 Schedule of Rates to the Inclusive:

The prices/rates quoted by the contractor shall remain firm till the issue of final certificate and shall not be subject to escalation. Schedule of rates shall be deemed to include and cover all costs, expenses and liabilities of every description and all risks of every kind to be taken in executing, completion and handing over the work to the Owner by the contractor. The contractor shall be deemed to have known the nature, scope, magnitude and the extent of the works and materials required though the contract document may not fully and precisely furnish them. He shall make such provision in the schedule of rates as he may consider necessary to cover the cost of such items of work and materials as may be reasonable and necessary to complete the work. The opinion of the Engineer-in-Charge as to the items of work which are necessary and reasonable for completion of work shall be final and binding on the contractor although the same may not be shown on or described specifically in contract documents.

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

69.3 Schedule of rates to cover Constructional Plant, Materials. Labours etc.:

Without in any way limiting the provision of other subclauses the schedule of rates shall be deemed to include the cover the cost of all constructional plant, temporary works (except as provided for herein), pumps, materials, labour, insurance, fuel, stores, and appliances to be supplied by the contractor and all other matters in connection with each items in the schedule of quantities and

the execution of the works or any portion thereof finished complete in every respect and maintained as shown or described in the contract documents or as may be ordered in writing during the continuance of the contract.

69.4 Schedule of Rates to cover Royalties, Rents and Claims:

The schedule of rates shall be deemed to include and cover the cost of all royalties and fees for the articles, processes, protected by letters, patent or otherwise incorporated in or used in connection with the works, also all royalties, rents, and other payments in connection with obtaining materials of whatsoever kind for the works and shall include an indemnity to the owner which the contractor hereby gives against all actions, proceedings, claims, damages, costs and expenses arising from the incorporation in or use on the works of any such articles, processes or charges if levied on materials, equipment or machinery to be brought to site for use on work, shall be borne by the contractor.

69.5 Schedule of Rates to cover taxes and duties:

No exemption or reduction of custom duties, excise duties, sales tax, quay or any port duties, transport charges, stamp duties or Central or State Government or Local Body (or from any other body) or Municipal Taxes or duties, taxes or charges whatsoever will be granted or obtained and all expenses of which shall be deemed to be included in and covered by the schedule of rates. The contractor shall be obtain and pay for all permits or other privileges necessary to complete the work.

69.6 Schedule of Rates to cover Risk of Delay:

The schedule of rates shall be deemed to include and cover the risk of all responsibilities of delay and interference with the contractor's conduct of work which occur from any cause including orders of the owner in the exercise of his powers and on account of extension of time granted due to various and for all other possible or probable causes of delay.

69.7 Schedule of Rates cannot be altered:

For work under unit rate basis no alteration will be allowed in the schedule of rates by reasons of works or any part of them being modified, altered, extended, diminished or omitted. The schedule of rates is of fully inclusive rates which have been fixed by the contractor and agreed to by the Owner and cannot be altered.

- 69.7.1 The schedule of rates to cover for working in operating plant. Contractor's rates shall be deemed to include taking into account that he has to work in operating plant and shall take sufficient care in moving the plants, equipments and materials from one place to another, so that they do not cause any damage to any person or to the property of the owner or to third party including over head and underground cable/pipe lines. In the event of such damages including eventual loss of production and operation of the plant or services in any plant or establishment as estimated by the owner or ascertained or by the

third party shall be borne by the contractor. Since the work is to be executed for the expansion of the plant, the rate of the contractor shall also deem to include all interference/obstruction/interruption for which no compensation shall be paid to be contractor.

70. Procedure For Measurement/ Billing of Work in Progress:

70.1 All measurements shall be in metric system. All the works in progress will be jointly measured by the representative of the Engineer-in-Charge and the contractor's authorised agent progressively. Such measurements will be got recorded in the measurement book by the Engineer-in-Charge or his authorised representative and signed in token of acceptance by the contractor or his authorised representative.

For the purpose of taking joint measurement the contractor's representative shall be bound to be present whenever required by the Engineer-in-Charge. If, however, he absents for any reason whatsoever the measurements will be taken by the Engineer-in-Charge or his representative and this will be deemed to be correct and binding on the contractor.

70.2 Billing:

The contractor will submit a bill in approved proforma in accordance with the contract terms and the agreed billing schedules in quintuplicate to the Engineer-in-Charge giving abstract and detailed measurement for the various items executed during a month, before the expiry of the first week of the succeeding month. The Engineer-in-Charge shall take or cause to be taken the requisite measurements for the purpose of having the same verified and the claim as far as admissible, adjusted, if possible, before the expiry of 10 days from presentation of the bill.

70.2.1 The bill shall be submitted by the contractor in computerised formats approved by the owner. The bills along-with floppies containing measurement of work, particulars of materials, recoveries etc. have to be submitted to the owner.

70.2.2 For lump-sum contracts, the payment will be according to agreed billing schedule. No adjustment shall be allowed in lump-sum prices for any variations in the quantities, specifications etc. shall take or a cause to be taken the requisite measurement for the purposes of having the same verified and the claim as far as admissible, adjusted, if possible, before the expiry of 10 days from presentation of the bill.

70.3 Secured Advance on Materials:

In case of tenders for completed items of works, contractor may be allowed "Secured Advance" on the security of materials brought to site for execution of the contracted items of work to the extent of 75% of the value of materials which go into the completed works as assessed by the Engineer-in-Charge provided that the materials are of an imperishable nature and that formal

agreement is drawn up with the contractor under which the Owner secures a lien on the materials and is safe guarded against losses due to the contractor postponing the execution of the work or to the improper storage &/or misuse of the materials and against the expenses entitled for their proper watch and safe custody. Recoveries of advances so made would not be postponed until the whole of the work entrusted to the contractor is completed. They should be adjusted from his running account bills for work done as the materials are used, the necessary deductions being made whenever the items of work in which they are used and billed for.

70.4 Dispute in Mode of Measurement:

In case of any dispute as to the made of measurement not covered by the contract to be adopted for any item of work, mode of measurement as per latest Indian Standard Specifications shall be followed.

70.5 Rounding of Amounts:

In calculating the amount of each item due to the contractor in every certificate prepared for payment, sum of less than 50 paisa shall be omitted and the total amount on each certificates shall be rounded off to the nearest, i.e. sum of less than 0.50p shall be omitted and sums of 0.50p and more upto one rupee shall be reckoned as one rupee.

71. LUMPSUMS IN TENDER:

For the item in tender where it includes lumpsum in respect of parts of work, the contractor shall be entitled to payment in respect of the items at the same as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-Charge capable of measurement, or determination, the Owner may at his discretion pay the lumpsum amount entered in the tender or a percentage thereof and the certificate in writing of the Engineer-in-Charge shall be final and conclusive against the contractor with regards to any sum payable to him, under the provisions of this clause.

72. RUNNING ACCOUNT PAYMENTS TO BE REGARDED AS ADVANCE:

All Running Account Payment shall be regarded as Payments by way of advance against the final payment only and not as payment for work actually done and completed, and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected or be considered as an admission of the due Performance of the contract, or any part thereof, in this respect, or of the accruing of any claim by the contractor, nor shall it, conclude, determine or affect in any way the powers of the Owner under these conditions or any of them as to the final settlement and adjustments of the accounts or otherwise, or in any other way vary or affect the contract. The final bill shall be submitted by the contractor within one month from the sate of physical completion of the work, otherwise,

the Engineer-in-Charge's certificate of the measurement and of total amount payable for the work accordingly shall be final and binding on all parties.

73. NOTICE OF CLAIMS FOR ADDITIONAL PAYMENT:

Should the contractor consider that he is entitled to any extra payment or compensation or to make any claims whatsoever in respect of the works arising under the terms of this contract he shall forthwith give notice in writing to the Engineer-in-Charge that he claims extra payment within ten days from the ordering of any work or happening of any event upon which the contractor bases such claims and such notice shall contain full particulars of the nature of such claims with necessary particulars as above within the time above specified shall be an absolute waiver thereof. No omission by the Owner to reject any such claim and no delay in dealing therewith shall be waiver by the Owner of any right in respect thereof.

74. PAYMENT OF CONTRACTOR'S BILL:

No payment shall be made for works estimated to cost less than Rs. 10,000/- till the whole of the work shall have been completed and a certificate of completion given. But in case of works estimated to cost more than Rs. 10,000/- the contractor, on submitting the bill thereof be entitled to receive a monthly payment proportionate to the part thereof approved and passed by the Engineer-in-Charge, whose certificate of such approval and passing of the sum so payable be final and conclusive against the contractor. This payment will be made after making necessary deductions as stipulated elsewhere in the contract document for materials, security deposit etc. or any statutory recoveries.

Payment due to the contractor shall be made by the Owner, by Crossed Account Payee Cheque forwarding the same to registered office or the notified office of the contractor. In no case will owner be responsible if the Cheque is mislaid or misappropriated by un-authorised person/ persons. In all cases, the contractor shall present his bill duly pre-receipted on proper revenue stamp.

All payment shall be made in Indian Currency.

75. Receipt For Payment:

Receipt for payment made on account of work when executed by a firm, must be signed by a person holding due power of attorney in this respect on behalf of the contractor, except when the contractors are described in their tender as limited company in which case the receipts must be signed in the name of the company by one of its principal officers or by some other persons having authority to give effectual receipt for the company.

76. Completion Certificate:

76.1. Application for completion certificate:

When the contractor fulfils his obligation under clause 69.4 he shall be eligible to apply for completion certificate in respect of the work by submitting the completion documents along with such application for completion certificate.

The Owner or his representative shall normally issue to the contractor the completion certificate within one month after receiving an application therefor from the contractors after verifying from the completion documents and satisfying himself that the work has been completed in accordance with and as set out in the construction and erection drawings, and the contract documents.

The contractor, after obtaining the completion certificate, is eligible to present the final bill for the work executed by him under the terms of contract.

76.2. Completion Certificate:

Within one month of the completion of work in all respects, the contractor, shall be furnished with a certificate by the owner or his representative of such completion but no completion certificate shall be given not shall the work be deemed to have executed until all, scaffolding, surplus materials and rubbish is cleared off the site completely not until the work shall have been measured by the Engineer-in-Charge, whole measurement shall be binding and conclusive. The work will not be considered as complete and taken over by the owner, until all the temporary work, labour and staff colonies etc. constructed are removed and work site cleared to the satisfaction of the Engineer-in-Charge.

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

Completion Certificate shall be in 3 parts as follows:

- (1) Physical/ Mechanical Completion work.
- (2) Satisfactory completion of commissioning of equipment with load.
- (3) Satisfactory completion of guarantee.

The contractor shall clearly indicate the 3 dates separately.

76.3. Completion Documents:

For the purpose of Clause 76 the following documents will be deemed to form the completion documents:

- (i) The technical documents according to which the work was carried out.

- (ii) Three sets of construction drawings showing therein the modification and corrections made during the course of execution and signed by the Engineer-in-Charge.
- (iii) Completion Certificate for embedded and covered –up works.
- (iv) Certificate of final levels as set out for various works.
- (v) Certificate of tests performed for various works.
- (vi) Material appropriation statement to the materials issued by the owner for the works and list of surplus materials returned to the owner's store duly supported by necessary documents.
- (vii) Physical/ Mechanical Completion work.
- (viii) Satisfactory completion of commissioning of equipment with load.
- (ix) Satisfactory completion of guarantee.

The Contractor shall clearly indicate the 3 dates separately.

77. Final Decision And Final Certificate:

Upon the expiration of the period of liability and subject to the Engineer-in-Charge being satisfied that the works have been duly maintained by the contractor during monsoon or such period as herein provided in clause 68.1 and that the contractor has in all respect duly made up all subsidence and performed all his obligations under the contract, the Engineer-in-Charge shall (without prejudice to the right of the Owner to retain the provisions of relevant clause hereof) otherwise give a certificate, herein referred to as the final certificate, to the effect and the contractor shall not be considered to have fulfilled the whole of his obligations under the contract until Final Certificate shall have been given by the Engineer-in-Charge notwithstanding any previous entry upon the work and taking possession, working or using of the same or any part thereof by the Owner.

78. Certificate And Payments No Evidence of Completion:

Except the final certificate no other certificate or payment against a certificate or on general account shall be taken to be an admission by the Owner of the due performance of the contract of any part thereof or of occupancy or validity of any claim by the Contractor.

SECTION – VII

TAXES AND INSURANCE

79. TAXES, DUTIES, OCTROI ETC.

- 79.1. The Contractor shall defray all charges, such as rent, toll local taxes excise duty, other payments and compensations, if any, in connection with the procurement and handling of materials, fabrication and execution of works or any method or process connected with the works or Temporary works.

Sales Tax or any other tax on materials required for the works as also Tax on works contract shall be payable by the Contractor and the Owner will not entertain any claim whatsoever in this regard.

- 79.2. Notwithstanding anything contained elsewhere in the contract, the owner shall deduct at source from the payments due to the contractor, the taxes as required under Section -13-AA of the Orissa Sales Tax Act or as amended from time to time or under any other statute. The amounts so deducted shall be deposited by the Owner with the Sales Tax authorities as per Law. It is for the contractor to deal with the Sales Tax authorities directly in respect of any claim or refund relating to the above deductions and the owner shall not be liable or responsible for any claims or payments or reimbursement in this regard.

80. INSURANCE:

Contractor shall at his own expense carry and maintain insurance with reputed insurance companies to the satisfaction of the Owner as follows:

80.1 Employees State Insurance Act:

The contractor agrees to and does hereby accept full and exclusive liability for compliance with all obligations imposed by the Employees State Insurance Act, 1948, and the contractor further agrees to defend, indemnify and hold Owner harmless from any liability of penalty which may be imposed by the Central, State or Local authority by the reason of any asserted violation by contractor or Sub-contractor of the Employee's State Insurance Act, 1948 and also from all claims, suits or proceeding that may be brought against the Owner arising under, growing out of or by reasons of the work provided for by this contract whether brought by employees of the contractor, by third parties or by Central or State Government authority or any political sub-division thereof.

The contractor agrees to fill in with the Employees State Insurance Corporation, the Declaration Forms and all forms which may be required in respect of the contractor's or sub-contractor's employees, whose aggregate remuneration is Rs. 560.00 per month or less and who are employed in the work provided for or those covered by ESI from time to time under the Agreement. The contractor shall deduct and secure the agreement of the sub-contractor to deduct the employee's contribution as per the first schedule of the Employee's State Insurance Act from wages and affix the employee's

contribution cards at wages payments intervals. The contractor shall remit and secure the agreement of the sub-contractor to remit to the State Bank of India, Employees State Insurance Corporation Account, the employee's contribution as required by the Act. The contractor agrees to maintain all cards and records as required under the Act in respect of employees and payments and the contractor shall secure the agreement of the sub-contractor to maintain such records. Any expenses incurred for the contributions, making contributions or maintaining records shall be to the contractor's or sub-contractor's account.

The Owner shall retain such sum as may be necessary from the total contract value until the contractor shall furnish satisfactory proof that all contribution as required by the Employees State Insurance Act, 1984, have been paid. This will be pending on the contractor when the Employees State Insurance Act is extended to the place of work.

80.2 Workmen Compensation and Employees Liability Insurance:

Insurance shall be affected for all the contractor's employees engaged in the performance of this contract. If any of the work is subject, the contractor shall require the sub-contractor to provide workmen's compensation and employer's liability insurance for the latter's employees if such employees are not covered under the contractor insurance.

80.3 Any other insurance required under Law or Regulations or by Owner:

Contractor shall also carry and maintain any and all other insurance, which he may be required under any law or regulation from time to time. He shall also carry and maintain any other insurance, which may be required by the Owner.

80.4 Accident or Injury to workmen:

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

80.5 Transit Insurance:

In respect of all items to be transported by the Contractor to the site of work, the cost of transit insurance should be borne by the contractor and the quoted price shall be inclusive of this cost.

81 DAMAGE TO PROPERTY OR TO ANY PERSON OR ANY THIRD PARTY:

81.1 Contractor's rate shall deem to include taking into account that he has to work in operating plant and shall take sufficient care in moving the plants, equipment and materials from one place to another so that they do not cause

any damage to any person or to the property of the Owner or to a third party including over head and underground cables, pipelines. In the event of such damages including eventual loss of production and operation of the plants or services in any plant or establishment as estimated by the Owner or ascertained or by the third party shall be borne by the Contractor.

81.2 Contractor shall also be responsible for making good to the satisfaction of the Owner any loss or any damage to all structures and properties belonging to the Owner or being executed or procured or being procured by owner or by other agency within the premises of all the work or Owner. If such loss or damages is due to fault and or the negligence or willful acts or omission of the contractors, his employees, agents, representatives or sub-contractors.

81.3 The contractor shall indemnify and keep the owner harmless of all claims for damages to property other than owner's property arising under or by reason of this contract if such claims result from the fault and/ or negligence or willful acts or omission of the contractor, agents, representative or sub-contractor.

82 DEMURRAGE DUES:

The contractor shall pay demurrage charges incurred by the Owner because of the contractor's failure to load or unload any goods or materials within the time allowed by the Railway and/ or Transport Agency for such loading or unloading as charges incurred by the contractor within the permissible time as also charges due on consignments booked by or to him. In case the contractor fails to pay these charges, these charges shall be deducted from any sums, which may be due or become due to the contractor in terms of this contract and/ or any other contract.

SECTION – VIII LABOUR LAWS AND ARBITRATION

83 LABOURER LAWS:

Contractor shall comply with any and all laws, ordinances, regulations and decision of courts (which shall be deemed to be a part of this Agreement) concerning the health, sanitary arrangements, wages, welfare, safety and employment of any and all of his workers upon the Project or any portion thereof and shall exclusively bear the consequences of failure to comply therewith Contractor shall Indemnify and hold Engineer and Owner harmless from any claims, fines or penalties which may be made against Engineer or Owner as result of Contractor's failure to fulfil these obligations.

Without limiting the generality of the foregoing, Contractor shall fully comply with.

The contractor shall obtain clearance from the Labour Department regarding the compliance of the labour laws on 6 monthly basis and submit to the owner for record.

- (i) No labour below the age of 18 (eighteen) years shall be employed on the work.
- (ii) The contractor shall not pay less than what is provided under law to labourers engaged by him on the work.
- (iii) The contractor shall at his expense comply with all labour laws and keep the Owner indemnified in respect thereof .
- (iv) The contractor shall pay equal wages for men and women in accordance with applicable labour laws.
- (v) If the contractor is covered under the contractor labour (Regulation and Abolition) Act, he shall obtain a licence from licensing authority (i.e. office of the labour commissioner) by payment of necessary prescribed fee and the deposit, if any, before starting the work under the contract.
- (vi) The Contractor shall employ labour in sufficient numbers either directly or through sub-contractors to maintain the required rate of progress and of quality to ensure workmanship of the degree specified in the Contract and to satisfaction of the Engineer-in-Charge. The contractor shall not employ in connection with the works any person who has not completed his 18 (eighteen) years of age.
- (vii) The Contractor shall furnish to the Engineer-in-Charge the distribution return of the number and description, by trades of the work people

employed on the works. The Contractor shall also submit on the 4th and 19th of every month to the Engineer-in-Charge a true statement showing in respect of the second half of the preceding month and the first half of the current month (1) the accidents that occurred during the said fortnight showing the circumstance-under which they happened and the extent of damage and injury caused by them and (2) the number of female workers who have been allowed Maternity benefit as provided in the Maternity Benefit Act 1961 or Rules made thereunder and the amount paid to them.

- (viii) The contractor shall comply with the provisions of the payment of Wages Act 1936, Minimum Wages Act 1938, Employees Liability Act 1928, Workmen's Compensation Act, 1923, Industrial Dispute Act 1947, the Maternity Benefit Act 1961, Employees Provident Fund Act, 1952 and Contract Labour regulation and abolition Act 1937, Employment of Children Act 1938 or any modifications thereof or any other law relating thereto and rules made thereunder from time to time.
- (ix) The Engineer-in-Charge shall on a report having been made by an Inspecting Officer as defined in Contract Labour (Regulation and Abolition) Act 1970 have the power to deduct from the moneys due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker or Workers by reason of non-fulfillment of the Conditions of the Contractor for the benefit of workers, non-payment of wages or of deductions made from his or their wages which are not justified by the terms of the Contract or non- observance of the said regulations.
- (x) The Contractor shall indemnify the Owner against any payments to be made under and for the observance of the provisions of the aforesaid Acts without prejudice to his right to obtain indemnity from his sub-contractors. In the event of the contractor committing a default or breach of any of the provisions of the aforesaid Acts as amended from time to time, of furnishing any information or submitting or filling any Form/Register/Slip under the provisions of these Acts which is materially incorrect then on the report of the inspecting Officers the Contractor shall without prejudice to any other liability pay to the owner a sum not exceeding Rs. 50.00 as liquidated damages for every default, breach of furnishing, making submitting, filling materially incorrect statement as may be fixed by the Engineer-in-Charge and in the event of the contractor's default continuing in this respect the liquidated damages may be enhanced to Rs. 50.00 per day of default subject to a maximum of one percent of the estimated cost of the works put to tender. The Engineer-in-Charge shall deduct such amount from bills or security deposit of the Contractor and credit the same to the welfare fund constituted under these acts. The decision of the Engineer-in-Charge in this respect shall be final and binding.

84 Implementation of Apprentices Act 1961:

The contractor shall comply with the provisions of the Apprentices Act 1961 and the Rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer-in-Charge may, at his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising of any violation by him of the provisions of the Act.

85 Contractor to Indemnify the Owner:

85.1 The contractor shall indemnify the Owner and every member, Officer and employee of the owner, also the Engineer-in-Charge and his staff against all actions, proceedings, claims, demands costs and expenses whatsoever arising out of or in connection with the matter referred to in clause 81 and elsewhere and all actions, proceedings, claims demands costs and expenses which may be made against the Owner for or in respect of or arising out of any failure by the contractor in the performance of his obligations under the contract. The Owner shall not be liable for or in respect of any demand or compensation payable by law in respect or in consequence of any accident or injury to any workman or other person in the employment of the contractor or his sub- contractor and contractor shall indemnify and keep indemnified the Owner against all such damage and compensation and against all claims, damages, proceedings, costs, charges and expenses whatsoever thereof or in relation thereto.

85.2 Payment of Claims and Damages:

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

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

86. Health and Sanitary Arrangements For Workers:

- 86.1 In respect of all labour directly or indirectly employed in the works for the performance the contractor's part of this agreement, the contractor shall comply with or cause to be complied with all the rules and regulations of the local sanitary and other authorities or as framed by the Owner from time to time for the protection of health and sanitary arrangements for all workers.
- 86.2 The contractor shall provide in the labour colony all amenities such as Electricity, water and other sanitary and health arrangements. The Contractor shall also provide necessary surface transportation to the place of work and back to the colony for their personnel accommodated in the labour colony.

87. Arbitration:

All disputes or differences whatsoever which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof of the contract or the rights touching or concerning the works or the execution or maintenance thereof of this contract or the construction meaning operation or effect thereof or to the rights or liabilities of the parties or arising out of or in relation thereto whether during or after completion of the contract or whether before or after determination, fore closure or breach of the contract (other than those in respect of which the decision of any person is by the contract expressed to be final and binding shall after written notice by either party to the contract to the other of them and to the Appointing Authority hereinafter mentioned be referred for adjudication to a sole Arbitrator to be appointed as hereinafter provided.

For the purpose of appointing the sole Arbitrator referred to above, the Appointing Authority will send within thirty days of receipt of the notice, to the contractor a panel of three names of persons.

The contractor shall on receipt of the names as referred selected any one of the person names to be appointed as a sole Arbitrator and communicate his name to the Appointing Authority within thirty days of receipt of the names. The appointing Authority shall there upon without any delay appoint the said person as the sole Arbitrator. If the contractor fails to communicate such selection as provided above within the period specified, the Appointing Authority shall make the selection and appoint the selected person as the sole Arbitrator.

If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacate his office due to any reason whatsoever sole Arbitrators shall be appointed as aforesaid. The work under the contract shall, however continue during the arbitration proceedings.

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

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

The Arbitrator shall give a separate award in respect of each dispute or difference and shall give a reasoned and speaking award/ awards.

The venue of arbitration shall be at Bhubaneswar. However, if the situation so warrants, it may, as and when required, be held at the place where the site of work is situated.

The fees, if any, of the Arbitrator shall, if required to be paid before the award is made and published be paid half and half by each of the parties. The costs of the reference and of the award including the fees, if any of the Arbitrator shall be in the discretion of the Arbitrator who may direct to and by whom and in what manner, such costs or any part thereof shall be paid may fix or settle the amount of costs to be so paid.

The award of the arbitrator shall be final and binding on both the parties.

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

For Public Sector Enterprises guidelines as per the circular of BPE No. 15/9/86-BPE (FIN) dated 30.03.89 as amended time to time will be followed.

88. Jurisdiction/ Governing Laws:

(a) Jurisdiction:

For all disputes arising of this contract, the jurisdiction shall be lie under the jurisdiction of direct courts in the respective areas in the State of ORISSA (India) only.

(b) Governing Laws:

The contract shall be governed by and constructed according to the laws in force in INDIA.

SECTION – IX SAFETY CODE

89. GENERAL:

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

90. SAFETY REGULATIONS:

90.1. In respect of all labour, directly or indirectly employed in the work for the performance of contractor's part of this agreement, the contractor shall at his own expense arrange for all the safety provisions as per (i) Safety codes of CPWD & Indian Standards Instructions (ii) The electricity Act, (iii) The Mines Act, and (iv) Regulations. Rules and orders made thereunder and such other acts as applicable.

90.2. The contractor shall observe and abide by all fire and safety regulations of the Owner. Before starting construction work, contractor shall consult Owner's Safety Engineer or Engineer-in-Charge and must make good to the satisfaction of the Owner any loss or damage due to fire to any portion of the work done under this contract or to any of the Owner's existing property.

91. First Aid and Industrial Injuries:

(i) Contractor shall maintain first aid facilities for his employees and those of his subcontractors.

(ii) Contractors shall make outside arrangements for ambulance service and for treatment of industrial injuries. Name of those providing these services shall be furnished to Owner prior to start of constructions and their telephone numbers shall be prominently posted in Contractor's field office.

(iii) All critical industrial injuries shall be reported promptly to owner, and a copy of Contractor's report covering each personal injury requiring the attention of a physical shall be furnished to the Owner.

92. General Rules:

Smoking within the Battery Areas, rank farm, or dock limits is strictly prohibited. Violators of the "No Smoking" rules shall be discharged immediately".

93. Contractor's Barricades:

(i) Contractor shall erect and maintain barricades required in connection with his operation to guard or protect.

- (a) Excavations.
 - (b) Hosting Areas.
 - (c) Areas adjudged hazardous by Contractor's or Owner's Inspectors.
 - (d) Owner's existing property subject to damage by Contractor's operation.
 - (e) Rail road unloading spots.
- (ii) Contractor's employees and those of his sub-contractors shall become acquainted with Owner's barricading practice and shall respect the provisions thereof.
 - (iii) Barricades and hazardous areas adjacent to but not located in normal routes of travel shall be marked by red flasher lanterns at nights.

94. Scaffolding:

- (i) Suitable scaffoldings should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except such short period works as can be done safely from ladders. When a ladder is used a Mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal and 4 vertical).
- (ii) Scaffolding or staging more than 4 metres above the ground or floor swing on suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise retarded at least one metre high above the floor or platform of such scaffolding or staging and extending along with entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
- (iii) Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally and if the height of the platform of gangway or the stairway is more than 4 metres above ground level or floor level, they should closely boarded, should have adequate width and should be suitable fastened as described in (ii) above.
- (iv) Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 metre.
- (v) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 metres in length. The width between the side rails in run ladder shall in no case be less than 30 cm. For ladder upto and including 3 metres in length; for longer ladders this width should be

increase at least 15 mm for each additional metre of length. Uniform step spacing shall not exceed 30 cms. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or public. The contractor shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defence of every suit, action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit or action or proceedings to any such person or which may with the consent of the contractor be paid to compromise any claim by any such person.

95. Excavation and Trenching:

All trenches 1.2 metres or more in depth, shall at all times be supplied with at least one ladder for each 50 M length or fraction thereof.

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

96. General Safety:

- (i) Before any demolition work is commenced and also during the process of the demolition work.
 - (a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - (b) No electric cable or apparatus which is liable to be a source of danger shall remain electrically charged.
 - (c) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
- (ii) All necessary personal safety equipment as considered adequate by the Engineer-in-Charge, should be kept available for the use of the persons employed at the site and maintained condition suitable for immediate use and the contractor should take adequate steps to ensure proper use of equipment by persons concerned as outlined below:

- (a) Workers employed on mixing asphalt materials, cement and lime mortars shall be provided with protective footwear and protective gloves.
- (b) Those engaged in white washing and mixing or stacking of cements bags or any materials which are injurious to the eyes shall be provided with protective goggles.
- (c) Those engaged in welding and cutting works, shall be provided with protective face and eye –shields, hand gloves etc.
- (d) Stonebreakers shall be provided with protective goggle and protective clothing and seated at sufficiently safe intervals.
- (e) When workers are employed in sewers and manholes which are in use, the contractor shall ensure that the manhole cover are opened and are ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or board to prevent accident to the public.
- (f) The contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken:
 - (1) No paint containing lead or lead products shall be used except in the form paste or readymade paint.
 - (2) Suitable facemasks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
 - (3) Overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash them on cessation of work.
- (iii) When the work is done near any place where there is a risk of drowning all necessary safety equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.
- (iv) Use of hoisting machines and tackles including their attachments anchorage and supports shall conform to the following standard or conditions:
 - (a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defect and shall be kept in good working order.
 - (b) Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from patent defects.

- (c) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding which or give signals to the operator.
- (d) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be marked with the safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
- (e) In case of department machines, the safe working load shall be notified by the Engineer-in-Charge. As regards contractor's machines, the contractor shall notify the safe working load of the machine to the Engineer-in-Charge, whenever he brings any machinery to site of work and get it verified by the Engineer-in-Charge.
- (v) Motors, gears, transmission lines, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safe-guards. Hoisting appliances should be provided with such means as to reduce to the minimum the accidental descent of the load, adequate precaution should be taken to reduce to the minimum the risk of any part or parts of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel such as gloves sleeves and boots as may be necessary should be provided. The workers shall not wear any rings, watches and carry keys or other materials, which are good conductors or electricity.
- (vi) All scaffolding, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffoldings, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of works.
- (vii) These safety provisions should be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.
- (viii) To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the contractor shall be open to inspection by the welfare officer Engineer-in-Charge or safety Engineer of the Administration or their representatives.
- (ix) Notwithstanding the above clauses there is nothing in these to exempt the contractor from the operations of any other Act or rules in force in the Republic of India. The works throughout, including any temporary works, shall be carried out in such a manner as not to interfere in any way whatsoever with the traffic on any roads or footpaths at the site or in vicinity thereto or any existing works whether the property of the Administrations or of a third party.

97. Care in handling Inflammable gas:

The Contractor has to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinder/ inflammable liquids/ paints etc. as required under the law and/ or as advised by the fire authorities of the Owner.

98. Temporary Combustible Structures:

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

99. Precautions Against Fire:

The Contractor will have to provide Fire Extinguisher/ Fire Buckets and drums at work site as recommended by Engineer-in-Charge. They will have to ensure all precautionary measures and exercise utmost care in handling the inflammable gas cylinders/ inflammable liquid/ paints etc. as advised by Engineer-in-Charge. Temporary combustible structures will not be build near or around the work-site.

100. Explosives:

Explosives shall not be stored or used on the works or on the site by the contractor without the permission of the Engineer-in-Charge in writing and then only in the manner and to the extent to which such permission is given. When explosives are required for the works they shall be stored in a special magazine to be provided at the cost of the contractor in accordance with the Explosive Rules. The contractor shall obtain the necessary licence for the storage and the use of explosives and all operations in which or for which explosives are employed shall be at sole risk and responsibility of the contractor and the contractor shall indemnify the owner against any loss or damage resulting directly or indirectly therefrom.

101. Mines Act:

101.1 Safety Code: The contractor shall at his own expense arrange for the safety provisions as required by the Engineer-in-Charge in respect of all labour directly employed for performance of the works and shall provide all facilities in connection therewith. In case the Contractor fails to make arrangements and provides necessary facilities as aforesaid. The Engineer-in-Charge shall be entitled to do so and recover the costs thereof from the Contractor.

101.2 Failure to comply with Safety code or the provisions relating to report on accidents and to grant of maternity benefits to female worker shall make the Contractor liable to pay Company liquidated damages an amount not exceeding Rs. 50/- for each default or materially incorrect statement. The decision of the Engineer-in-Charge in such matters based on reports from the Inspecting Officer or from representatives of Engineer-in-Charge shall be final and binding and deductions for recovery of such liquidated damages may be made from any amount payable to the Contractor from all the provisions of the Mines Act 1952 or any statutory modification's or re-enactment thereof the time being in force and any Rules and Regulations made thereunder in respect of all the

persons employed by him under this contractor and shall indemnify the Owner from and against any claim under the Mines Act or the rules and regulations framed thereunder by or on behalf of and persons employed by him or otherwise.

102. Preservation of Peace:

The Contractor shall taken requisite precautions and use his best endeavors to prevent any riotous or unlawful behaviour by or amongst his workmen and other employed on the works and for the preservation of peace and protection of the inhabitants and Security of property in the neighborhood of the work. In the event of the Owner requiring the maintenance of a special Police force at or in the vicinity of the site during the tenure of works, the expenses thereof shall be borne by the Contractor and if paid by the Owner shall be recoverable from the Contractor.

103. Outbreak of Infectious Diseases:

The Contractor shall remove from his camp such labour and their families as refuse protective inoculation and vaccination when called upon to do so by the Engineer-in-Charge's Representative. Should Cholera, Plague or other infectious diseases break out the Contractor shall burn the huts, bedding clothes and other belonging of or used by the infected parties and promptly erect new huts on healthy sites as required by the Engineer-in-Charge failing which within the time specified in the Engineer's requisition, the work may be done by the Owner and the cost thereof recovered from the Contractor.

104. Treatment of Contractor's Staff in Company's Hospital:

The Contractor and his staff, other than labourers and their families requiring medical aid from the Owner's hospitals and dispensaries will be treated as private patients and charged accordingly. The contractor's labourers and their families will be granted from treatment in the Owner's hospitals and dispensaries where no other hospitals or dispensaries are available provided the contractor pays the cost of medicines dressing and money accordingly to the normal scale as also additional charges if any for special examination e.g. X-Ray etc.

105. Use of Intoxicants:

The sale of dent spirits or other intoxicating beverages upon the work in any of the buildings, encampments or tenements owned, occupied by or within the control of Contractor or any of his employee is forbidden and the contractor shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.

In addition to the above, the contractor shall abide by the safety code provision as per CPWD safety code and Indian Standard Code framed from time to time.

PROFORMA FOR BANK GUARANTEE FOR EARNEST MONEY DEPOSIT

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

B. G. No. _____

Date: _____

1. WHEREAS M/s National Aluminium Company Limited (A Government of India Enterprise), having its Corporate Office at NALCO BHAWAN, P-1 Nayapalli, Bhubaneswar (hereinafter called "The Company Owner" which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) has issued tender paper vide its Tender No.....for -----
----- (hereinafter called "the said tender") to M/s.(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. WEBank having its branch office atdo hereby undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Company stating that in the opinion of the company which is final and binding, the amount claimed is due because of any withdrawal of the tender or any material alteration to the tender after the opening of the tender by way of any loss or damage caused to or would be caused or suffered by the Company by reason of any breach by the said tenderer(s) of any of the terms and conditions contained in the said tender or failure to accept the letter of Intent Agreement or that the amount covered under this Guarantee is forfeited. Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bank under this guarantee, However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....(Rupees..... only).
3. We undertake to pay to the Company any money so demanded 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 thereunder. Our liability to pay is not dependent or conditional on the owner proceeding against the tenderer.
4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said tenderer(s) but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said contract(s)/ Order(s) are fulfilled.
5. WEBank Ltd. further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the finalisation of the said tender and that it shall continue to be enforceable till the said tender is

finally decided and order placed on the successful tenderer(s) and or till all the dues of the company under or by virtue of the said tender have been fully paid and its claims satisfied or discharged or till a duly authorised officer of the company certifies that the terms and conditions of the said tender have been fully and properly carried out by the said tenderer (s) and accordingly discharges the guarantee.

6. That the Owner Company will have full liberty without reference to us and without affecting this guarantee to postpone for any time or from time to time. The exercise of any of the power of the owner under the tender.
7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry we shall be discharged from all the liabilities under this guarantee.
8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time on the request of Tenderer (s).

Date... .. Bank
Corporate Seal of the Bank By its constitutional Attorney

Signature of duly
Authorised person
On behalf of the Bank
With seal & signature code

Note: BGs to be furnished from any of the banks listed earlier.

BANK GUARANTEE FOR SECURITY DEPOSIT

(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 office at _____ (hereinafter called “ The Company Owner” which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) having agreed to exempt M/s. (Hereinafter called “the said Contractor (s)/ Seller(s)” which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns) from the demand under the terms and conditions of Contract(s)/ Order(s) No. dt. of cash security deposit for the due fulfillment by the said contractor(s) seller(s) of the terms and conditions contained in the said Contract(s)/Order(s), on production of Bank Guarantee for Rs. (Rupees..... only).
2. We Bank having its branch office at _____ do hereby agree and undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Company stating that in the opinion of the company which is final and binding, the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of any breach by the said Contractor(s)/seller(s) of any of the terms and conditions contained in the said contract(s) or ders(s) or by reasons of the said Contractor(s)/ Seller(s) failure to perform the said Contract(s)/ Order(s) including defect liability obligations or that the amount covered under this guarantee is forfeited. Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bank under this guarantee, However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees..... only).
3. We undertake to pay to the Company any money so demanded notwithstanding any dispute or disputes raised by the contractor (s)/ Seller(s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment 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 respect and for all purposes be binding and operative until payment of all money due or liabilities under the said contract(s)/ Order(s) are fulfilled.
5. We..... Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract(s)/ Order(s) and that it shall continue to be enforceable till all the dues of the company under or by virtue of the said Contract(s)/Order(s) have been fully paid and its claims satisfied or discharged or till a duly Authorised officer of the company certifies that the terms and conditions of the said Contract(s)/Order(s) have been fully

and properly carried out by the said contractor(s) and accordingly discharges the guarantee.

6. We.....Bank further agree with the Company that the company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract(s)/ Order(s) or to extend the time of performance by the said Contractor(s) Seller(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Contractor(s)/ Seller(s) and to forbear or enforce any of the terms and conditions relating to the said Contract(s)/ Order(s) and we shall not be relieved from our liability by reason of any such variations, or extension being granted to the said Contractor (s)/ Seller(s) or for any forbearance, act or omissions on the part of the Company or any indulgence by the Company to the said Contractor(s)/ Seller(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have affect of so relieving us.
7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry we shall be discharged form all the liabilities under this guarantee.
8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time at the request of Contractor(s)/ Sellers(s).

Date..... Bank

Corporate Seal of the Bank

By its constitutional Attorney

Signature of duly
Authorised person
On behalf of the Bank
With seal & signature code

BGs to be furnished from any of the banks listed as per Annexure.

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

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

B. G. No.....

Date.....

1. WHEREAS National Aluminium Company Limited (A Government of India Enterprise) having its office at(hereinafter referred to as “The Company/Owner” which expressions shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) has entered into a contract with M/s. / has placed a purchase order on M/s.....(hereinafter referred to as “Contractor(s)/ Seller(s)” which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns) foron the terms and conditions as set out inter alia, in the Company’s contract No./ P.O. No.dateand various documents forming part thereof hereinafter referred to as the “said contract” which expression include all amendments, modifications and/ or variations thereto and where as the Contractor(s)/ Seller(s) has agreed for due execution of the entire contract and guarantees its performance including any parts executed through any other agencies/ subcontractors.

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

2. WeBank having its branch office at.....do hereby agree and undertake to pay the amount due and payable under this guarantee without any demur merely on a demand from the Company stating that in the opinion of the Company, which is final & binding, the amount claimed is due by reason of default made by the Contractor(s)/ Seller(s) in performing any of the terms & conditions of the said Contract including defect liability obligations, in fulfilling the performance guarantee obligation or loss or damage caused to or would be caused to or suffered by the Company by reason of any breach by the said Contractor (s)/ Seller(s) of any of the terms & conditions of the contract. Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However our liability under this guarantee shall be restricted to Rs.(Rupees..... only).
3. We undertake to pay to the Company any money so demanded notwithstanding any dispute or disputes raised by the contractor(s)/ Seller(s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under this present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under. Our liability to pay is not dependent or conditional on the 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. WeBank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract(s)/ Order(s) and that it shall continue to be enforceable till all the dues of the company under or by virtue of the said Contract(s)/Order(s) have been fully paid and its claims satisfied or discharged or till a duly authorised officer of the Company certifies that the terms and conditions of the said Contract(s)/Order(s) have been fully and properly carried out by the said contractor(s) and accordingly discharges the guarantee.
6. We.....Bank further agree with the Company that the company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract(s)/ Order(s) or to extend the time of performance by the said Contractor(s) Seller(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Contractor(s)/ Seller(s) and to forbear or enforce any of the terms and conditions relating to the said Contract(s)/ Order(s) and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor (s) / Seller(s) or for any forbearance, act or omission on the part of the Company or any indulgence by the Company to the said Contractor(s)/ Seller(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have affect of so relieving us.
7. Notwithstanding anything contained herein before, our liability shall not exceed Rs.....(Rupees.....only) and shall remain in force till.....Unless a demand or claim under this Guarantee is made on us within three months from the date of expiry we shall be discharged form all the liabilities under this guarantee.
8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time at the request of Contractor(s)/ Sellers(s).

Date..... Bank
Corporate Seal of the Bank By its constitutional Attorney

Signature of duly
Authorised person
On behalf of the Bank
With seal & signature code

BGs to be furnished from any of the banks listed as per Annexure.

BANK GUARANTEE 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 office at _____(hereinafter called “ The Company Owner” which expression shall unless repugnant to the subject or context includes its legal representatives, successors and assigns) having agreed to make an advance payment of Rs.....(Rupees.....only) to M/s.....(hereinafter called “the said Contractor (s)/ Seller(s)” which expression shall unless repugnant to the subject or context includes their legal representatives, successors and assigns) from the demand, terms and conditions of Contract/Order dated.....on production of a bank guarantee of equivalent amount.
2. WeBank having its branch office atdo hereby agree and undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Company stating that in the opinion of the Company which is final and binding, the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of non-payment / adjustment of any part of the said advance or any dues to the company or any breach by the said Contractor(s)/seller(s) of any of the terms and conditions contained in the said contract(s) orders(s) or by reasons of the Contractor(s)/ Seller(s) failure to perform the said Contract(s)/ Order(s). Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bank under this guarantee, However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....(Rupees..... only).
3. We undertake to pay to the Company any money so demanded not withstanding any claim dispute or disputes raised by the contractor (s)/ Seller(s) in any suit or proceeding pending before any office, court or tribunal relating thereto our liability under this present guarantee being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment thereunder. Our liability to pay is not dependable or conditional on the owner proceeding against the Contractor(s)/ Seller(s).
4. The guarantee herein contained shall not be determined or affected or suspended by the liquidation or winding up, dissolution or change of constitution or insolvency of the said tenderer(s) but shall in all respect and for all purposes be binding and operative until payment of all money due or liabilities under the said tenderer(s) are fulfilled.
5. WeBank 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 tenderer(s) and that it shall continue to be enforceable till the said tender is finally decided and order placed on the successful tender 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 Contractor(s)/ Order(s) have been fully and properly carried out by the said tenderer(s) and accordingly discharges the guarantee.

6. That the owner/Company will have fully 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 form all the liabilities under this guarantee.
8. We.....Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing. We further undertake to keep this Guarantee renewed from time to time on the request of the Contractor(s)/ Seller(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

- i) BGs to be furnished from any of the banks listed as per Annexure.
- ii) Address of Corporate Office should be referred in case of Foreign BG.

LIST OF STANDARDISED BANKS

SCHEDULED PUBLIC SECTOR BANKS (INDIAN)

1. State Bank of India.
2. State Bank of Bikaner and Jaipur
3. State Bank of Hyderabad
4. State Bank of Indore.
5. State Bank of Mysore.
6. State Bank of Patialia.
7. State Bank of Saurashtra
8. State Bank of Travancore.
9. Allahabad Bank
10. Andhra Bank
11. Bank of Baroda.
12. Bank of India
13. Bank of Maharashtra
14. Canara Bank
15. Central Bank of India
16. Corporation Bank
17. Dena Bank
18. Indian Bank
19. Indian Oversea Bank
20. Oriental Bank of Commerce
21. Punjab National Bank
22. Punjab and Sid Bank
23. Syndicate Bank
24. Union Bank of India
25. *United Bank of India (Deleted)*
26. UCO Bank
27. Vijaya Bank.

LIST OF STANDARDIED BANKS

SCHEDULED PRIVATE SECTOR BANKS (INDIAN)

1. Vyasa Bank
2. UTI Bank Ltd.
3. SBI Commercial & International Bank Ltd.
4. ICICI Banking Corporation Bank Ltd.
5. HDFC Bank Ltd.
6. IDBI Bank Ltd.

SCHEDULED FOREIGN BANKS

1. American Express Bank Ltd.
2. ANZ Grindlays Bank Plc
3. Bank of American NT & SA
4. Bank of Tokyo Ltd.
5. Banque Nationale de Paris
6. Barclays Bank Plc
7. Citi Bank N.A.
8. Deutsche Bank A.G.
9. Hongkong & Shanghai Banking Corporation.
10. Standard Chartered Bank
11. The Chase Manhattan Bank Ltd.
12. Dresdner Bank AG.

**DETAILS OF WORKS OF SIMILAR NATURE & MAGNITUDE CARRIED OT
DURING THE LAST 5 YEARS**

Sl. No.	Name of work done	Estimated cost	When started	When completed	Date of Completion As per contract.	Remarks
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-
- Note :** 1. In the remarks column, please state whether the works stated above are carried out by you in the name of the Firm in which the present Bid is submitted or any other names, if later, state relationship of the firm and also a copy of the Partnership Deed.
2. Please enclose the true copy of the certificate issued by the authorities, if any.

Signature of Bidder

Name of Work:

Name of Tenderer:

CONCURRENT COMMITMENTS OF THE TENDERER

Full Postal Address of Client & Name of Officer -in-Charge	Description of the work	Value of contract	Date of commencement of work	Scheduled Completion period	Percentage Completion as on date	Expected date of completion	Remarks if any

SIGNATURE OF BIDDER

NAME OF WORK:

NAME OF TENDERER:

DETAILS OF EQUIPMENTS, TOOLS TACKLES

Tenderer shall submit herein details of equipment, tools, tackles, etc required to perform the work and shall note in each case whether the same is (a) already owned by tenderer and available for use on this contract (b) anticipated to be hired by Contractor or (c) anticipated to be purchased by Contractor, in case of (a) anticipated (b) and (c) Location of hirer or supplier shall be stated.

Sl. No.	Description, Make Mode & Capacity	Year of Manufacture	Category (a) or (b) or (c) below	Location	Remarks
(1)	(2)	(3)	(4)	(5)	(6)

- Contractor agrees to augment the above chart with additional number/ categories of equipment, if required to complete the work within the agreed time schedule of completion and directed by the Engineer-in-charge.
- In case of hiring of equipment from other agencies, copies of the arrangements made with the hirer/ supplier shall have to be furnished.

(Signature of Bidder)

**DETAILS OF MINIMUM MANPOWER PROPOSED TO BE
DEPLOYED ON THIS WORK**

Sl. No.	Details of Manpower	No.	Remarks
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Note : Please furnish the above details in two categories – To be deployed by (i) Contractor and (ii) Sub- contractors.

Minimum manpower deployment shall be based broadly as above and will be modified as mutually agreed to suit the detailed construction programme jointly worked out; further if any additional man power is required for completion of work in time, the same shall be provided by you as directed by Engineer without any extra cost.

The manpower proposed to be deployed in the work needs to be given quarter wise separately for direct personnel of the contractor and the manpower proposed to be deployed through the sub-contractors.

(Signature of Bidder)

**ORGANISATION CHART SHOWING NO. OF QUALIFIED
ENGINEERS & SUPERVISORY PERSONNEL ETC.**

Sl. No.	Details of personnel to be deployed on this work	No.
--------------------	-------------------------------------------------------------	------------

Note: Names and short resume of their experiences may also be given for key personnel.

The tentative chart of your site organisation as above furnished by you shall be subject to variation to suit the construction programme/ requirement and as directed by Owner/ Engineer.

(Signature of Bidder)

LIST OF PROPOSED SUB CONTRACTORS

Sl. No.	Name of sub-contractor	Description of work or trade	Amount (Rs.)
------------	---------------------------	---------------------------------	--------------

-
- 1) Types of work executed by the sub-contractors.
 - 2) The particulars of clients where the sub-contractors did the works.
 - 3) Approximate value of the work carried by the sub-contractors in the last 3 years.

(Signature of Bidder)

PPROGRESS BILLINGS

(Bidder's anticipated progress billing month by month to be inserted here)

Tentative construction schedule indicating the expected dates of start of activity is to be given by the contractor. This schedule shall be updated within specified milestones from time to time depending upon the availability of fronts equipment and priorities fixed by Engineer. Contractor shall submit within 15 days of the date of letter of intent programme/ schedule for supply of items covering all phases of work including design, procurement, manufacture, assembly, fabrication, testing, transportation, erection, testing at site and commissioning matching the overall completion schedule.

The billing as well as all the connected documents shall be computerized.

(Signature of Bidder)

NAME OF WORK

NAME OF TENDERER :

INFORMATION ABOUT TENDERERS (FORM – H)

- 1.0. In case of Individual:
 - 1.1. Name of Business:
 - 1.2. Whether his business is registered:
 - 1.3. Date of Commencement of Business:
 - 1.4. Whether he pays Income Tax over Rs. 10,000/- per year:
- 2.0. In case of Partnership:
 - 2.1. Name of Partnership with qualification:
 - 2.2. Whether the Partnership is Registered:
 - 2.3. Date of Establishment of firm:
 - 2.4. If each of the partners of the firm pays Income Tax over Rs. 10,000/- a year and if not, who of them pays the same.
- 3.0. In case of Limited Liability Company or Company Limited by Guarantees:
 - 3.1. Amount of paid of capital:
 - 3.2. Name of Directors:
 - 3.3. Date of Registration of Company:
 - 3.4. Copies of the Balance Sheet of the Company of the last two years:

Copies of audited Profit & Loss Account and the Balance sheet shall be enclosed in case of Individuals, partnerships as well as limited companies for the last 3 years.

(Signature of Bidder)
Name & Address of the Bidder

NAME OF WORK:

NAME OF TENDERER:

LIST OF ENCLOSURES (FORM – I)

The tenderer is required to enclose the following documents as part of his tenderer.

1. Power of attorney of the signatory to the tender.
2. Income Tax/ Sales Tax Clearance Certificate in the proforma prescribed by the Govt. of India.
3. Documents showing annual turnover for similar works for the past two years such as annual report, profit and loss account etc.
4. Solvency Certificate by Nationalized Schedule Bank.

(Signature of Bidder)

** In absence of Income Tax Clearance Certificate tenderer may not be awarded the work tendered for as per Central Govt. Directives.

NAME OF WORK:

NAME OF TENDERER:

EXCEPTION AND DEVIATION (FORM – J)

As pointed out in the NIT/ LIT, tenderer may stipulate here exceptions and deviations to the tender conditions, if considered un-avoidable.

Sl. No.	Page No. of tenderer document	Sl. No. of tender document	Subject	Deviation

(Signature of Bidder)

AMENDMENT TO GCC

Sl No.	Clause No	Brief Description of Clause	Modification
01	2.3 2.3.10	Power Supply	<p>i) Clause No. 2.3 of General Condition of Contract stands modified to the following extend:</p> <p>The cost of construction power appearing in the 10th and 11th line as Rs 1/- per kwh shall be read as Rs.4.30 (Rupees four and thirty paise only) per kwh</p> <p>The state Electricity Inspector appearing in the second line shall be read as 'Central Electricity Authority at Chennai'.</p>
02	2.4	Land for Contractor's Field office, Godown and Workshop	<p>Clause No. 2.4 of General Condition of Contract modified to the following extend:</p> <p>"The owner shall provide land to the Contractor for their offices, godown and workshop "</p>
03	2.5	Land for Residential Accommodation	<p>Clause No. 2.5 of General Condition of Contract modified to the following extend:</p> <p>"The land for residential accommodation for staff and labour may be made available to Contractor outside plant boundary limit."</p>
04	22	Extension of time	<p>The word "any one" appearing in the end of the second para of Clause No. 22.0 shall be read as "OWNER".</p>
05	52.3.6	Return of unutilised materials and scrap/wastage.	<p>i) The words "SAIL, Bhubaneswar stock yard rate" appearing in 3rd line of first para shall be replaced by "Landed cost".</p> <p>ii) The words " Rs.7000/- per tonne" Appearing in last para shall be replaced by " twice the landed cost of materials".</p>
06	53 (xv)	Conditions for issue of materials	<p>The contents of the sub-clause No.53.(xv) shall stand deleted and replaced with the following:</p> <p>"For the free issue materials, the following norms shall be adopted:</p> <p>i. For issue of materials within plant boundary wall limit, the Contractor shall submit only indemnity bond for the entire value of the materials issued to them free of cost as Clause 53 (ix) of GCC.</p> <p>ii. For the materials which are issued to out side plant boundary like township etc., the Contractor shall furnish Bank Guarantee equivalent to 20 % of value of materials and indemnity bond for the 80</p>

Sl No.	Clause No	Brief Description of Clause	Modification
			<p>% value of the materials.</p> <p>iii. For materials taken out side Damanjodi/ Angul to the vendor's Shop, 100 % Bank Guarantee against value of the materials will be submitted by the vendor before taking of the materials. The Indemnity Bond and the Bank Guarantee shall remain valid till the material account is totally settled.</p>
07	60 (c)	Alterations in Specifications and Design and Extra Works	The words "including equipment hire charges at Schedule hourly/ daily rates" appearing in 7 th line shall be replaced by the words " prevalent at site the time of execution".
08	60(d)	Alterations in Specifications and Design and Extra Works	<p>Add new sub-Clause 60 (d) as follows:</p> <p>"The quoted prices/rates indicated in Schedule of Rates shall remain firm for all variations in contract value within range of (+) 50 % and (-) 25 % for the entire duration of the contract. In case the actual contract value varies from the awarded contract value beyond the above mentioned limit than adjustment to contract value shall be made in accordance with procedure specified in proforma for adjustment for increase/ decrease in contract value enclosed as per Annexure to SCC."</p>
09	76.3 (ii)	Completion documents	<p>Clause No. 76(ii) of General Condition of Contract shall be replaced by:</p> <p>"Six sets of construction drawings showing there in execution of the work duly approved by Engineer-in-charge and one set of reproducible on polyester film."</p>
10	80.1	Employees State Insurance Act	Delete the word "whose aggregate remuneration is Rs.560.00 per month or less and" appearing in the 3 rd & 4 th line of the 2 nd para of this sub clause.
11	New Sub clause	-	<p>Add a new clause designated as Sub clause 80.6 after existing Cl no. 80.5,</p> <p>"80.6 – The contractor shall comply with all relevant and applicable statutory provisions in respect of the workers engaged by him at his cost and above stipulation are only indicative are not exhaustive."</p>

Sl No.	Clause No	Brief Description of Clause	Modification
12	83 (viii)	Labour Laws	<p>Clause 83 (viii) of GCC shall be modified to the following extent:</p> <p>Add the words “<i>all relevant statutes at their own costs including</i>” between the words “<i>provisions of</i>” and “<i>the payment of Wages Act 1936</i>” appearing in the first line of this sub-clause.</p> <p>Provided further that-</p> <p>a) The payment of minimum wages to contract labour shall be as per the rates notified by the Central Govt. as per Minimum Wage Act, 1948 and as adopted by the NALCO Management from time to time including any additional element and statutory dues there on</p> <p>b) The minimum wage as notified by the Chief Labour Commissioner (Central) has a variable component as Special Allowance which is linked to average AICPI for Industrial workers, which keeps on changing every six months. The contractor has to absorb all such variations due to increase in Minimum wage in their quoted price, and no claim whatsoever on this account shall be entertained.</p> <p>c) Where the minimum wages notified by the concerned State Government are higher than the rates notified by Central Government, the State Government rates should apply in concerned <i>scheduled employment</i> as long as the same remains higher than the Central Government rates</p> <p>d) The classification of workers in different categories will be as per the notification issued by the Central Government fixing the minimum wages for the above scheduled appointment.</p>
13	New Clause	Jurisdiction/ Governing Law	<p>Add a new clause designated as Sub clause 88 (c) after existing Cl no. 88 (b)</p> <p>All the works that will be carried out inside the factory premises shall attract the provisions of factory act for the contract labourers engaged therein.</p>

Sl No.	Clause No	Brief Description of Clause	Modification
			<p>The Contractor, before commencement of work will arrange medical examination at his cost and shall submit the certificate of fitness in respect of the workers in the prescribed form from the nearby District HQ hospital or any Govt. Hospital for his workers, who will be handling or working with hazardous substance.</p> <p>In respect of contracts having more than one year, the medical check up of such workers shall have to be repeated by the contractor on completion of every one year.</p>
14	79	Taxes & Duties	<p>The rates quoted by the tenderer will cover all the taxes, duties, and levies as applicable on the date of bid/ revised bid (if any).</p> <p>-In case of any imposition of <u>new taxes</u> by Govt notification at a later date, same shall be reimbursed to the contractor against submission of authentic document towards payment of such taxes by them.</p> <p>-In case of revision of rate of Works Contract Tax by Govt notification, same shall be reimbursed to the contractor against submission of documentary evidence towards payment of such extra amount by them.</p>
15	74	Payment of Contractor's Bill	<p>Insert the following after the last para:</p> <p>“However, owner prefers to release the payment due to the contractor electronically. The e-payment facility is available under INTERNET mode through company banker as well as in NEFT/RTGS mode through designated enabled branches. The contractor shall submit duly filled Bank Mandate form in duplicate with due authentication from their banker to avail e-payment facility. The payment of Rs. 1 lakh and above shall be made only through e-mode. The prescribed mandate form is appended as Appendix to GCC. The bid documents submitted without bank mandate is liable for rejection”</p>

(To be submitted in duplicate)

MANDATE FORM FOR ELECTRONIC PAYMENT THROUGH INTERNET & RBI

To
National Aluminium Company Limited,

Dear Sir,

Sub: Authorization for release of payment due from NALCO, _____ through
Electronic fund transfer(RBI-EFT)/Internet / RTGS.

Refer Order No.....dt.....and/or Tender/Enquiry/Letter No.....dt.....

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

1. Name of the Party :
2. Address of the party :
.....
.....
.....
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 ف		Current ف		Cash Credit ف							
Account Number(as appearing in the Cheque Book)												
RTGS / IFSC Code												

4. Date from which the mandate should be effective :

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

Place:

Date:

Signature of the party/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)

N.B. : RBI EFT / RTGS facilities Centre:
New Delhi, Chandigarh, Kanpur, Jaipur, Ahmedabad, Mumbai, Nagpur, Hyderabad, Bangalore, Chennai,
Trivandrum, Kolkata, Bhubaneswar, Guwahati, Patna.

N.B. : RTGS charges if any, is to be borne by the party.

(To be submitted in duplicate)

MANDATE FORM FOR ELECTRONIC PAYMENT THROUGH INTERNET

To
National Aluminium Company Limited,

.

Dear Sir,

Sub: Authorisation for release of payment due from NALCO, _____ through
Electronic fund transfer by Internet Mode .
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 Party :
2. Address of the party :.....
.....
.....
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												
Account Type	Savings ف		Current ف	Cash Credit ف											
Account Number(as appearing in the Cheque Book)															
Please attach Xerox copy of a cheque of your bank for ensuring accuracy of the bank name, branch name and code number .															

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 Internet.

Place:

Date:

Signature of the party/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)

Validate

Print

Help

Item Rate BoQ

Tender Inviting Authority: Mr. Anirban Biswas, Project Manager, (NALCO-CGPP Project)

Name of Work: Dismantling, Modification and Erection of Miscellaneous Mechanical work for the Installation of Steam and Power Plant for 5th Stream Alumina Refinery Expansion at Damanjodi, Odisha

Contract No: NALCO CGPP/2025/MISC.MECH/01

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

1. The work shall be carried out as per specification, relevant IS standard and direction of Engineer- in-charge.
2. All materials (except free issue material) required for work are in bidder scope of supply unless specifically excluded from the Bidder's scope.
3. Rates for all items of work are to be filled in by the Tenderer in figures.
4. The rate quoted by Bidder is in Indian Rupees only.
5. The Unit Rate quoted shall be inclusive of all costs to be incurred by the bidder in connection with the work but exclusive of GST. GST as applicable shall be paid extra.
6. The payment shall be released as per the payment terms of tender document (after effecting requisite statutory deductions) through e-payment.
7. The quoted Rate shall remain firm till completion of the assignment.

NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. P	TOTAL AMOUNT Without GST in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	6	7
1	DISMANTLING Note : Dismantling of erected pipework, valves, pipe supporting structural work including cutting, removing, transporting and storage i.e. stacking as per size/type wise, of the materials at the purchaser/ consultant specified area, i.e. all work required from dismantling upto storage.					
1.01	1.1 114.3 mm OD x 6.02 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends with pipe fittings	90.00	RM		0.00	INR Zero Only
1.02	1.2 168.3 mm OD x 7.11 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends with pipe fittings	50.00	RM		0.00	INR Zero Only
1.03	1.3 219.1 mm OD x 6.3 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends with pipe fittings	165.00	RM		0.00	INR Zero Only

1.04	1.4 273 mm OD x 6.3 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends with Pipe fittings	500.00	RM		0.00	INR Zero Only
1.05	1.5 355.6 mm OD x 5.6 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends with Pipe fittings	90.00	RM		0.00	INR Zero Only
1.06	1.6 457 mm OD x 6.3 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends with pipe fittings	45.00	RM		0.00	INR Zero Only
1.07	1.7 508 mm OD x 6.3 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends with Pipe fittings	60.00	RM		0.00	INR Zero Only
1.08	1.8 60.3 mm OD x 3.91 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends with pipe fittings	80.00	RM		0.00	INR Zero Only
1.09	1.9 88.9 mm OD x 5.49 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends with pipe fittings	80.00	RM		0.00	INR Zero Only
1.10	1.10 DN 100, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
1.11	1.11 DN 200, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
1.12	1.12 DN 250, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	7.00	Each		0.00	INR Zero Only
1.13	1.13 DN 50, Class 800, forged carbon steel gate valve, body to ASTM A105, Trim material to ASTM A182 Gr.F6, bolted bonnet, outside screw and yoke rising stem, SW ends to ANSI B16.11	2.00	Each		0.00	INR Zero Only
1.14	1.14 Gate valve - DN 250	2.00	Each		0.00	INR Zero Only
1.15	1.15 Gate valve - DN 200	2.00	Each		0.00	INR Zero Only
1.16	1.16 Gate valve - DN 150	2.00	Each		0.00	INR Zero Only
1.17	1.17 Gate valve - DN 100	2.00	Each		0.00	INR Zero Only
1.18	1.18 Gate valve - DN 80	2.00	Each		0.00	INR Zero Only
1.19	1.19 Non Return valve - DN 100	4.00	Each		0.00	INR Zero Only
1.20	1.20 Dismantling Steel Structures like angles, Tees, Ducts and channels including all gazete plates, bolts, nuts, cutting revets, welding wetc. Including dismembering and stacking within plant premises as directed by EIC.	25.00	MT		0.00	INR Zero Only
1.21	1.30 Dismantling of existing ventillation duct	400.00	Sqm		0.00	INR Zero Only

2.00	ERECTION Fabrication ,erection of Ms/SCs, pipeline with , tees, crosses, reducers, flanges, elbows, Beveled Ends etc), valves, traps, strainers, compensators, explosion flaps, spring supports, hoses, thermal insulation, GI cladding, all type of flanges etc. Supply of various other fittings like tappings, unions, bosses, nipples, sockets, sockolets, weldolets, couplings/half couplings, etc.; supports like hangers, clamps, turn buckles, springs, U-bolt etc. shall be done.					
2.01	2.1 508 mm OD x 6.3 mm thk.,IS 3589 Gr.FE 410 , ERW Black pipe, Beveled Ends	100.00	RM		0.00	INR Zero Only
2.02	2.2 508 mm OD x 6.35 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends	12.00	Each		0.00	INR Zero Only
2.03	2.3 508 mm OD x 6.35 mm thk., Seamless Carbon Steel B.W 45 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	3.00	Each		0.00	INR Zero Only
2.04	2.4 508 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Equal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9	4.00	Each		0.00	INR Zero Only
2.05	2.5 508 mm OD x 6.35 mm thk / 273 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Unequal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9	2.00	Each		0.00	INR Zero Only
2.06	2.6 508 mm OD x 6.35 mm thk / 355.6 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Concentric reducer to ASTM A234 Gr.WPB dimension to ANSI B16.9	2.00	Each		0.00	INR Zero Only
2.07	2.7 DN 500, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends with bolts, nuts and gaskets.	4.00	Each		0.00	INR Zero Only
2.08	2.8 DN 500, Class 150, Slip on, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends with bolts, nuts and gaskets.	4.00	Each		0.00	INR Zero Only
2.09	2.9 457 mm OD x 6.3 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends	45.00	RM		0.00	INR Zero Only
2.10	2.10 457 mm OD x 6.35 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	5.00	Each		0.00	INR Zero Only
2.11	2.11 457 mm OD x 6.35 mm thk., Seamless Carbon Steel B.W 45 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	3.00	Each		0.00	INR Zero Only

2.12	2.12 457 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Equal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9	2.00	Each		0.00	INR Zero Only
2.13	2.13 457 mm OD x 6.35 mm thk / 273 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Concentric reducer to ASTM A234 Gr.WPB dimension to ANSI B16.9	2.00	Each		0.00	INR Zero Only
2.14	2.14 DN 450, Class 150, Slip on, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 10 with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.15	2.15 DN 450, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 10 with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.16	2.16 355.6 mm OD x 5.6 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends.	100.00	RM		0.00	INR Zero Only
2.17	2.17 355.6 mm OD x 6.35 mm thk / 273 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Unequal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9.	1.00	Each		0.00	INR Zero Only
2.18	2.18 355.6 mm OD x 6.35 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	7.00	Each		0.00	INR Zero Only
2.19	2.19 355.6 mm OD x 6.35 mm thk., Seamless Carbon Steel B.W 45 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	5.00	Each		0.00	INR Zero Only
2.20	2.20 355.6 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Equal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9.	2.00	Each		0.00	INR Zero Only
2.21	2.21 355.6 mm OD x 6.35 mm thk / 168.3 mm OD x 7.11 mm thk., Seamless, Carbon Steel, B.W Unequal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9.	2.00	Each		0.00	INR Zero Only
2.22	2.22 355.6 mm OD x 6.35 mm thk / 273 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Concentric reducer to ASTM A234 Gr.WPB dimension to ANSI B16.9.	2.00	Each		0.00	INR Zero Only
2.23	2.23 DN 350, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 10 with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.24	2.24 DN 350, Class 150, Slip on, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.25	2.25 273 mm OD x 6.3 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends.	300.00	RM		0.00	INR Zero Only

2.26	2.26 273 mm OD x 6.35 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	30.00	Each		0.00	INR Zero Only
2.27	2.27 273 mm OD x 6.35 mm thk., Seamless, Carbon Steel, B.W Equal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9.	4.00	Each		0.00	INR Zero Only
2.28	2.28 DN 250, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	1.00	Each		0.00	INR Zero Only
2.29	2.29 DN 250, Class 150, Weld neck, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends with bolts, nuts and gaskets.	12.00	Each		0.00	INR Zero Only
2.30	2.30 DN 250, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.31	2.31 219.1 mm OD x 6.3 mm thk.,IS 3589 , ERW Black pipe, Beveled Ends.	200.00	RM		0.00	INR Zero Only
2.32	2.32 219.1 mm OD x 6.35 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	40.00	Each		0.00	INR Zero Only
2.33	2.33 DN 200, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	3.00	Each		0.00	INR Zero Only
2.34	2.34 DN 200, Class 150, Weld neck, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 20 with bolts, nuts and gaskets.	5.00	Each		0.00	INR Zero Only
2.35	2.35 DN 200, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 20 with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.36	2.36 168.3 mm OD x 7.11 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends.	45.00	RM		0.00	INR Zero Only
2.37	2.37 168.3 mm OD x 7.11 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	30.00	Each		0.00	INR Zero Only
2.38	2.38 168.3 mm OD x 7.11 mm thk., Seamless, Carbon Steel, B.W Equal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9.	1.00	Each		0.00	INR Zero Only

2.39	2.39 DN 150, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.40	2.40 DN 150, Class 150, Weld neck, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 40 with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.41	2.41 DN 150, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 40 with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.42	2.42 114.3 mm OD x 6.02 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends.	50.00	RM		0.00	INR Zero Only
2.43	2.43 114.3 mm OD x 6.02 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	15.00	Each		0.00	INR Zero Only
2.44	2.44 DN 100, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	3.00	Each		0.00	INR Zero Only
2.45	2.45 DN 100, Non return Valve Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.46	2.46 DN 100, Class 150, Weld neck, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 40 with bolts, nuts and gaskets.	5.00	Each		0.00	INR Zero Only
2.47	2.47 DN 100, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 40 with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.48	2.48 88.9 mm OD x 5.49 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends.	150.00	RM		0.00	INR Zero Only
2.49	2.49 88.9 mm OD x 5.49 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	40.00	Each		0.00	INR Zero Only
2.50	2.50 88.9 mm OD x 5.49 mm thk., Seamless Carbon Steel B.W 45 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	5.00	Each		0.00	INR Zero Only
2.51	2.51 88.9 mm OD x 5.49 mm thk., Seamless, Carbon Steel, B.W Equal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9.	8.00	Each		0.00	INR Zero Only

2.52	2.52 DN 80, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	3.00	Each		0.00	INR Zero Only
2.53	2.53 DN 80, Class 150, Cast Carbon Steel Plug Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	7.00	Each		0.00	INR Zero Only
2.54	2.54 DN 80, Class 150, Cast Carbon Steel Non return Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.55	2.55 DN 80, Class 150, Weld neck, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 40 with bolts, nuts and gaskets.	5.00	Each		0.00	INR Zero Only
2.56	2.56 DN 80, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 40 with bolts, nuts and gaskets.	3.00	Each		0.00	INR Zero Only
2.57	2.57 60.3 mm OD x 3.91 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends.	175.00	RM		0.00	INR Zero Only
2.58	2.58 60.3 mm OD x 3.91 mm thk., Seamless Carbon Steel B.W 90 deg. elbow to ASTM A234 Gr. WPB, dimension to ANSI B 16.9, bevelled ends.	50.00	Each		0.00	INR Zero Only
2.59	2.59 60.3 m m OD x 3.91 mm thk., Seamless, Carbon Steel, B.W Equal Tee to ASTM A234 Gr.WPB dimension to ANSI B16.9.	10.00	Each		0.00	INR Zero Only
2.60	2.60 DN 50, Class 800, forged carbon steel gate valve, body to ASTM A105, Trim material to ASTM A182 Gr.F6, bolted bonnet, outside screw and yoke rising stem, SW ends to ANSI B16.11.	2.00	Each		0.00	INR Zero Only
2.61	2.61 DN 50, Class 150, Blank flanges to B16.5 forged steel to ASTM A105, bevelled ends Sch 40 with bolts, nuts and gaskets.	2.00	Each		0.00	INR Zero Only
2.62	2.62 DN 50, Class 150, Cast Carbon Steel Plug Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	15.00	Each		0.00	INR Zero Only

2.63	2.63 DN 50, Class 150, Cast Carbon Steel Non return Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	10.00	Each		0.00	INR Zero Only
2.64	2.64 DN 50, Class 150, Cast Carbon Steel ball valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.	1.00	Each		0.00	INR Zero Only
2.65	2.65 DN 50, Y-type Strainer, Carbon Steel.	1.00	Each		0.00	INR Zero Only
2.66	2.66 21.3 mm OD x 2.77 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Plain ends.	75.00	RM		0.00	INR Zero Only
2.67	2.67 DN 15 Forged carbon steel 90 deg. elbow, SW, 3000lbs, ASTM 105, ANSI B16.11.	4.00	Each		0.00	INR Zero Only
2.68	2.68 DN 15 Forged carbon steel Tee, SW, 3000lbs, ASTM 105, ANSI B16.11.	1.00	Each		0.00	INR Zero Only
2.69	2.69 DN 25 Half coupling, material confirming to ASTM A 105 class 3000 rating, SWE as per ANSI B 16.11.	5.00	Each		0.00	INR Zero Only
2.70	2.70 Blow down Pumps - Vertical Centrifugal single stage - 9 Cu.m/hr with Electrics and associated instrumentation work.	2.00	Each		0.00	INR Zero Only
2.71	2.71 Drain Oil Pump - Vertical single screw as per API 676 - 10 Cum/hr with electrics and associated instrumentation work.	2.00	Each		0.00	INR Zero Only
2.72	2.72 Oil water mixture transfer pump - Vertical single screw as per API 676 - 2 Cu.m/hr with electrics and associated instrumentation work.	2.00	Each		0.00	INR Zero Only
2.73	2.73 Recovery oil transfer pump - Vertical single screw as per API 676 - 2 Cu.m/hr with electrics and associated instrumentation work.	2.00	Each		0.00	INR Zero Only
2.74	2.74 Drain Oil Tank with Coil Heaters, Flame arrester and associated Instrumentation as per design code IS 10987 - 1992 - 5 Cu.m Capacity.	1.00	Each		0.00	INR Zero Only
2.75	2.75 Supply,Fabrication and Erection of ventillation duct with Material including duct material and necessary accessories with fasteners,asbestos rope ,gaskets etc. as per IS 655.	400.00	Sqm		0.00	INR Zero Only
2.76	2.76 Coating and Wrapping (Protection of Underground pipes , Two Coats of 2mm thk(Total Thickness-4mm) as per IS:10221 along with Supply of materials.	400.00	Sqm		0.00	INR Zero Only

2.77	2.77 Supply, Application/erection of Insulation material for Pipe and Equipment with LRB Mineral wool and Mineral fiber block having 120Kg/Cum. Density. As per IS: 14164, IS: 3677 and IS: 3690.	200.00	Sqm		0.00	INR Zero Only
2.78	2.78 Erection of Cladding Material of GI, 22 SWG along with supply of materials as per IS 737.	200.00	Sqm		0.00	INR Zero Only
2.79	2.79 Fabrication and Erection of Structural Steel works along with supply of materials including loading, transporting, fixing in position at all heights and depths above and below finished ground level welded/bolted structural steel work as specified for all member such as Angles, Channels, Joists, Beams, Plates, Flats, Tubes, Clamps, ties , struts, diaphragms and all othe miscellaneous structural work etc., as specified and as shown in drawings or as directed by Engineer/Consultant.	25.00	MT		0.00	INR Zero Only
Total in Figures					0.00	INR Zero Only
Quoted Rate in Words					INR Zero Only	

**NATIONAL ALUMINIUM COMPANY LTD
DAMANJODI, ODISHA**

18.5 MW CO-GENERATION POWER PLANT

Doc. Type	Technical Specification			
Doc. Title	Technical Specification for Dismantling, Modification and erection for Miscellaneous Mechanical Work			
Doc. No.	TS-28812-COS-000618A		Rev.	0
Zone / Unit / Package	General			



**M. N. DASTUR & COMPANY (P) LTD
CONSULTING ENGINEERS**

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ANNEXURES

ANNEXURE-1: MINIMUM THICKNESS OF INSULATION FOR PIPES

TENDER DRAWINGS

Sl. No.	Drawing No.	Description
1.	28812-3CA-000-UTL-0001-RO	G. A. OF LDO DRAIN OIL TANK
2.	28812-3CA-VBA-UTL-0010-R0	SCHEME FOR DRAIN OIL SYSTEM
3.	28812-3CA-VBA-UTL-0016-R0	CIVIL & STRUCTURAL ASSIGNMENT LAYOUT FOR FUEL OIL SYSTEM
4.	28812-3CA-VBA-UTL-0018-RA	ACW AND OTHER UTILITY PIPING RE-ROUTING DRAWING IN TG BUILDING
5.	28812-3CA-VBA-UTL-0019-R0	OVERALL PLOT PLAN- POWER PLANT AREA
6.	28812-000-000-UTV-0001-RB	MODIFICATION OF VENTILATION DUCT



TECHNICAL SPECIFICATION OF DISMANTLING, MODIFICATION AND ERECTION FOR MISCELLANEOUS MECHANICAL WORK

1.0 INTRODUCTION

National Aluminum Company Limited (NALCO), a Government of India Undertaking and a Navaratna Company owns and operates a large integrated Mines-Alumina- Aluminum Complex in India. It has multi-locational operations as follows:

- a) Mines & Alumina Refinery Damanjodi, Odisha.
- b) Aluminium Smelter Angul ,Odisha.
- c) Captive Power Plant Angul, Odisha.
- d) Port Handling Facilities Visakhapatnam, Andhra Pradesh (for Alumina Export & Caustic Soda Import)

The existing plant at Damanjodi has a co-generation Steam & Power Plant with the following facilities.

- i) 4 Nos. of 200 TPH steam generators
- ii) 1 No. of 250 TPH steam generator
- iii) 4 Nos. of 18.5 MW capacity back pressure steam turbogenerators
- iv) 1 No. of 19.5 MW capacity back pressure steam turbogenerator

1.2 At present, it is planned to add one number Pulverized coal (PC) fired Steam generator of 300 TPH capacity and one number Condensing cum Extraction TG of 18.5 MW capacity (Unit-6).

1.3 Since it is a brown field plant, some of the existing facilities which are acting as hindrance to the above proposed Power plant (Unit-6) have to be dismantled/re-routed.

1.4 This specification covers dismantling & shifting of existing building, equipment and miscellaneous item including supply, erection, testing and commissioning of Electrical and Civil & Structural works for Unit-6 as specified.



1.5 All items of equipment shall be complete in all respects and any equipment not covered in this specification but essential for proper installation, operation and maintenance shall be included in the offer and the reasons for such inclusion shall be clearly stated.

1.6 The design, manufacture and installation of miscellaneous works shall be strictly in accordance with Central Electricity Authority (CEA). The specification shall be studied thoroughly regarding the workability of the plant and equipment and the Tenderer shall take full responsibility for the guaranteed operation of the equipment as regards to output, performance, reliable and safe working of facilities indicated in the specification.

2.0 GENERAL

2.1 This specification covers the requirement of miscellaneous equipment and piping erection and shall be read in conjunction with other documents forming the Contract.

2.1.1 Most of the equipment may be supplied in small sub-assemblies and components which shall be assembled by the Contractor before erection. Also, various components of equipment supplied by different suppliers are to be assembled at site by the Contractor before erection. However, the employer shall try to get the supplied items in assembled condition to the maximum extent possible so as to minimize the erection time and to have the better quality. In case of some certain equipment components which are really required to be assembled at site, the Contractor shall carry out the required assembly work in presence and guidance of the equipment supplier/Employer.

2.2 The Contractor shall select and adopt methods and procedures for equipment erection to suit the of equipment and erection work involved according to the best modern practice. The Contractor shall be solely responsible to provide competent and adequate supervision, to ensure that assembly and erection work are in compliance with the Equipment Supplier's drawings and/or instructions. However assembly and erection work shall be carried out with the guidance and supervision of equipment supplier representative/Employer/Consultant. The Contractor shall not make any alteration to equipment to facilitate assembly or erection work, without prior agreement of the Equipment Supplier and final approval of the Employer/Consultant. Equipment Supplier's drawings and documents may be examined by the Contractor in the office of the Employer at NALCO before submission of the tender.



2.3 All assembly and erection procedures adopted by the Contractor shall be open for inspection and approval of the Employer. Acceptance of assembly or erection procedures shall not in any way relieve the Contractor of his responsibility for proper erection of the equipment.

2.3.1 The Contractor shall closely co-ordinate and co-operate with other contractors engaged by the Employer and working at site simultaneously during erection, testing, start-up and commissioning. However, the employer shall co-ordinate with the various agencies and also provide the necessary shut-down / work clearance / permits etc. required for smooth execution of the job.

General Guidelines for the Contractors

- i) Contractor needs to submit the job procedure activity wise for approval to Employer/Consultant prior to communication again.
- ii) Contractor to take the approval of ITP/QAP.
- iii) Contractor shall provide Quality control supervisor for all discipline.
- iv) Contractor shall be responsible for the quality of all supplied material and purchased items.
- v) Contractor shall provide MTC (Material Test Certificate) for all the supplied material.
- vi) Approval of WPS/PQR shall be done by Contractor.
- vii) Contractor must have sufficient safety officers at site to manage the safety.
- viii) Contractor shall have sufficient certified scaffolding inspectors.
- ix) Protocol for handing and taking over shall be maintained by Contractor.
- x) Before erection Contractor needs to submit the JSA (Job Safety Analysis), Rigging and lifting plan for approval.
- xi) Contractor shall provide level-1 rigger for the lifting activities
- xii) Gas cutting shall not be allowed for any hole making.



- xiii) Erection sequence to be prepared by Contractor and submitted to Employer/Consultant for their review.
- xiv) No erection shall be carried out in unsafe manner/high wind.
- xv) IMIR shall be maintained by Contractor.

2.4 Scope of Work

The successful tenderer shall prepare a final bill of materials based on the working drawings issued to him and submit the same for approval of consultant. Based on the approved bill of materials he shall supply/fabricate/erect the components required to complete the Miscellaneous works. The Brief scope of work shall be as follows:

- 2.4.1 Dismantling and re-routing of existing Auxiliary cooling water supply/return lines, utility lines and firefighting lines.
- 2.4.2 Inter connection of existing oily water piping network to the proposed oil water separator with necessary pumps (both upstream and downstream).
- 2.4.3 Dismantling of existing Oil water sump near existing Fuel oil Pump House.
- 2.4.4 Re-routing of existing LDO and HFO lines in the tank farm area. Closing/dismantling of existing trenches and pits inside the tank farm area.
- 2.4.5 Dismantling of existing staircase, Platform, walkway, side sheeting.
- 2.4.6 Dismantling of Staircase at north of A-30 road.
- 2.4.7 Breaking of gable end wall in TG Building.
- 2.4.8 Re-routing of existing ventilation duct near grid no. 32.
- 2.4.9 Shifting of Pipe rack bracing from 4.5 m to 6.5 m.
- 2.4.10 Re-routing of firefighting lines on the existing pipe rack from 2.5 m level to 6.5 m level.
- 2.4.11 Dismantling of B' column in the existing TG-5 and re-designing the roof trusses.
- 2.4.12 Dismantling/demolishing the Operator room in B-C bay near Column no. 26-27.



2.4.13 Making floor openings (RCC floor) of required sizes at various locations for Pipe entry in the existing TG Building (Unit-5).

2.4.14 Installation of Blowdown pumps, Drain Oil Pump, Oil water mixture transfer pump, Recovery oil transfer pump etc.

2.4.15 The scope of work of the Contractor shall include complete erection services covering unloading, receiving of materials, storage (location to be finalized in consultation with the employer / engineer), transportation to site and subsequent handling at site, preservation (in the Contractor's stores), erection /installation, rendering assistance in testing, start-up, commissioning and performance tests of all mechanical, fluid systems (hydraulic, lubrication and cooling water etc.), media distribution systems (utility & water) including insulation if required as per Equipment Supplier's drawings and specification, interconnecting piping between equipment and TOP, electrical, instrumentation and level-1 automation, utility, water system, technological & miscellaneous structures, Pipe & Pipe fittings, ducts etc. supplied by Equipment Suppliers & Employer and also the items to be supplied by the Contractor based on Equipment Supplier's drawings, specifications & bill of materials along with operation exchange parts and special tools such as special torque wrench and any other instrument that may be required for checking of the critical assembly of the machine parts etc. to be supplied by Equipment Suppliers (Items like optical measurement devices like theodolites, leveling devices with micrometers, torque spanners, micrometers adjustable up to 3m do not qualify for special tools and shall be treated as normal tools to be supplied by the successful erection Contractor) including cabling, termination, earthing under Expansion Project of NALCO supplied by the Equipment Supplier as well as those that may be procured from/fabricated by agencies, if any, based on the Equipment Supplier's drawings, specification and bill of materials in accordance with the Contract. The Contractor shall also supply the items required for the installation of shop water pipe work. The Contractor shall obtain instructions for satisfactory erection, start- up and commissioning from the Equipment Supplier under the supervision of the Employer/ Consultant.

2.4.16 The Contractor shall provide all skilled, semi-skilled and unskilled labour including certified level-1 riggers, certified welders, pipe fabricator, pipe fitters, instrument tube fitters, licensed electricians, mechanics etc., supervisory staff including safety officer, erection tools and tackles, materials, all hoisting, transporting, erection and testing equipment and instrument and all other related equipment required for the complete erection and assistance in commissioning of all equipment with auxiliaries and accessories. The Contractor shall supply all the consumables like DA, Oxygen, LPG, Argon, CO₂, Flux and Wires, Mild Steel electrodes, LH and Special electrodes, Alloy steel and SS electrodes, M.S and S.S filler wires etc. However, the Employer shall provide all the



steel materials, steel required for enabling work as a free issue returnable (Scrap/used) basis. Also, initial fill of lubricants & subsequent fill and all other consumables including media flushing oil as required for commissioning of the plant will be supplied by the Employer. All nuts, bolts, other fasteners, packing, gaskets etc. which are permanent in nature will be supplied by the Employer. All other bolts, nuts, washers etc. required for erection purposes are to be supplied by the Contractor. The work shall include but not be limited to the following:

- i) Taking delivery of the equipment including pipes, hoists, valves, motors, fabricated structural steel materials etc. from locations as stipulated in the General Conditions of Contract including obtaining all necessary permission from concerned local Government authorities as may be required and/or from the Employer's stores and/or yard and transport of the packages/equipment etc. to the site of erection. However the employer shall provide necessary statutory authority clearance as and when required. e.g. excise clearance. Store management shall be in scope of Contractor.
- ii) Opening of crates and packing cases, thorough cleaning and checking of completeness of equipment etc. in the presence of Employer in relation to Equipment Supplier's drawings, packing lists etc. All wooden scrap shall be disposed by contractor on specified location of employer. The Contractor shall also visually inspect the equipment etc. for any visible damage or defect jointly with the Employer/Engineer's representative to find out the completeness of the supply and also for missing parts, damaged items etc. Damages or missing items if any shall be immediately brought to the notice of the Employer/Consultant by the Contractor in writing and minor repairs (Manpower assistance only by the Contractor) undertaken as instructed. The Contractor shall furnish to the Employer certificates of acceptance for all the equipment etc. after taking delivery and satisfactory checking as aforesaid. All documents such as manuals, packing lists etc. obtained after the opening of packing cases and crates shall be handed over to the Employer by the Contractor. Any document found from packing case of equipment shall be handover to NALCO.
- iii) Providing storage and safe custody of the equipment, materials etc. till such time these are erected, commissioned and handed over to the Employer. Any damage and/or loss to the equipment etc. during the period shall be made good by the Contractor at his own cost.



- iv) Complete assembly and erection of all mechanical equipment, pipe work and appurtenances, structural steelwork etc. including supply as may be required, for cutting, shaping, joining etc. and erection of chutes, troughs, storage tanks, ductwork, insulation work and miscellaneous structural steelwork, including aligning, lining, leveling, coupling and grouting of anchor bolts and base plates, curing, welding of sub-assemblies and supports to make the equipment ready for commissioning. All the machined pack plates, machined taper wedges, machined sole plates etc. for the installation of the equipment shall be under the scope of Contractor. The steel for M.S. packing plates which is needed to be sheared and machined shall be supplied by the Contractor. Fabrication of shims and packing plates for leveling/ alignment of equipment by gas cutting followed by grinding are not acceptable. Grouting of the equipment including the supply of all grouting materials inclusive of non-shrink grouting shall be done by Contractor as per Equipment Supplier's specification. Also, Shims in sizes 0.05mm, 0.10mm, 0.20mm, 0.50mm, 1.0mm, 2.0mm, 5.0mm, 10.00mm, 20.00mm and 50.0mm as required shall be supplied by the Contractor. Shims shall be aligned in such a way that no point loads exist, thus eliminating problems on this account. Efforts shall be made to use a less number of shims as possible e.g. if the gap between machine and foundation comes to 80mm, this should be filled using a 50mm shim followed by a 20 (25) mm shim and a 10 (5)mm. For any rotating equipment erection/ installation and alignment, skilled millwright fitters shall be provided by contractor.
- v) Prior to and/or subsequent to erection, 'revisioning' of equipment (Manpower assistance only) shall also be carried out by the Contractor wherever required as per the instructions given in the Equipment Supplier's drawings and documents / Engineer's instructions.
- vi) Manpower assistance shall be provided by the Contractor for minor rectification work to equipment and structural steelwork for proper assembly and fitting like machining, grinding, chipping, welding, cutting, drilling, tapping etc.
- vii) Any modification of foundation base plate or foundation holes wherever required to match the motors or other mounted devices with the mechanical equipment shall be done as directed by the Employer. Manpower assistance shall be provided by the Contractor.



- viii) Required drilling/cutting holes (New pocket excluded) /pocket in concrete for fixing of anchor fasteners/hilty bolts/wedge bolt (the bolts will be supplied by the Employer and fixed by the Contractor as per Engineer's instructions).
- ix) Painting of all structural steelwork items fabricated by the Contractor as per general painting specification including supply of painting material. Also, touch-up painting including the supply of paint for the items, subjected to paint damage during handling shall be in the scope of the Contractor and the colour code and specification of the paint shall be indicated by the Employer before the application. Buffing to be done for the damaged paint area up to the parent metal surface and one coat of primer and two coats of finish paint shall be applied matching with the existing paint of the member at the affected area. Final paint DFT shall be checked after completion of the touch up paint.
- x) Lubricating and greasing in accordance with the Equipment Supplier's instructions/drawings, consumables such as lubrication oil, grease and hydraulic oil required for this as well as for revisioning of the equipment will be supplied by the Employer free of cost.
- xi) General clean up prior to preparing the equipment for trial run and start-up.
- xii) Rendering assistance to the Engineer/Equipment Supplier and under Equipment Supplier's instructions, testing of equipment, pipe work, ductwork, etc. trial runs as well as start up and commissioning of the equipment and carrying out of rectification work in equipment erection, if necessary as required by the Equipment Supplier/Engineer. Consumables such as water and, power required for trial runs and commissioning will be supplied free of cost by the Employer.
- xiii) Any other work connected with erection and commissioning of the equipment that is customarily rendered by the Contractor to complete the work.

2.5 Drawings and Instructions

2.5.1 Subject to Contractor's signing secrecy documents, whenever required, the Contractor shall be furnished with Two (2) set of Equipment Supplier's drawings and instructions and One (1) copy of Erection Manual as may be available to the Employer for study, guidance and compliance in completing the installation of all equipment etc. to the



satisfaction of the Equipment supplier/Engineer. The Contractor shall return to the Employer aforesaid drawings and instructions after the erection work is completed.

2.5.2 The equipment supplier and/or Engineer will assist by their advice and guidance in correctly interpreting the drawings and in proper execution of the work. This shall not relieve the Contractor of his sole responsibility to provide competent and adequate supervision to ensure strict compliance with the instructions and drawings.

2.6 Responsibility for Equipment

After the Contractor has accepted the equipment etc. as being in proper condition, he shall be solely responsible for their safety and protection from loss and/or damage of any nature until the equipment etc. are finally handed over to the Employer after the completion of work and materials supplied by the Employer are accounted for by the Contractor including return of surplus and scrap materials and accepted by the Employer.

2.6.1 Identification and records of the equipment etc. received and installed shall be maintained by the Contractor and records presented to the Employer/Engineer every fortnight to his satisfaction.

2.7 Strutting, Shoring and Bracing

2.7.1 Throughout the performance of the work, the Contractor shall keep equipment, structures and materials adequately braced by guys, struts or other approved means which shall be supplied and installed by the Contractor as required till the erection work is satisfactorily completed. Such guys, shoring, bracing, strutting, planking, supports etc. shall not interfere with the work of other agencies and shall not damage or cause distortion to other works executed by other agencies. Prior permission shall be obtained by the Contractor from NALCO Engineer before welding any temporary supporting members to the permanent structures of the building.

2.8 Method of Work

2.8.1 The Contractor shall adopt methods and procedures of work to suit the nature of the work involved and according to his own experience in such work. The contractor shall inform the Employer/Engineer for critical nature of work only. And shall also inform the engineer for review in writing.

2.9 Programme of Work

2.9.1 The Contractor shall schedule his work to meet the targets as may be specified by the Consultant from time to time and ensure that drawings, materials, equipment and services required from



others are required well in advance of the requirement at site to meet the demand of the Construction Schedule. In this connection the employer shall furnish the overall project completion schedule indicating area wise Civil and Structural handing over date and item wise Supply schedule date for the preparation for the construction schedule by the contractor. Delays which may affect the progress of the Work shall be brought immediately to the notice of the Employer/Consultant in writing. None of the contractor's worker shall work more than 12 hours and week off shall be provided to all the workers as per labor law. In case any delay towards Civil / Structural clearance, material supply etc. which is not attributable to the contractor, construction Programme may be suitably extended. However, the Contractor shall reschedule the work and/or perform overtime work at his own cost with the approval of the Employer as may be necessary to meet the required construction programme.

2.9.2 Contractor shall arrange all PPEs including safety helmets, gloves, safety shoes, welding helmet, goggles, safety belts, aprons etc. to the workmen as per the site requirement. In case of non compliance, action as stipulated by Employer in the relevant Safety codes shall be taken.

3.0 STORAGE AND HANDLING

3.1 Scope

3.1.1 The Contractor shall take delivery of all equipment, pipework, structures, materials etc. from locations indicated in the General Conditions of Contract and transport the same to his own store and/or the site for installation. The transportation will include all handlings. The Equipment / items that need to be stored in Air-conditioned environment shall be preserved and kept inside Employers premises.

3.2 General Handling

3.2.1 The Employer at his discretion may hand over the equipment, structures and materials to the Contractor either from his stores/yards or directly from the carriers.

3.2.2 The Contractor shall provide proper handling and transport equipment namely mobile cranes (crawler & tire mounted) of adequate capacity having telescopic long boom, hoists, winches, derricks, slings, pulley blocks etc. All equipment and rigging shall be examined and checked by him at frequent intervals to prevent accidental failure and consequent damage to the equipment, structures and materials to be installed. All handling and transport equipment shall be provided by contractor with certificate of competent authority. For the laboratory equipment and other instruments which are highly sophisticated and delicate in nature, extra precautions shall be taken while handling to



prevent accidental failure during loading and unloading operations. Special care shall be taken during transportation of these to avoid damage to the equipment due to vibration. Certificate of competent authority should be obtained regarding fitness of all lifting tools and tackles etc.

3.2.3 All auxiliary and loose parts shall be systematically classified for ready identification and location when needed. As far as possible materials shall be stored in the order required for installation.

3.2.4 The Contractor shall maintain at site a computerized list of equipment to be erected, which shall be updated daily. PPR/WPR/MPR shall be submitted by contractor to Employer/Consultant regularly. All receipts and issues of equipment etc. shall be entered in this list as and when each consignment is received and again as and when issues are made for erection or any other purpose. This list shall be open for inspection for only authorized persons of Employer at all times. The Contractor shall be accountable for equipment in his custody till all left-over materials are handed over to the Employer after completion of the Works.

3.3 Checking on Receipt

3.3.1 Upon receipt of equipment etc. the Contractor shall unpack the cases and carefully check and visually inspect in the presence of the Employer all equipment etc. for completeness in relation to Equipment Supplier's drawings, packing lists etc. and for any damage and report in writing any shortage or damage to the Employer immediately. The Contractor shall furnish to the Employer certificate of acceptance for all equipment etc. after taking delivery and satisfactory checking for completeness and damage as aforesaid.

3.3.2 All protective greases and wrappings furnished or applied or machined surfaces or other parts to protect them during storage shall also be inspected. Any shortfall in this shall be made by the Contractor, which shall be supplied by the Employer free of cost. Reciprocating and/or rotating equipment received completely assembled shall be lubricated and turned manually as often as according to the Equipment Supplier's instructions to prevent seizing and localized pitting.

3.3.3 All empty crates, packing cases and packaging materials and all documents such as manuals, packing lists etc. obtained after opening of packing cases and crates shall be returned to the Employer by the Contractor at the place indicated by the Employer within the Employers premises.

3.4 Storing of Equipment

The equipment shall be stored in closed or semi-closed type stores according to the protection needed for different types of equipment



and parts. Microprocessor based instruments, analytical balance etc. need temperature and humidity controlled storage. All special equipment needing air-conditioned storage shall not be stored in non-air-conditioned area or removed from air-conditioned storage area without prior approval of the Employer/Consultant.

3.4.1 **Insulation materials**

All insulation materials shall be carefully handled to prevent damage and shall be protected from moisture. High, medium, low temperature insulation materials shall be stacked in suitably identifiable units. All insulation materials shall be supplied by the Erection Contractor.

3.4.2 **Pipes**

All pipes shall be carefully unloaded and shall not be dragged or lifted from their ends. Ends of all pipes and the openings of all flanges and nozzles attached to drums, tanks or equipment while in storage shall be greased, capped, plugged or blank flanged. The covering shall be done in a manner to prevent corrosion. Pipes of different diameters and materials shall be stacked separately and suitably identified. The identification marks provided by the Equipment Supplier shall be checked any disfigured or obliterated marks renewed as directed by the Employer.

3.4.3 **Valves fittings**

The Contractor shall check that valves, fittings are not subject to corrosion from hydrostatic test liquid remaining saturated in the packing. Any such condition when detected shall be immediately brought to the notice of the Employer/Consultant and remedial measures taken as directed. Ends of all valves, fittings shall be greased and kept plugged or capped suitably. Different sizes and categories of materials shall be stacked separately with identification tags. Tag numbers shall be checked and where found missing shall be renewed as directed by the Engineer.

Packing rings, gaskets, flanges, bolts and nuts etc. shall be suitably stacked and missing tag marks renewed as directed by the Engineer. Metallic gaskets shall be examined for pitting or corrosion marks which if noticed shall be brought to the Engineer's attention immediately and necessary remedial measures taken as advised. Protective greases shall be applied to metallic gaskets, flanges, bolts and nuts and other equipment as necessary to protect them from corrosion.

3.4.4 **Structural fabricated materials**

All structural fabricated members shall be stacked in the sequence in which they are required for erection. All members shall be stacked free from ground to prevent corrosion and shall be so stacked as not to cause deformation in any individual member.



3.4.5 **Laboratory equipment, electrical, instruments and controls**

Laboratory equipment, control instrument panels, switchgears, motors, instruments, control devices, other electrical equipment and accessories shall be stored in a cool dry covered place as indicated under serial number 2.4 above. Particular care shall be taken to prevent ingress of foreign matter, moisture or rodents, in such equipment. Glass covers shall be protected by pasting paper or tape during handling and installation which shall be removed only when the equipment is being prepared for operation. Cables shall be protected during storage from mechanical damage and from absorption of moisture at unprotected ends. All non-ferrous materials such as condenser tubes, valves, instruments, piping and fittings shall be carefully stored and guarded to protect them from damage or loss/theft.

3.4.6 **Welding rods**

Welding rods shall be supplied by the Contractor and stored in a hot dry place during storage, welding rods for different alloy materials and categories of work shall be stored separately and identified for proper use. Contractor is to keep the holding and backing oven in their store and site separately. Holding and backing register has to maintain in record as per manufacturer recommendations. All, consumables available in store shall be properly colour coated to avoid the mixed up.

3.5 **Protection against Weather and Fire Hazards**

The Contractor shall provide at his own cost any required sleepers or concrete or wooden blocks for dunnage and tarpaulins for protecting the equipment etc. against inclement weather during installation. The use of tarpaulins and/or wood in the working areas particularly where welding is in progress, shall be avoided to guard precautions and safety measures for protection of plant and equipment against fire hazards. Welding booth made of fire blanket shall be provided in hazardous area like near cables, Oxygen pipeline, fuel media pipeline along-with fire watchman and necessary fire extinguishers and pressurized fire water hoses.

A. DISMANTLING WORK

1.1 Working Condition

The dismantling operations required to be carried out in an operating plant shall be done without any hindrance to the plant operation activities.

All dismantling work shall be carried out in a phased manner as approved by the Engineer/Consultant.



1.2 Safety

On all demolition works, safety signals like danger boards, red lights, safety net etc. as needed and/or as directed shall be conspicuously exhibited and the area of demolition shall be kept barricaded or kept manned to prevent trespassing by unauthorised persons.

Personal safety equipment as mentioned hereunder shall be made available for the use of persons employed on the demolition work and maintained in good condition.

- i) Safety helmets and shoes to workmen entering into dismantling site.
- ii) Goggles preferably made of celluloid lens to workmen employed on demolition of walls, floors, etc to protect the eyes from flying pieces, dirt, dust etc,
- iii) Gloves to workmen engaged on demolishing RCC work, removing steelwork etc.
- iv) Safety belts, fall arrestor to workmen working at height.

1.3 Scope of Dismantling/Relocation Work

On being given the clearance for dismantling of building/structure/equipment, the Contractor shall take over the area for dismantling and shall shut-off required utility lines and disconnect power lines etc. The Contractor shall then check up all the closed valves of the utility lines like gas lines, oil lines, compressed air line, water line, steam line etc. work is undertaken.

Similarly, all the power cables, bus bars, control cables, instrument cables, earthing etc. shall be disconnected from the supply sources at suitable locations as approved by the Engineer/Consultant.

The Tenderer shall carry out all necessary activities for dismantling/demolition of certain existing facilities which includes preparatory work, removal of the existing installation, demolish the concrete wherever necessary, clear & removal of all the debris, etc. in a segregated way and transfer the same within 3 km from the work place in place/places designated by TSJ and leave the site in a clear workable and safe condition.

In the course of execution of work, proper care shall be taken such that no damage is caused to the existing facilities/structures inside or outside the battery limit. If at all any such damage occurs, it will be restored to its original condition without any additional charges to the Employer.



For the erection of new equipment if any unit/system are required to be dismantled from their existing position, Tenderer shall carry out the erection of the same at its original location. Any preparatory work required for dismantling including temporary support shall be considered as included in the scope of work of the successful Tenderer

The Tenderer, where necessary, shall dismantle equipment and revision the parts if required before placement on foundation. All gear drives and pinion stands shall be dismantled if required, the gear casing shall be leveled and aligned and the gear elements assembled with casing and box up with lubrication pipes etc. and grouted. The revisioning work shall be carried out as per instruction of equipment supplier.

The Tenderer shall clean thoroughly all the parts to be assembled including the machined base with a solvent, lubricate and reassemble. Any dents still seen shall be smoothed out and cleaned. The equipment shall be placed over the base plate taking care of the foundation bolts. All doweling wherever necessary, shall be done by the Tenderer. Site assembly envisages certain amount of drilling and reaming of Dowel holes of various sizes. The Tenderer shall arrange to carry out the job including supply of drills and reamers. The equipment shall be then aligned with reference to the axes and leveled with the help of shims or any other suitable devices. The Tenderer shall align all the equipment to the accuracy as indicated in the drawing. The lines, levels, alignments and expansion movements shall be carefully re-checked by the Tenderer jointly with the Employer during erection.

Modification and Relocation work, as required for installation of new equipment and facilities shall be under the scope of erection service of successful Tenderer. Modification/rectification of existing structure during erection /assembly/trials shall be carried out by the Tenderer, as required at site by welding, grinding, drilling and tapping of new holes etc. as a part of erection work.

The Tenderer shall make permanent datum marks on the floors/permanent structures after installation of all equipment. These marks shall be subject to inspection and approval by the Employer and are intended to ensure proper alignment and leveling of equipment during reassembly after maintenance/overhaul etc.

B. WELDING

1.1 General

The welding and the welded work shall conform to IS: 816-1969 and IS: 9595-1996, unless otherwise specified. The layout and sequence of the operation shall be so arranged as to minimize defects, distortion and shrinkage stresses to acceptable levels.



1.1.1 The Contractor shall arrange at his own cost for all tests outlined in the specification and other tests indicated by the Equipment Supplier/Employer except the plates/pipes/imported plates/ alloy steel, including consumables to be provided by the employer from time to time during the progress of work.

1.2 Plant and Equipment

1.2.1 The Contractor shall provide all tools, plant, instruments and consumables and PPEs for carrying out the welding work at site.

1.2.2 The equipment shall be of sufficient capacity and type to suit the welding procedure laid down and be capable of depositing the particular type or types of weld metal to be used under the conditions of current, voltage and polarity specified by consumable manufacturers. Efficient means shall be provided for accurate indication of the current and in addition, a pair of tong testers shall be supplied by the Contractor for checking the voltage and amperage. No oil cooled welding transformers shall be used.

1.2.3 All the equipment, accessories and connections like earthing etc. shall be maintained by the Contractor properly in order to ensure proper quality of the welding.

1.3 Preparation of Joints

1.3.1 The edges shall be prepared by manual/automatic flame cutting torch, correctly to the shape, size and dimensions of the groove. In case of 'U' groove joint, the edges shall be prepared with an automatic flame cutting torch in two phases following a bevel cut with a gouging pass or by machining.

1.3.2 The welding surfaces shall be smooth, uniform and free from fins, tears, notches or any other defects which may adversely affect welding and shall be free from loose scale, slag, rust, grease, paint, moisture or any other foreign material. The clean surfaces shall extend about 50 mm beyond the welding faces to avoid contamination of the weld metal with foreign material and to avoid unsound weld deposit.

1.4 Assembly for Welding and Tolerances

Parts to be welded shall be properly assembled and held firmly in position by means of jigs clamps etc. prior to and during welding. Tolerances for assembly of welded joints shall be as per IS: 9595-1996/AWS D1.1-2008 or equivalent. For submerged arc welding, gap between faying surfaces shall be avoided to avoid burn-through.



1.5 Welding Electrode/Wire Flux Combinations

1.5.1 Covered electrodes for manual metal arc welding of carbon and carbon manganese steels shall be of approved maker and as per IS: 814-2004 or equivalent AWS/BS specification. Submerged arc wire and fluxes shall be of approved make and as per IS: 3613-1974 (Acceptance tests for flux combination for submerged arc welding), IS: 7280-1974 (Bare wire electrodes for submerged arc welding of structural steels, AWS B5.17-2008 Specification for the qualification of welding fabricators) or equivalent.

1.5.2 In the selection of electrodes/wire-flux combinations, the Contractor shall ensure the following requirements:

- i) Compatibility of strength/mechanical property between the weld deposit and the parent metal.
- ii) Minimizing defects in weld deposit and the heat affected zones.
- iii) Compatibility of corrosion resistance properties between the weld deposit and the parent metal.

1.5.3 All electrodes/wire flux combinations shall be stored under dry condition and used as per instructions of the manufacturer of such consumables. Baking of electrodes and fluxes shall be carried out prior to use as per manufacturer's instructions. Any electrode which has part of its flux coating broken away or is otherwise damaged shall be rejected. Electrode shall be used only before the date of expiry as specified by the manufacturer.

1.5.4 If the Contractor proposes to use a consumable which is not already approved by the Employer/Consultant, then the Contractor prior to its use and at his own cost shall carry out all weld metal test for such consumable as per IS: 814-2004/3613-2004 in the presence of the Consultant to establish claims of properties made by such consumable manufacturer and to obtain Employer/Consultant's approval of such consumable.

1.6 Qualification and Testing of Welders

The Contractor shall satisfy the Engineer that the welders appointed by the Contractor are suitable for the work for which they are responsible and shall produce evidence to the effect that welders have satisfactorily completed appropriate tests as described in IS: 817-1966/IS:7310 (Part-I)-1974. Necessary welder qualification test to be carried out at site and only qualified welders with proper ID Cards will be allowed to weld. The Engineer/Employer may at his own discretion order periodic tests of the welders and/or of the welds produced by them. Such tests shall be carried out at the expense of the Contractor. Contractor shall



ensure that the welders carry with them their respective certificates with photographs according to their respective ability.

1.7 Welding Procedure

1.7.1 Welding procedure shall be prepared by the Contractor in line with IS:7307 (Part-I)-1974 and tests shall be carried out as per procedure. WPS and PQR shall be prepared and inspection will be done as per approved QAP. Once welding procedure is approved, it shall be strictly followed and no variation shall be permitted without the Employer's approval. Welding procedure shall cover the following:

- i) Type and size of electrode/wire flux combination;
- ii) Arc current and for submerged arc welding arc voltage;
- iii) Speed for deposition and length of run per electrode or for submerged arc welding speed of travel;
- iv) Number and arrangement of runs in multirun welds;
- v) Position of welding for manual metal arc welding;
- vi) Preparation and set up of parts;
- vii) Welding sequence and disposition of runs;
- viii) Any other relevant information.

1.7.2 The welding procedure shall be such that it simulates the actual welding conditions to the maximum extent and meets the quality requirement of joint as specified.

1.7.3 The Contractor shall record the approved welding procedure and shall ensure compliance of the same by each welder. Each welder shall be provided by the Contractor with all details of welding procedure. The approved procedure shall be re-checked and updated by the Contractor as when directed by the Engineer.

1.8 On Job Welding

1.8.1 The sequence of welding shall be so planned and followed that there shall be a balance of welding about the neutral axis of the fabrication. The Contractor shall employ sufficient number of welders working at the same time in the diagonal quadrants of a large job using back step method. The rate of progress of each welder shall be more or less equal and of uniform quality.



1.8.2 The general direction of welding shall be towards the free end of the joint, but in a long joint back-step technique shall be used to reduce distortion.

1.8.3 For shell welding, the vertical joints shall be first welded to a circular course and the completed circular course shall be aligned and adjusted for correct axes prior to welding of the horizontal circumferential seam to minimize initial locked-up stresses. Alternatively, the Contractor shall complete each course in all respects on ground and then the pre-assembled course shall be lifted and placed in position. In such a sequence and planning the same principle of balancing of weld about the neutral axis shall be followed and the method of fabrication of each course shall be similar to fabrication of penstock pipes or transmission/industrial pipeline of bigger diameter.

1.8.4 **Jigs and manipulators**

Jigs and manipulators shall be used where practicable and shall be designed to facilitate welding and to ensure that all welds are easily accessible to the operators. Employer will provide the required materials and consumables only.

1.8.5 **Ends of butt welded joints**

The ends of butt joints shall be so welded as to provide full throat thickness. This may be done by the use of extension piece, cross-runs or other approved means. Full penetration welding and weld soundness to be maintained.

1.8.6 **Weld face and reinforcement of butt welds**

The welded face shall be deposited proud of the surface of the present metal. Where a flush surface is required the surplus metal shall be dressed off. Reinforcement on both surfaces in butt welded splices shall be ground flush with the parent plate by grinding operation in the direction of stress. Reinforcement of butt weld joints shall be minimum and not more than 1.6 mm to maintain the heat input on weld.

1.8.7 **Testing of butt welds**

All butt welded joints are to be radiographically tested by the Contractor, unless otherwise directed by the Employer. TS / GS clauses will be valid for the above tests. Percentage of Radiographic Test will be determined depending upon the media and working pressure of the pipe.

1.8.8 **Minimum leg length and throat thickness in fillet welds**

The minimum length of a fillet weld as deposited shall not be less than the specified size. A concave weld shall not be deposited, unless specifically permitted. In case a concave fillet profile is permitted, then the



leg length shall be increased above that specified, so that the resultant throat thickness is as great as would have been obtained by the deposition of a flat-faced weld of the specified leg length. Welds with unequal leg lengths shall be avoided as far as possible.

1.8.9 **Deslagging**

After making each run of welding, all slag shall be thoroughly removed and the surface cleaned.

1.8.10 **Quality of welds**

The weld metal, as deposited (including tack welds if incorporated and which are to be made by the same quality electrode as that for the final deposit) shall be free from cracks, slag inclusions, porosity, cavities and other deposition defects. The weld metal shall be properly fused with the parent metal without undercutting or overlapping at the toes of the weld. The surface of the weld shall have a uniform consistent contour and regular appearance.

1.8.11 **Weather conditions:**

Welding shall not be done under such weather conditions which might adversely affect the efficiency of the welding. Welding under high wind speed, humid atmosphere and low ambient temperature shall be avoided.

1.8.12 **Welded crane girders and other plate construction**

Submerged arc welding shall be employed for fabrication of welded crane girders and other plate construction. Manual arc welding may be permitted where necessary but shall be minimized to avoid start and stop phenomena.

1.8.13 **Preheating of welded joints**

Preheating of welded joints shall be as per IS: 9595-1996/ ASME B31.3.

1.8.14 **Supervision**

The Contractor shall employ competent persons to supervise welding work to ensure that the standard of workmanship and the quality of the materials comply with the requirements laid down in this specification. Welding supervisor should have minimum of 20 years of experience in field of welding and should have minimum qualification of 12th standard and certification of welding from IIW.



1.9 Inspection and Tests on Welded Joints

Inspection of welded joints shall generally be as per IS: 822, unless otherwise specified hereinafter.

1.10 Visual Examination

The Contractor shall conduct visual examination and measurement of external dimensions of the weld for all joints. However, for exceptionally good quality of welding work the inspection and tests may be carried out on sample basis. Before examining a welded joint, it shall be cleared of slag and other impurities. Examination shall be done by a magnifying glass and measuring instrument which has an accuracy of +0.1 mm or by weld gauges. Welded joints shall be examined from both sides. The Contractor shall examine the following during the visual examination:

- a) Check the correctness of shape and size of the welded joints;
- b) Penetration of weld metal;
- c) Influx;
- d) Burns;
- e) Under cuts;
- f) Unwelded craters;
- g) Cracks in welded spots and heat affected zones;
- h) Porosity in welds and spot welds;
- i) Compression in welded joints as a result of electrode impact while carrying out contact welding;
- j) Displacement of welded element.

1.11 Tests

The Contractor shall carry out at his own cost any or all tests as specified hereinafter and as directed by the Consultant to satisfy the Employer about the acceptability of the welded joints.

1.12 Destructive Testing of Welds

1.12.1 Destructive Testing of welds if required shall be carried out at the discretion of the Employer as per details mutually agreed. The common details are given below:

- i) Weldability of parent metal (Hot rolled low medium and high tensile structural steel) as per IS: 2062;
- ii) Hardness and tensile test as per IS:1608-2005;
- iii) Impact test (Method of chirpy impact test i.e. V notch for metallic material) as per IS:1757-1988;



- iv) Tensile and impact tests as per IS: 814-2004 for manual metal arc welding and as per IS:3613-1974 for submerged arc welding;
- v) Macro etching of welded cross section as per IS: 3600 (Part I to IX);
- vi) Band and nick break tests as per IS: 3600 (Part I to IX);
- vii) Fillet and lap wind test as per IS: 3600 (Part I to IX) and IS: 4943-1968.

1.13 Non-destructive Testing

1.13.1 Dye penetrant, chalk-kerosene test, magnetic particle, X-ray/Gamma-ray radiography and ultrasonic testing shall be employed to ensure that the welds are free defects which cannot be detected by visual examination and for the routine control of weld quality without destroying the weld. Unless otherwise specified, extent to which non-destructive testing shall be as agreed mutually between the Contractor and the Employer.

1.13.2 Dye-penetrant examination

DP test to be carried out for butt joints as required by Employer/Consultant. This shall mainly be carried out in accordance with IS:3658-1999. The weld surfaces shall be cleaned and ground prior to carrying out of the test. DPT procedure shall be submitted by Contractor to Employer/Consultant before commencement of work.

1.13.3 Cost of dye-penetrant tests shall be borne by the Contractor. Cost of the other non-destructive tests shall be borne by the Employer, if the test indicates satisfactory and joint becomes acceptable. Otherwise, the cost and rectification of defective joint to the satisfaction of the Employer shall be borne by the Contractor.

1.13.4 Magnetic particle test

It shall be carried out on clean and ground weld surfaces by machines capable of supplying AC & DC amperages of sufficient levels for detection of surface and sub-surface defects. The magnetic powder shall be of proper fineness to ensure flowability and alignment of particles along with defects. The prods of magnetic particle inspection units shall be placed at right angles to each other in two steps to avoid directionality effect of the defects. Both AC & DC shall be used for each of the orientation as stated above. Magnetic particle examination shall be carried out in areas where sub-surface defects are also to be revealed and on fillet and lap joints at the discretion of the Consultant. Spots left by the prods on the base metal during testing shall suitably be dressed. MPT procedure



shall be submitted by Contractor to Employer/Consultant before commencement of work.

1.13.5 **Radiographic test (X-ray and Gamma-ray examination):**

X-ray and Gamma-ray examination shall be carried out by the Contractor through BARC approved radiographers only.

- i) X-ray and Gamma-ray examinations shall be conducted to determine gas inclusion (blow holes), slag inclusion, shallow welds and cracks etc. These shall be carried out as per IS: 2595-2008 (Industrial radiographic testing- Code of practice), IS: 3657-1978 (Radiographic image quality indicators) and AWS D1.1-2008.
- ii) Before conducting the examination, the welded joints shall be cleaned of slag and scale and visually examined. The welds shall be marked into separate portions depending on the length of radiography with the help of lead members. The radiograph shall be such as to ensure that there are no distortions and shall reveal the defect correctly. The length shall not be more than 0.75 of the focal distance and the width of the radiograph would depend on the width of the welded joint plus 25 mm on either side of the weld. The cassette with film shall be properly protected by the Contractor by a sheet of lead or equivalent of proper thickness against incidental, diffused and secondary radiation. In case of use of Gamma-ray source strength shall be sufficiently high to avoid inordinately long exposure time resulting in foggy radiographs. NDT to be carried out in line with ASME Section V.

1.13.6 **Ultrasonic test**

Ultrasonic test shall be conducted as per IS: 3664-1981 (Code of Practice for ultrasonic pulse echo testing by contact and immersion methods), IS:4904-2006 (Calibration blocks for use in ultrasonic non-destructive testing), AWS D1.1-2008 or equivalent by the Contractor to detect gas inclusion (pores), slag inclusion, shallow welds, cracks, lamination etc. Prior to starting of ultrasonic test, the welded joint shall be thoroughly cleaned of slag and other materials. Surface of the base metal adjacent to the welded joint on both sides shall be mechanically cleaned by a grinder or a metal brush to provide contact of the whole of the ultrasonic probe surface with surface of base metal. Suitable coolant like water, oil or grease shall be used depending on the surface smoothness of the base metal to ensure proper transmission of sonic waves. The joints so treated shall be marked and the marks shall be entered into the documentation. Subsequent to this, ultrasonic test shall be carried out as directed. Ultrasonic operator shall be subject to the Consultant's approval and the



Consultant at his discretion may test the operator. Suitable simulation and standard blocks shall be made from ultrasonically sound material of same composition and physical state. These blocks shall be provided with drilled holes/rectangular slots/V-grooves etc., in order to simulate, compare and assess defect size and location.

Use of proper probe size, frequency and type shall be made to ensure accurate detection of defects. Probing shall be carried out from multiple directions to avoid directionality or orientation effect of the defect. Type of defects shall be identified and recorded to help in taking decision regarding acceptability.

1.14 Extent of Coverage of Non-Destructive Tests

Non-destructive tests of welded joints shall be carried out as per approved procedures. The extent to which non-destructive tests are to be carried out shall be mutually discussed and agreed between the Contractor and the Employer. Some of the non-destructive tests are as follows:

- a) For butt welds unless otherwise stated on approved drawings/documents, 20 per cent of all Butt-joints of welds shall be tested radiographically.
- a) Butt joints of welds shall be tested radiographically to the extent as mentioned in the approved drawings.
- b) For thick welded joints ultrasonic tests shall be carried out as and when required by the Employer.
- c) DPT can be carried out at site by the Contractor as per instruction of Employer/Employer's Consultant.

1.15 Documentation

The following documents shall be maintained by the Contractor and produced as and when asked for by the Employer:

- a) Documents (certificates etc.) conforming the quality of electrodes and accessories to be used/used in welding;
- b) List of certificates on qualification of welders who will carry out or have carried out welding and also their identification stamps on welding done by them;
- c) Documents on approved deviations, if any;
- d) Radiography films and their interpretation joint wise;
- e) Ultrasonic test reports;



- f) Details of joints checked by liquid dye penetration examination;
- g) Details of joints checked by magnetic particle inspection;
- h) Contractor shall prepare a weld map and shall provide weld joint numbering to keep the record of welder name against weld joint number.
- i) Any other relevant information.

1.16 Acceptance Norms

Acceptance norms for welds shall generally be as per relevant IS, however in absence of suitable guidelines in IS, AWS D1.1-2008, standard radiographs from I.I.W. or equivalent approved by the Employer shall be followed.

C. ERECTION OF MECHANICAL EQUIPMENT

1.1 Scope

The Contractor shall provide all, materials including installation materials (including supply of temporary structures, templates, jigs etc.), plant and machineries, labour and supervision in connection with cleaning, handling, transporting, rigging, assembling, erecting, aligning, leveling, bolting, welding, grouting, coupling, wiring and connecting for satisfactory installation of all equipment, materials, appurtenances and accessories in proper locations and orientations as required. All Special Tools and tackles based on the recommended list of the equipment supplier for erection and commissioning will be under the scope of Contractor.

- 1.1.1 All fabrication shall be carried out in accordance with IS: 800-2007 (Code of practice for general construction in steel).
- 1.1.2 All bolts and nuts shall conform to IS: 1363 (Part I to III)-2002 for product grade 'C' and 1364 (Part I to VI) for product grade 'A' & 'B' and unless otherwise specified shall be hexagonal. All nuts shall fit tight.
- 1.1.3 Plain washers shall be made of mild steel, unless otherwise specified. Spring washers shall be provided for those parts which carry dynamic loads.
- 1.1.4 Mild steel electrodes shall conform to IS: 814-2004. For welding in any particular position, the electrodes used shall be those recommended by the manufacturer in that position.



1.1.5 All materials used in connection with the erection work shall comply with the appropriate Indian Standards or as approved by the Employer.

1.2 Clean up, Assembly and Installation

1.2.1 All pits and sumps shall be handed over to the Contractor in clean condition by the employer. Any subsequent cleaning / dewatering as required shall be carried out by the contractor using dewatering pumps and related piping wherever necessary.

1.2.2 The top of concrete foundations shall be thoroughly cleaned with air or water jet by the Contractor prior to placing of bed plates, cover plates, sole or subsole plates on foundations. All the concrete foundations shall be handed over to the contractor with post- concrete report mentioning the dimensions, centerline, level, pocket orientation etc. Any undulation, Concrete surfaces defects, mistake in foundation orientation / bolt box fixing etc. shall be suitably rectified by the Employer prior to handing over the concrete foundation to the Contractor However the contractor shall carry out minor chipping etc., if required, to facilitate the equipment erection.

1.2.3 The Contractor shall place the bed plates, cover plates, sole or sub-sole plates on the foundations and shim up with the machined steel wedges steel wedges until the equipment is in level so checked with precision machinist's levels. Required machined steel wedges and shim stocks shall be furnished by the Contractor and used in sufficient numbers to avoid unsupported spans with any perceptible deflection. The Contractor shall not use thinner plates to make up thicker packing.

1.3 Revisioning, Assembly, Alignment, Lining, leveling and Grouting

1.3.1 The Contractor, where necessary, shall dis-assemble and re-assemble the supplied equipment if required for erection before placement on foundation. All gear drives and pinion stands shall be dismantled if required, the gear casing shall be leveled and aligned and the gear elements assembled with casing and box up with lubrication pipes etc. and grouted. However, the gearboxes, which are proprietary in nature, shall not be opened.

The Contractor shall clean thoroughly all the parts to be assembled including the machined base with a solvent, lubricate and reassemble. Any dents still seen shall be smoothened out and cleaned. The equipment shall be placed over the base plate taking care of the foundation bolts. All doweling wherever necessary, shall be done by the Contractor. Site assembly envisages certain amount of drilling and reaming of Dowel holes of various sizes. The Contractor shall arrange to carry out the job including supply of drills and reamers. The equipment shall be then



aligned with reference to the axes and leveled with the help of shims or any other suitable devices. The Contractor shall align all the equipment to the accuracy as indicated in the drawing. The lines, levels, alignments and expansion movements shall be carefully re-checked by the Contractor jointly with the Employer during erection.

Installation of all electrical equipment to be coupled to the mechanical equipment including all DC and AC motors along with motor mounted ventilation units, techno-generators, techno- combination units, brakes, limit switches, position encoders etc. as specified shall be carried out.

All required adjustments shall be made by the Contractor as directed by the Employer after trial run. Where necessary, alignment of hot equipment shall be checked to conform to the specified hot tolerances and necessary adjustment shall be made by the Contractor. The Contractor shall make permanent datum marks on the floors/permanent structures after installation of all equipment with the items / materials as required, provided by the Employer. These marks shall be subject to inspection and approval by the Employer and are intended to ensure proper alignment and leveling of equipment during reassembly after maintenance/ overhaul etc. However, the employer will provide reference center line and bench mark to the contractor prior to start of the erection

1.3.2 The Contractor shall plumb and level all steelwork and shall thoroughly brace and guy the structures during erection to keep them plumb and rigid till completion. Erected parts of the structure shall be stable during all stages of erection. The stability of structures subject to the action of wind, dead weight and erection forces shall be obtained by observing specified sequences of erection of vertical and horizontal structural members by installing permanent and temporary bracings. As the work progresses, the steel members shall be securely bolted. No permanent bolting, welding or grouting shall be done until proper alignment has been obtained and approved by the Engineer.

1.3.3 Field connections of structural steelwork shall be made by site welding unless otherwise directed. Holes of erection joints to be bolted shall be filled with temporary bolts and plugs after mounting the structures. The number of temporary bolts and plugs shall not be less than 50% of the total of holes. In joints where the number of holes is equal to 5 or less, not less than 3 holes shall be temporarily filled. The number of washers on permanent bolts shall not be more than two (and not less than one) for the nut and one for the bolt head. All nuts shall be locked against turning after tightening.

1.3.4 All field assembly and welding shall be executed in accordance with the requirements for the shop fabrication excepting such as manifestly apply to site conditions only. The paint shall be removed before field welding, for a distance of at least 50 mm on either side of the joints.



- 1.3.5 All motors and driven equipment shall be accurately leveled and aligned to specified tolerances. Equipment shipped with motor mounted, aligned and coupled shall have the coupling dis-assembled and alignment re-checked.
- 1.3.6 Unless otherwise directed, alignment of sleeve bearing journals in bearings shall be checked using Prussian blue, with spindle or wheel journal resting on bottom bearing halves and the top halves removed. Pillow block bearings shall be similarly checked if more than two in-line bearings exist on the shaft.
- 1.3.7 Ball and roller bearings shall rotate freely between balls and rollers and races but no motion shall exist between inner race and the spindle and between outer race and machine frame.
- 1.3.8 All rotary equipment shall be checked for free movement by hand rotation when correctly aligned and installed.
- 1.3.9 After the equipment/structure etc. has been installed, lined, leveled and aligned, the foundation bolts shall be pulled up tightly (tensioning devices required for tensioning of bolts by the Contractor and the equipment shall be grouted and grouting cured for seven days by the Contractor. On completion of the final alignment prior to grouting of the equipment, a protocol indicating alignment/levels with reference to the drawing and actual dimensions achieved shall be prepared by the Contractor for Owner's certification/signature. Grouting shall normally be carried out as specified in the relevant drawings. In case of any dispute the grout & method shall be decided and approved by Engineer. When the grout is thoroughly cured as aforesaid the alignment shall be rechecked if required.
- 1.3.10 The erection contractor may carry out certain amount of gas cutting and grinding on components as required for maintaining the working clearance with prior approval from the Employer.
- 1.3.11 Minor rectification on equipment/component during erection/assembly/trials may be carried out by the contractor at site by gas cutting, welding, grinding, drilling and tapping of new holes etc. as a part of work in consultation and prior approval from equipment supplier and Employer.
- 1.3.12 Limit switches/proximity switch bases, strikers etc. shall be mounted on to the equipment by drilling and tapping holes or by welding as per drawing. Modification of the base frames/support frame of mounted electrics to the extent of enlarging/plugging and drilling and tapping of new holes below dia 20mm only may be carried out by the Contractor. But making of holes by gas cutting shall not be permitted in any case.



1.3.13 Grouting for equipment including grouting materials (non-shrink grouting materials also to be supplied by the Contractor) are under Erection Contractor's scope.

1.3.14 If the period of erection is likely to take more than 6 months, the Contractor shall recheck the alignment of the equipment erected more than 6 months ago. This shall be done in order to ascertain that there is no settlement in the foundations.

1.4 Installation of Gears, Chain Drives, Couplings, Rolling Contact Bearings and Guards

1.4.1 Installation of gears and gear boxes

1.4.1.1 The positioning of the gear box axes in the horizontal plane shall be carried out with reference to the datum lines already marked on the gear box at the time of its manufacture.

1.4.1.2 The correctness of the level of the gear shaft shall be checked by aligning the coupling halves, which connect the gear box with the driven mechanism.

1.4.1.3 The horizontality of the gear box shafts shall be checked with a surveyor's level and leveling staff or with a precision spirit level. All the checking equipment, tools shall be under the scope of contractor.

1.4.1.4 The permissible deviation from horizontality of the shafts shall be 0.1 mm/m along with shaft and 0.2 mm/m across the entire gear box, unless otherwise specified in the supplier's instructions.

1.4.1.5 After the installation of the gear box a check shall be made for freeness of rotation by hand.

1.4.1.6 In the case of open gears the meshing of the gear teeth shall be checked with Prussian blue and that teeth engagement shall be corrected as per the gear backlash requirements per manufacturer's recommendations or otherwise as per the figures given as below (backlash to be checked with feeler gauge) which are applicable to gear reducers also.

Type of Meshing	A	B	C	D
Backlash microns		130 - 260	260 - 530	530 - 1,060

Note:

- (1) Centre distance of gears 500 to 2500 mm
- (2) A - Zero backlash
- (3) B - Decreased backlash
- (4) C - Normal backlash
- (5) D - Increased backlash



The vibration amplitude shall be checked with a vibrator at different speeds over the bearings in vertical and horizontal planes as per the amplitude and the bearing temperature rise as recommended by the supplier. However, the amplitude shall not exceed 0.08mm and the bearing temperature rise shall not exceed 60 deg above ambient temperature unless otherwise required. Temperature gun and vibration meter shall be supplied by the Contractor.

1.4.1.7 For worm gear drives the meshing of the worm and wheel shall be checked after ensuring the perpendicularity of the driving and driven shafts.

1.4.1.8 Backlash of the work gear drives shall be within the limits specified by the Supplier. The dowels lock plates and fasteners shall be checked for proper tightening.

1.4.2 **Chain drives**

1.4.2.1 The sprockets which will be mounted at erection site shall be checked for parallelism with the help of straight edge and feeler gauge. Any skewness shall be reduced to the minimum. Permissible deviation is 0.05 mm/100 mm of sprocket diameter unless otherwise required.

1.4.2.2 Sprockets shall be checked for tightness over the shafts.

1.4.2.3 Chain elements shall be checked for proper seating between the teeth.

1.4.2.4 The sag in the chain shall be checked on the slack side with the help of a straight edge and feeler gauge.

Sag for vertical drives - 0.002A

Sag for horizontal drives - 0.02A

where, A = Centre to centre distance of the shaft.

1.4.3 **Coupling**

1.4.3.1 The Contractor shall couple the equipment with the couplings (Supplied either in fitted condition with respective shafts or in finished bore with key way condition) and approval shall be obtained from the Engineer before final coupling of the equipment is completed. High precision dial indicators/gauges shall be used for coupling alignments. Tolerance (for both radial and axial play) shall be as per coupling manufacturer's standards unless otherwise specified by the Employer.



1.4.3.2 Where motor drive is connected to drive equipment by means of gears, the Contractor shall check all bolts to ensure that all bolts are tight. The leveling shall be performed as stated for other rotary equipment.

1.4.3.3 Coupling shall be decoupled and recoupled as required during the trial runs of any equipment and its drives. Suitable and standard pullers shall be used for removing the couplings/bearings.

1.4.3.4 When the alignment has been finally checked and approved by the Engineer after satisfactory trial run, the Contractor shall drill and ream holes for taper pin dowels up to 30 mm dia and furnish and install the machined dowels as required.

1.4.4 **Rolling contact bearings**

1.4.4.1 Sub-assemblies consisting of rolling contact bearings shall be cleaned carefully 'with solvent e.g. kerosene and shall be inspected as far as possible (unless otherwise warranted by severe sea-water corrosion, dust entrainment, damaged packing) without dismantling them. Rotating the elements of the bearing during cleaning shall be avoided. If the original grease packing has to be cleared out, the fresh grease of suitably quality shall be applied and the bearing covered all over with oil paper.

1.4.4.2 Marks on the bearing, appearance, freedom of rotation, noise shall be examined.

1.4.4.3 Prior to assembly, all seals, roller and joints shall be lubricated with a grease.

1.4.4.4 Radial clearances between rolling elements and races shall be checked before and after assembly for proper functioning of the equipment. Radial clearances of antifriction bearings shall be as per bearing manufacturers' specification at preload condition.

1.4.4.5 Before assembly a thorough inspection shall be made of the size of the bore and shaft dia for obtaining proper fit.

1.4.5 All drives shall be fitted with guards positively before each trial run on power to prevent accidents.

1.4.6 All drives shall be lubricated.



1.4.7 **White metal bearings**

Unless otherwise required, bearings halves shall be checked for correctness of lubricant passage and grooves and for matching of sides, halves shall be turned-up using a dummy mandrel of proper size. Scrapping shall be continued until the following condition is reached.

- (a) With Prussian Blue applied: 4 to 5 to the shell the number of spots per sq m
- (b) Clearance between the top half and the journal for a bearing of 100 to 300 mm:
0.08 to 0.15 mm (for low speed)
0.25 to 0.5 mm diameter (for high speed)
- (c) The clearance can be increased by inserting brass shim between the edges of the shells not exceeding 0.08 mm.
- (d) The axial clearance between shell and the collar 0.1 to 0.8 mm of the journal.
- (e) Steel shells shall be checked for locking holes (for preventing rotation while in service).

1.5 **Lubrication and Greasing of Equipment**

1.5.1 All horizontal and vertical rotating equipment shall have their priming connections, cooling water supply to bearings, lubrication piping to bearings, stuffing box jackets and sealing glands checked to ensure free passage thereto.

1.5.2 All lubricants used for lubrication shall be in Equipment Supplier's instructions/drawings.

1.5.3 Bearings for drives and driven equipment shall be checked and cleaned as follows:

- (i) Sleeve bearings:

Remove bearings caps and drain plugs in bearing housing. Flush cut housing with solvent and then with flushing oil and drain completely. Replace drain plugs and fill lubrication system with recommended lubricant for the particular unit.

- (ii) Grease lubricated ball bearings:

Remove bearing housing cover to assure supply of grease and good clean condition thereof. If grease shows any sign of deterioration, dirt or contamination by any foreign material, remove grease completely, bathe the bearings in kerosene,



wipe dry and repack with appropriate grease for the particular unit.

(iii) Oil lubricant ball bearings:

Flush out housing and bearings thoroughly with solvent and then with flushing oil and drain completely. Fill reservoir to proper level with recommended lubricant for particular unit.

(iv) Gear Boxes:

The gear boxes shall be washed with solvent and then with flushing oil. The gear box shall be completely drained and the residual oil shall be allowed to dry. The recommended lubricating oil shall be filled to the optimum level marked. Both overfilling and underfilling are not desirable.

(v) The above processes shall be repeated often as directed during the trial runs of the equipment.

1.6 Packing

1.6.1 Stuffing boxes, valve glands and gauge glands shall be checked for sufficient rings or packing and tightness of packing gland draw-up units. Pump casing flanges and inlet outlet connections shall be checked for tightness of joints initially and till satisfactory commissioning. Packing lubrication shall be checked for cleanliness and supply. Additional lubricant shall be added as often as required.

1.6.2 Connections requiring gaskets shall be tightened evenly all round to ensure equal stress over the entire gasket area.

1.6.3 All packing, glands and flanged joints shall be checked and tightened as necessary during trial run and commissioning. Temporary gauge glands and packing shall be installed and renewed as often as required.

1.7 Clean up and Painting

1.7.1 The Contractor shall be required to do cleaning and touching up of damaged surfaces of equipment etc. with paint as may be required.

1.7.2 All steelwork items to be fabricated by the Contractor shall be painted with one coat of approved red oxide zinc chromate primer and two coats of approved aluminum paint unless otherwise required. Surface preparation and painting shall be carried out in accordance with IS: 1477 (Part I to II)-1971.



1.7.3 Throughout the erection of the work the Contractor shall perform clean-up on day-to-day basis and in addition:

- i) All installed equipment; pipework etc shall be inspected and cleaned thoroughly as required.
- ii) All external surfaces shall be cleaned of all dirt, dust, grease, oil etc.
- iii) Before closing or boxing any equipment or work, care shall be taken that small tools, ropes, electrodes, butts beads and any other foreign matter have been completely removed.

D. ERECTION OF PIPEWORK

1.1 General

1.1.1 This specification covers the cutting, shaping, joining etc. as required, erection, cleaning, pickling and passivation of hydraulic piping, testing, purging/flushing, painting, protection and commissioning of pipe work.

1.1.2 The term 'pipe work' referred herein generally covers pipes of various sizes, fittings (such as bends, tees, reducers, plugs, nipples, sockets, unions, flanges, crosses etc.), valves (gate, globe, plug, ball, diaphragm, pressure regulating, flow control, relief, safety, electrically operated, pneumatically operated etc.), expansion bellow (rubber/steel), orifice plates traps, strainers, switches, thermostats, controllers, sight glasses, drip pots, water seals, spectacle blinds, explosion blinds, flash back arrestors, flexible hoses (both metallic and non-metallic), hose couplings, hose clamps, hose nozzles, hose box/cabinet, fire hydrant assemblies, oil and moisture separators, lubricators, concrete anchors at bends etc. pipe supports (pipe racks, brackets, hangers, U-bolts, clamps, special type of clamps for hydraulic lubrication systems, spring supports etc.), studs, nuts, gaskets, washers, split pins, keys, threaded or machined parts, anchor supports, guide/free supports, associated structural steelwork like trestles, towers, pipe bridges, pipe-racks, girders, brackets, platforms, ladders etc. hot insulation, corrosion protection, painting, measuring and metering instruments etc. (field and remote instruments).

1.1.3 All methods and procedures for fabrication for Shop Pipe work for water system, cleaning including pickling, testing, purging/flushing, insulation, painting and commissioning of pipe work shall strictly adhere to the instructions contained herein unless otherwise indicated in the drawings and/or instructed by the Employer/ Equipment Supplier. Where such details are not available the procedure outlined herein and elsewhere in the contract documents and/or instructions



issued by the Employer/Equipment Supplier shall be followed. However, the Contractor shall provide all the items like various size of pipes fittings , gaskets, O-rings, fasteners, machined blind flanges, companion flanges, dummy valve blocks and stools for by-passing the servo / proportionate valves/precision valves, hose connection, minimess and sockets for venting of air tapping etc. required for Pressure testing, purging, pickling and Oil flushing loop circuit. Also Employer shall provide Purging / flushing media like compressed air, water, hydraulic flushing oil, nitrogen etc.

1.1.4 The Contractor shall be responsible for necessary liaison work and for stage wise inspection and assist the Employer for getting the work approved by the statutory authorities such as Factories Inspectorate, Boilers Inspectorate and Explosives Inspectorate etc. However, the Employer shall arrange for formal approval of work and shall pay the connected fee or such approval.

1.1.5 Contractor shall employ specialized agency for carrying out work of Oil Lubrication System and Oil Hydraulic System and shall obtain a no objection certificate from the Employer for the agency to be employed before commencement of work on these systems.

1.2 Scope

1.2.1 The Contractor shall provide all equipment, tools, tackle, consumables, materials, labour and supervision for carrying out the following:

1.2.1.1 Receiving, unloading, unpacking, checking of all 'Free Issue' items of pipe work from Employer's/stockyard and moving into site storages or erection site. Store management shall be in Contractor scope. Vender to keep custody of Employer's issued materials with proper stacking with colour coding for easy identification. Room temperature of store shall be maintained.

1.2.1.2 Cleaning, handling, transporting, rigging, assembling, erecting, aligning, levelling, bolting, welding and connecting for satisfactory installations of all items supplied to the Contractor, in proper locations and orientations according to the drawings and/or equipment Supplier's instructions and /or as directed by the Employer.

1.2.1.3 Painting all shop pipe work and supports, corrosion protection of all underground steel pipes.

1.2.1.4 Assisting in commissioning, including flushing, purging and putting into commission of pipe works.



1.3 Erection

1.3.1 The Employer will supply to the Contractor prefabricated and random lengths of pipes (up to DN 300 as applicable), valves, special anchors, expansion joints, traps, strainers, flanges, measuring, metering and control instruments etc. as applicable as well as standard structural steel members for fabrication of pipe supports. Contractor shall carry out necessary fabrication, of steel supports etc. at site for erection of pipe work. The Contractor shall furnish gaskets, nuts, bolts, clamps, and all other materials, labour, tools and plant for all pipe work and appurtenances as required for completing the work. Contractor shall also have to supply miscellaneous items like flanges, fittings, reducers, traps, strainers, small size valves etc. if the items supplied fall short at the time of erection. However, measurement of the same will be considered as per the BOQ items provided. Erection of pipe work shall be done by the Contractor strictly as per Equipment Supplier's and Employer's drawings and instructions. Where the clauses of this specification are at variance with Supplier's and Employer's drawings and instructions, the latter shall prevail to the extent of such variation.

1.3.2 Contractor shall fabricate and install all required structural steelwork for pipe work supports as instructed by the Equipment Supplier/Employer. However the drawings, bill of materials for fabrication of pipe supports shall be prepared by the Engineer, if required for approval of the Equipment Supplier/Employer.

1.3.3 Piping shall be cut to measurements as per the drawings and installed without forcing or springing to prevent excessive stress in valves and equipment or interconnecting piping. All pipes of hydraulic and lubrication systems with sizes up to DN 100 shall be cut by saw only and not by gas cutting. For hydraulic pipes up to DN 50 size, full TIG welding is required. However, sizes beyond DN 50, TIG welding is required at root and balance MMAW.

1.3.4 Exposed piping shall be run in straight lines parallel to major building axes where possible and sloped for proper drainage where necessary or as shown in the drawings. All required valve platforms/stands, access ladders, handrails etc. including erection are excluded from the scope of work of the Contractor.

1.3.5 Reducers in horizontal pipelines shall be eccentric type, installed to avoid pockets in lines where such pockets prevent proper operation or drainage of the line. Mainly in Pump and suction pipe line.

1.3.6 Shifting Equipment from Location indicated in Drawing.

1.3.7 Working platforms for the above may also have to be fabricated and erected for orifices as per drawings of Employer/Consultant.



1.4 Pipe Joints

1.4.1 All black steel pipe work shall be of butt-welded/socket welded construction. Flanges or unions shall be provided on straight lengths and at other joints as required for easy erection and maintenance. Flanged joints shall also be provided to match the connecting ends of equipment, valves, fittings etc. Where specific equipment connection necessitates, screwed joints and unions shall be provided as per the Schedule of quantities.

1.4.2 Galvanized steel pipe work or as directed by Employer/Consultant upto 65 DN shall be of screwed and socketed construction. Galvanized screwed unions shall be provided at 30 meters spacings on straight lengths and at other joints as necessary for easy erection. Screwed unions shall also be provided at connection to valves etc. as required as per the Schedule of quantities.

1.4.3 All cast iron pipes and fittings shall have socket and spigot ends and joints made by lead caulking. Flanged tail pieces shall be provided for mounting of valves for any other flanged accessory. Branches up to 40 DN shall be made by tapping. In case of a large branch, socket and spigot tee shall be installed in the line. (As Applicable).

1.4.4 All lined pipe work shall have flanged joints. Flanges shall also be provided at both ends of pipe fittings, e.g. bends, and tees, reducers etc. as well as for connection to the equipment and valves. (As Applicable)

1.4.5 All stainless steel pipelines shall be of butt or socket welded construction using shield arc welding process. Flanges or unions shall be provided on straight lengths and at other joints as required for easy erection and maintenance.

1.4.6 Special joints such as flare and compression joints, Victaulic couplings, lapped joints etc. shall be used where required. Such joints shall conform to Indian Standard or other recognized codes such as ANSI Code for pressure piping for the services for which they are intended. Molybdenum Disulphide compound, (MOLIKOTE or equivalent) is the preferred lubricant for threads, compression and flare fittings (As Applicable).

1.4.7 Joints shall be assembled with the inside of all pipes and fittings smooth, clean and free from burrs, blisters, scale, welding slag, sand and dirt. The side edges of pipes and tubing shall be suitably ground after cutting to remove burrs. Where required, the inside of weld without backing rings shall be ground smooth.



1.4.8 Flanges shall be drilled off-centers. Flange faces shall be free from particles of weld metal. Screwed flanges shall be screwed on tight with end of pipe projecting beyond the face of the flange and then the flange face and projecting end of pipe shall be machined to permit both pipe and flange to bear against the gasket.

1.4.9 Threaded joints shall be made up with a sealing compound or preferably Teflon tapes, suitable for the service for which the pipe work is intended. However, for nitrogen pipe work, no oil or grease shall be used, a soap and water mixture may be used when cutting threads for such pipe work.

1.4.10 For all non-metallic pipe work, flanged joints, using cemented and back welded flanges of the same material, shall be provided on pipe work at intervals of 30 meters on straight runs and at connections to valves, accessories and equipment as required. All flanges shall adhere to relevant standards adopted by the U.S. Department of Commerce or equivalent and suitable for the service conditions (As Applicable).

1.5 Welding of pipes

1.5.1 All joints by electric arc and gas welding process shall be as per IS:9595-96 and IS:1323 respectively. When other welding processes like TIG, MIG are employed, welding shall conform to relevant Indian Standards. However, the provisions of mandatory codes such as Indian Boiler Regulations, Explosives Manual, and Petroleum Manual of the Insurance Association of India etc. shall be met where required. A welding for oxygen line shall be done in conformity with practices recommended in ANSI/ASME B.31.1 or approved equivalent.

1.5.2 All welding work shall be carried out by qualified welders. All filler materials, edge preparation, post weld treatment etc. shall be as per relevant standards as mentioned above. All welds shall be made in such a manner that complete fusion and penetration are obtained without an excessive amount of filler metal beyond the root area. The voltage, amperage and polarity of welding current shall be in accordance with the electrodes manufacturer's recommendations. Reinforcement, if provided, shall be applied in such a manner that it will have a smooth contour merging gradually with the surface of adjacent pipe and welded fittings. Backing rings used shall be of the same material as the pipe and shall be used where shown in drawings or as directed by the Equipment Supplier/Engineer.

1.5.3 Pipe and attachment shall be aligned properly by accurate and permanent method prior to welding. If tack welds are used, the tacks shall be either fused into the first layer of weld or else chipped out. All welds shall be built up by the application of multiple beads or passes; the thickness of metal deposited in each bead or pass shall be maintain depending upon the size of the filler material. Each pass



shall be cleaned thoroughly for removal of slag etc. before depositing next pass. The completed weld shall be cleaned of slag and spatter metal on all surfaces and the inside beads shall be ground smooth electrode point.

1.5.4 All welding by the shielded electric arc process shall be done using electrodes in accordance with the relevant standards and as per list of approved electrodes. Great care should be taken to avoid the formation of scale in the pipe bore of hydraulic and lubrication lines during welding, and consideration should be given to Argon Arc welding or root runs or Argon purging of hydraulic pipe work. Branches and tees on hydraulic lines shall be made using socket weld tees, butt welds etc. whichever is applicable.

1.5.5 All welds subjected to pressure and made in carbon steel where the thickness of carbon steel material exceeds 19.1 mm shall be stress relieved in a manner recommended by the manufacturer/Engineer. Such stress relieving shall be performed by induction type stress relieving machine which maintain an accurate charted record of the rate of heating, soaking and cooling. The Contractor shall furnish and use his own stress relieving machines, heating cables, asbestos sheet paper, or tape coverings, consumables, thermocouple recording charts, inks and other materials required to complete satisfactorily and reliably all stress relieving work. Stress relieving may be done by uniformly heating welded area with nichrome /induction coil to $660 + 150^{\circ}\text{C}$, holding the temperature for one hour for each 25 mm of wall thickness or fraction thereof, and then cooling at a rate not in excess of 315°C per hour in still air. For local stress relieving of welded joints the Contractor shall submit details of procedure which shall only be used after approval (As applicable). After stress relieving hardness needs to check with digital hardness tester and if hardness is beyond acceptable limit re stress relieve to be carried out.

1.5.6 Backing rings shall not be adjacent to welding neck flanges and/or where welds can be made from both sides. The inside of such welds shall be ground smooth and flush with adjacent surface. Special joints preparation or required corrections or modification shall be made by the Contractor at any terminal weld to match equipment connection. All heat treatment shall be performed as prescribed by the manufacturer /Engineer and all such operations shall be carefully controlled. All forging and bending operations shall be carried out under prescribed controlled conditions. Any quenching of alloy steel or high pressure pipe will not be permitted.

1.5.7 Bends, branches, reducers etc. may be fabricated from pipes, by cutting and welding as above, where permitted by the service conditions. Such suggested bends shall have minimum three cuts for angle above 60° and up to 90° and two cuts above 30° up to 60° or as indicated in the equipment supplier's drawings.



1.5.8 Field welding of pipe supports to primary structural members of building and crane rails etc. and field burning or patching of structural members shall not be carried out unless approved by the Engineer.

1.6 Bending

1.6.1 Smooth bends may be fabricated by bending pipes. Cold bending may be adopted for 50 DN and lower, hot bending of carbon steel pipes shall be done at a temperature between 800°C and 1,100 °C. Prior to bending, the pipe shall be filled with sand and tamped and vibrated into place. After hot bending, the pipe shall be allowed to cool slowly till ambient temperature.

1.6.2 Pipe bends shall be true to angle and have a smooth surface free of flat spots and corrugations. Actual inside diameter at any portion of the pipe shall not deviate by more than ± 3 per cent from the inside pipe diameter.

1.6.3 Smooth bends shall have a radius of not less than four times the nominal diameter, unless otherwise shown in drawings. In case of pneumatic transport pipeline for carrying metal containers, the bend radius shall be 1250 mm minimum or as indicated in drawings.

1.6.4 Bends for non-metallic pipes shall be of the same materials as the pipe and shall be manufactured by molding process to dimensional standard adopted by U.S. Department of Commerce and equivalent.

1.6.5 Cold spring shall be carefully applied to the extent specified to all high pressure and/or high temperature lines. It shall be applied in a manner and to the extent at different locations, as specified by the Equipment Supplier and shall be subject to approval. Checks shall be made to ensure that the prescribed cold spring has been properly applied. Sliding and flexible expansion joints shall be properly installed and checked for freedom of adequate and prescribed movement.

1.6.6 Where tube and pipe bending is required to be performed, it shall be fabricated by hot bending process at high temperature throughout the operation to prevent cold stressing of the metal. Tangents on all quarter bends shall be bent truly perpendicular to the radius and the internal cross section of the pipe shall not be diminished or overhauled during the bending process. Bends and offsets to be fabricated in one place shall be bent true to shape so as to lie flat in full contact on Engineer's approval shall be taken.

1.6.7 Wherever tubes have to be expanded or rolled, the Contractor shall use approved tube expanding tools. Surface shall be thoroughly cleaned of any dirt or foreign matter with an approved solvent prior to expanding. The expansion shall then be done as recommended by



the manufacturer and measures shall be taken to ensure that no over expansion takes place. Extensometers and/or approved electronic measuring devices which automatically regulate the degree of rolling will be preferred for such work. All expanded ends shall be of bell mouth type unless otherwise specified.

1.7 Unions/Flanges

Unions or flanges shall be installed in all piping connections to equipment, valves, control valves, instruments and miscellaneous specialties. These are also to be provided as directed by the Engineer at site to facilitate the dismantling of piping and removal of valves, equipment or other items requiring maintenance or repairs.

1.8 Supports for Overhead Pipe work

1.8.1 All supports, anchors, hangers, rollers, clamps, guides, sway bracings, vibration dampeners etc. required for aligning and controlling the pipe work shall be fabricated /installed by the Contractor as required. The work shall include installation of such protection as may be needed to prevent mechanical damage to piping. Such installations shall be made in a manner satisfactory to the Engineer. The Contractor shall take adequate care to ensure that all supports are firmly and adequately anchored to properly restrain the imposition of harmful stresses and internal or hydraulic shocks on apparatus, equipment and/or devices to which any pipe line is connected. However applicable drawings to be provided by the Employer.

1.8.2 The maximum unsupported span for steel pipelines shall be as indicated below, unless otherwise indicated in the Equipment Supplier's/Furnace Engineer's drawings:

	Span (mm)	
DN	Carbon Alloy and Stainless Steel	ThermoPlastics
15 and below	1,000	Continuous
20, 25 and 32	2,000	Continuous
40, 50 and 65	3,000	1,000
80 and 100	4,000	1,000
150	5,000	1,500
200 and 250	6,000	1,500
300	7,000	2,000
350 and above	7,000	2,000



Support spacing not indicated above shall be as shown on drawings.

1.8.3 Timber or wire shall not be used as permanent support of pipe work, except where specifically indicated for hydraulic and lubricating system pipe work.

1.8.4 Vertical cast iron or steel pipe work shall be supported at the intervals of approximately 3500 mm and at the base of each riser.

1.8.5 All required platforms, valve stands, access ladders/stairs, handrails etc. shall be erected complete, after the piping is installed. The fabrication and erection of structural steelwork shall be excluded from the scope of the Contractor.

1.9 Underground Pipe work

1.9.1 The Contractor shall carry out excavation work for buried pipes and backfilling after laying of the pipes and the excess materials shall be removed to suitable places as directed by the Employer/Engineer.

1.9.2 All underground pipelines shall be completely watertight and resistant against corrosion from sub-soil water.

1.9.3 All underground pipe work shall be installed in built-in trenches. After the pipe is laid on skids, it shall be thoroughly cleaned and inspected. All abrasions of the coating and wrapping which will be inaccessible after laying shall be satisfactorily repaired while the pipe is suspended above the trench. The pipe shall then be lowered into place and laid to the required line and grade without permanent blocking. After laying the pipe in trench, field joints shall be made promptly. Pipe handling slings and any blocking used in handling or storing pipe must be well padded to avoid damage to pipe coating.

1.9.4 After completion and acceptance of the field test on each major section of pipeline, all testing media shall be removed from the section and all interior surface cleaned. All abrasion or other damage to the coating shall then be repaired.

1.9.5 Piping placed under or through foundations of walls of buildings and subject to their load shall be protected with steel pipe sleeves, boxed sections in the structure or other approved items.

1.9.6 Suitable anchors of concrete shall be provided at all bends and other locations in the pipeline where unbalanced pressure may exist or develop, which will tend to cause movement in the pipeline while the pipe is under normal or test pressure.



1.9.7 Vaults, manholes and footings shall be provided around and under valves including all embedded steel, deck, stairs and handrails.

1.9.8 Buried piping is not included in the Scope of work of this tender enquiry. If applicable, Employer / Engineer shall provide all the necessary embedded pipe sleeves of accurate size at the pipe routing location to cross the obstruction and after the laying of the pipes all sleeves are required to be sealed.

1.10 Pipe Sleeves

1.10.1 Pipe sleeves shall be provided for pipelines passing through foundations, walls, floors, roofs etc. They shall be of sufficient size to permit the passage of flanges or fittings assembled with the line.

1.10.2 Sleeves in floors or roofs shall be set sufficiently above the floor or roof to prevent drainage through them. Approved hoods and flashings shall be provided for sleeves and pipe work passing through roofs. Where sleeves are located in floors, outside walls, walls of pressurized rooms or other similar installations, they shall be packed with mineral wool, grout or other approved material after installation of pipeline and ends closed with cover plates or other approved means.

1.10.3 Generally, sleeves shall be indicated on the drawings, but unless specifically shown as omitted, they shall be installed by the Contractor.

1.11 Testing

1.11.1 After erection, all pipe work shall be tested in sections as indicated by the Equipment Supplier/Employer. All testing/ purging/ flushing medium including compressed air (both normal and dry oil-free) shall be provided by the Employer free of cost.

1.11.2 Test pressure

The test pressure for each class of pipes shall be mentioned in the drawings or as instructed by the Engineer. Nominal pressures inside brackets shall be used only in case of absolute necessity. Other utility service lines having PW 1.0 or lower shall be tested at 1.0 kg/cm²g above the corresponding 'nominal pressure'. Systems under vacuum conditions shall be tested at 1.5 kg/cm²g greater than the 'nominal external pressure' of the system. Services having temperature of 400oC or above shall be tested at 2.5 times of 'working pressure'. Expansion joints and/or other elements intended for absorbing stresses through directional movement shall be tested at 1.25 times the 'working pressure'. Drainage, vesting and similar systems shall be tested at 3 meters water column. Valves, traps,



strainers, separators etc. shall be tested as per manufacturer's specification. Fire protection pipe work, etc. shall be tested as per mandatory regulation in force. Fuel pipe work shall be tested as per mandatory regulations in force.

1.11.3 **Hydraulic tests**

In general, pipelines shall be hydraulically tested by the Contractor for test pressure, unless specified otherwise Flushing oil or hydraulic fluid shall be used for testing of hydraulic system. Unless otherwise specified or approved by the Employer, hydrostatic pressure test shall be made on all pressure parts, service and control lines for water, air and gas, receivers and vessels after final assembly. Welded joints shall be subjected to hand hammer test while under test pressure. The test pressure shall be maintained until the entire section under test has been examined for leaks. Defects revealed by the tests shall be repaired, or defective parts replaced and the system retested.

1.11.4 **Pneumatic tests**

Pneumatic tests shall be adopted for air and gas pipelines and instrument control air lines. All these systems, regardless of construction, shall be capable of withstanding without failure leakage or permanent distortion, an internal pneumatic test pressure of 7 kg/cm² or 110 per cent of the working pressure whichever is lower. The test shall be performed with compressed air with soap suds applied at all joints or points where leakage may occur. Defects revealed by the tests shall be repaired, or defective parts replaced and the system retested.

1.11.5 **Radiographic tests**

Radiographic tests shall be made of welds for parts indicated by the manufacturer/Employer particularly for steam lines, hydraulic lines and other pressure pipes where indicated. In general the following criteria will be followed:

- i) Hundred percent weld tests shall be made when the pipe or tube size exceeds 200 mm nominal diameter or 20 mm in thickness.
- ii) Ten percent random welds shall be tested when the pipe or tube size exceeds 100 mm nominal diameter but is below 200 mm nominal diameter.
- iii) Five percent random welds shall be tested when the pipe or tube size is below 100 mm. This may be reduced to two per cent random weld tests, if initial tests indicated satisfactory results. In any case at least one random weld out of every 100 meters of welding by any welder shall be tested.



- iv) Should the results of random tests in (ii) and (iii) above indicate any doubt on the quality of weld then additional tests shall be made as directed by the Engineer.

Note: For hydraulic system refer clause 1.11.6.4.

All radiographic testing materials shall be furnished by the Contractor and a set of radiographs duly identified for location shall be submitted to the Employer. Acceptance of welded pipe joints shall be as per following:

- i) Cracks, lack of fusion, incomplete penetration shall not be accepted.
- ii) Porosity, when well dispersed and the total volume of defects fall within 7.5 per cent of area considered may be accepted.
- iii) Scattered slag inclusion, not more than 5 per cent of total length may be accepted.
- iv) Undercuts, where deeper than 0.25 mm shall not be accepted.
- v) Overlap beyond 3 mm is not acceptable.

1.11.6 **Testing procedure**

1.11.6.1 The pipeline or section thereof under testing shall be slowly filled and the test pressure, measured and the lowest point of elevation shall be applied by means of pump. The duration of each pressure test shall be for one (1) hour minimum. During the test period there shall be no drop in pressure in case of hydraulic tests and there shall be no pressure drop in case of pneumatic tests after temperature corrections.

1.11.6.2 While a line is under pressure all visible leaks shall be made tight where possible. Other types of defective joints shall be cut out and replaced. Any cracked or defective pipe, fittings, valves etc. shall be removed and replaced by the Contractor with sound materials and the test shall be repeated until the results are satisfactory. Defective welds shall be repaired by removing the defective material which caused the leak and rewelding. No weld leak shall be repaired by mechanical caulking. Permissible leakage shall be as specified in the American Water Works Association (AWWA) Standards.

1.11.6.3 The Contractor shall furnish the pumps barrels, tanks, bulk heads, blanks, connections test gauges and all other equipment necessary for pressure testing. Compressed air for pneumatic tests shall be furnished by the Employer, if available, from plant service.



Otherwise compressed air shall be arranged by the Contractor from portable air compressors. The Contractor shall furnish, install and dismantle all temporary lines from Employer's water /compressed air supply line to the system under test.

1.11.6.4 For oxygen system pipe work, 100 per cent radiographic tests shall be carried out for all welded joints. However, for hydraulic and other pressure lines, 10% of the joints shall be subjected to radiographic tests. In case, any joint fails after the testing of 10% joints, then 100% radiographic tests shall be carried out. Radiographic tests shall meet the requirements of IS:4853. The scope of work shall include the certified interpretation of the radiographic films by a recognized agency like Lloyds Register of Shipping, Central Mechanical Engineering Research Institute (Durgapur), National Test House (Kolkata) etc. The radiography interpretation shall be done by certified ASNT Level-II.

1.12 Painting

1.12.1 Painting for pipe work and structural supports fabricated by the Contractor shall be done in accordance with procedures as outlined in General Specification of painting. The colour scheme for painting pipe work shall be as directed by the Employer.

1.12.2 The surface to be painted shall be cleaned free of dirt, rust, grease etc. and shall be thoroughly wire-brushed before application of primer. Painting shall be applied with brushes. Painting when applied shall spread evenly in a thin coat and shall flow smoothly without runs and sags and shall dry quickly forming a touch durable film without showing any brush marks or cracks.

1.13 Protective Coating for Buried Pipelines

1.13.1 Coating and wrapping of buried pipelines shall be as per IS:10221. All buried steel pipelines shall be giving a corrosion protection coating, compatible with the soil where the pipelines are to be laid. The coating shall not crack, check, scale off, sag, flow or loose bond under the working conditions.

1.13.2 The coating shall consist of a primer, an inner wrap, hot pipeline coating and an outer wrap. The coating material shall be approved 'plasticized coal tar pipeline coating – white grade' or any other approved equivalent. The inner wrap shall be glass fibre and the outer wrap shall be pre-saturated glass fibre or asbestos felt.

1.13.3 The pipe to be quoted shall be cleaned absolutely free from rust, scale and other foreign matters as well as from oils, grease etc. by an approved chemical or mechanical method.



1.13.4 The clean surface shall be given a coat of smooth even film coating of a quick drying pipeline primer to provide bond between the coating and metal surface. The primer shall be allowed to dry before coating. The minimum and maximum periods of time which may elapse between priming and coating shall be indicated by the Contractor. The work shall be carried out in a clean, dry atmosphere, preferably inside the building.

1.13.5 The hot pipeline coating shall be applied on prime surface in a single flood coat of approximately 2.4 mm, with simultaneous application of the inner wrap, followed by the outer wrap. The coating shall be left out for a distance of 230 mm either way from field joints; the joints shall be coated as described above after testing is completed.

1.13.6 Employer shall be given notice for testing of coating materials in advance to enable deputation of representatives to witness it. Certified copies of the test results shall be delivered to the Employer before any tested by a suitable electric exploring device where consider necessary by the Employer.

1.14 Commissioning

1.14.1 General

The cleaning of flushing/purging and commissioning of the pipe work for hydraulic, lubrication, pneumatic, water, fuel, oil and other services shall be carried out strictly as per drawings and documents of the Equipment Supplier. For pickling of lubricating and hydraulic oil pipelines, procedures outlined in Equipment Supplier's erection instruction shall be followed. Wherever such details are not available the following procedure shall be adopted.

1.14.2 Cleaning, flushing/purging

The piping elements shall be thoroughly cleaned of all foreign matters such as scales, dirt, oil, grease etc. by wiping and wire brushing before fabrication. and erection/assembly. Cleaned components of pipe work shall be suitably protected to avoid contamination by foreign matters. Pipelines shall be flushed/purged till all dirt, scales and foreign matters are removed prior to commissioning. Minimum duration of purging/flushing shall be 30 minutes. During flushing valves and pipeline accessories such as filters, cylinders, bearings etc. shall be isolated and bypassed where required. However, the final loop circuit drawings/diagrams for all the piping systems for pressure testing, chemical cleaning, oil flushing, purging shall be prepared by the contractor in consultation with Equipment supplier and Employer / Engineer. Contractor shall also provide adequate oil filter elements of different micron sizes for hydraulic and lube lines for the purpose of oil cleaning based on the NAS requirement of the fluid system. Employer shall provide online contamination testing kit, nitrogen charging kit with suction pump



unit to charge the nitrogen into high pressure accumulators based on the requirement.

1.14.2.1 Gaseous systems:

Compressed air, steam and nitrogen pipe work shall be purged with service fluids for which the pipe work is intended.

1.14.2.2 Water and chemical services:

Water, condensate, industrial sewerage, rinse water, acidic and alkaline effluent, milk of lime system etc. shall be flushed with water. Concentrated nitric and sulphuric acid systems shall be flushed with water and completely drained prior to commissioning.

E. ERECTION OF DUCTWORK

1.1 Scope

The Contractor shall provide all equipment, tools, tackle, consumables, materials, labour and supervisor for carrying out the following:

1.1.1 Receiving, unloading, unpacking, checking, moving into site storages or erection sites all items of ductwork and accessories which shall be supplied by the Employer.

1.1.2 Cleaning, handling, transporting, rigging, assembling, erecting, aligning, levelling, bolting, welding and connecting for satisfactory installations of all items supplied to the Contractor, in proper locations, and orientations according to the drawings and/or Equipment Supplier's instructions and/or as directed by the Employer. Ductwork erection shall include fabrication as required for matching end connections.

1.1.3 Fabrication of ducts, hoods, guide vane dampers, stiffeners, expansion joints, flexible connections etc. including preparation of shop detail drawings, bill of materials, drawing office dispatch list (D.O.D.L.) etc. on the basis of design drawings supplied and obtaining approval. The Contractor shall also supply all gaskets, bolts, nuts and other jointing materials, fixtures etc.

1.1.4 Fabrication and erection of all miscellaneous structural steelwork in hangers, brackets, 'U' bolts, saddles, supports, racks etc. for ductwork.

1.1.5 Touch-up painting at the joint area of all ductwork including supports etc. as specified.



1.1.6 Performance of leakage test of ductwork.

1.2 Mode of Installation

1.2.1 Ductwork and accessories shall be installed and suitably painted as required for the service condition subject to Engineer's approval. The size and thickness of ductwork for various systems shall be as indicated in the drawings. Suitable leak-proof flanged connection shall be provided at 6 metres intervals on the main headers and at all branch connections and leak-proof manholes and inspection openings shall also be provided at regular intervals on all headers and branch ducts. The ductwork shall be suitably supported, the maximum unsupported span being 3 meters. However the erection shall be carried out by the contractor based on the equipment suppliers drawings.

1.2.2 Dampers complete with operating lever, pointer to indicate the positions and graduations to indicate the percentage of opening shall be provided at connections to all equipment. The dampers shall be complete with locking arrangement to lock the flap in any desired position as shown in the drawings.

1.2.3 Suction hood shall be made of steel sheet suitably stiffened by steel sections and shall be painted to suit the service conditions. The size and shape of the hood shall be generally as indicated in the drawings.

1.2.4 Flexible connections shall be provided where ductwork is connected to any equipment likely to produce variations.

1.3 Painting

1.3.1 Painting for ductwork and structural supports etc. fabricated by the Contractor shall be done with one coat of approved red oxide zinc chromate primer conforming to IS:2074 and two coats of approved aluminum paint and as per clauses of NALCO specification.

1.3.2 The surface to be painted shall be cleaned free of dirt, rust, grease etc. and shall be thoroughly wire brushed before application of primer. Painting shall be applied by brushes. Painting when applied shall spread evenly in a thin coat and shall flow smoothly without runs and sags and shall dry quickly forming a touch durable film without showing any brush mark or cracks.

1.4 Testing and Commissioning

The Contractor in co-ordination with Equipment Supplier/ Employer shall operate, test and adjust the various equipment and ductwork to put the various systems into operation in accordance with the instructions given by Equipment Supplier/ Employer.



F. ERECTION OF MOTORS AND MOUNTED DEVICES

1.1 Scope

1.1.1 The Contractor shall provide all consumable, materials including installation materials (including supply of temporary structures, templates, jigs etc.), plant and machineries, instruments, labour and supervision for carrying out the following work:

1.1.2 Installation of all electrical equipment to be coupled to the mechanical equipment including all DC and AC motors along with motor mounted ventilation units, tacho-generators, tacho-combination units etc. as specified.

1.1.3 Installation of mounted devices to be coupled to the mechanical equipment. This shall include items such as brakes, programmable limit switches, position encoders etc. The installation shall be at different levels and shall include fitting of couplings, where required and connected to the associated mechanical equipment.

1.1.4 All motors and other devices shall have to be made identifiable by lettering with paint in the manner as instructed by the Employer.

1.1.5 Testing and commissioning, start-up, initial operation and final acceptance in co-ordination with the Employer.

1.1.6 Weight of various motors are indicated in the Bill of Quantities.

1.2 Standards

1.2.1 All installation shall be carried out in accordance with relevant codes and practices and as indicated by the Employer.

1.2.2 All installations shall conform to the requirements of the Indian Electricity Rules as regards safety earthing and other essential provisions specified therein.

1.3 Erection of Motors

1.3.1 The motors shall be erected as per IS: 900-1992- Code of practice for installation of induction motors in so far as it is applicable and/or as per Employer's instructions.

1.3.2 The Contractor shall carefully check clean and test for insulation resistance. If the value is below the permissible limits the machine shall be dried out by the Contractor by application of external heat. The Contractor shall then place the machine on its



foundation and make necessary alignment. After checking the levels, Contractor shall align the shaft and obtain approval of the Consultant. Subsequent to this the foundation bolts shall be tightened and coupling connected. The Contractor shall furnish the alignment data in the approved format to the Consultant for his records.

1.3.3 In case of large motors delivered in assembled or dismantled condition, the erection shall also include checking of different parts and their assembly in correct sequence. The bedplate shall be properly leveled by steel wedges before grouting. Wedges, shims etc. when provided shall be flush with frames and shall not project out of the base plate. Contractor shall undertake grouting according to specification approved by the Employer.

1.3.4 Generally the couplings will be supplied in finished bore condition and for auxiliary drives these will have to be fitted to the motor shafts. Where required, keys shall be manufactured and fitted by the Contractor.

1.3.5 The Contractor shall arrange to disconnect and connect the couplings as required during testing and trial runs of the plant. All moving parts shall be lubricated prior to start-up.

1.3.6 Any special mounting bracket or attachment required for mounting any accessory on the motor shall be fixed without making any modification to the motor which may make it non-standard unless approved otherwise by the Consultant. This shall include all motor mounted ventilation units, tacho-generators, resolvers, overspeed switches etc.

1.4 Erection of Mounted Devices

1.4.1 The devices coming under this category will include those to be mounted and coupled to the mechanical equipment such as programmable limit switches, shaft position encoders, brakes etc.

1.4.2 The Contractor shall install these devices on the supports provided on mechanical equipment and make necessary alignment. After checking the levels, Contractor shall align the shaft and obtain approval of the Employer Subsequently the holding down bolts shall be tightened and couplings connected by the Contractor.



G. START-UP, COMMISSIONING AND ASSISTANCE IN PROPER FUNCTIONING AND PERFORMANCE TESTS OF EQUIPMENT

{Refer Clause No: A 1.4 (ii), (xii)}

1.1 Scope

1.1.1 The Contractor shall provide necessary equipment, tools, tackles, instruments, labour, supervision etc. for the following:

- a) Preparing equipment for start-up and commissioning.
- b) Start-up and commissioning of equipment.
- c) Performance tests of equipment after commissioning

1.2 Preparation of Equipment for Start-up and Commissioning

1.2.1 The Contractor shall be required to clean up the equipment and prepare it for trial runs and operation. The Contractor shall bring to site such equipment, tools, instruments, labour as it is deemed necessary to cater for the work which shall include but not be limited to the following:

1.2.1.1 Clean-up dirt, remove any protective coating applied by the manufacturer, clean ventilation openings and remove all foreign bodies from the equipment erected.

1.2.1.2 All flanges, couplings, inlet and outlet connections etc. shall be checked for tightness.

1.2.1.3 Check alignments and mountings of all equipment.

1.2.1.4 Check rotating parts of all equipment.

1.2.1.5 Check for proper lubrication of all moving parts.

1.2.1.6 Sequence check of all control systems for proper erection and pneumatic connections and checking operation of all interlocks and protective devices.

1.2.1.7 Blow down all piping systems, installing, removing and refitting strainers in piping and equipment as required.

1.2.1.8 Calibrate any devices requiring field calibration.

1.2.1.9 Disconnecting and reconnecting the driven and driving parts of any equipment and drives, as required, during the trial runs and rectification, if any.



1.3 Start-up and commissioning of Equipment and Performance Tests

1.3.1 The Contractor shall provide adequate personnel with tools and tackles as approved by the Consultant and operating personnel of the Employer in starting up and Commissioning of equipment.

1.3.2 After commissioning of the equipment, the Contractor shall provide adequate personnel with tools and tackles as approved by the Consultant and operating personnel of the Employer in proper functioning of the equipment till the performance tests are completed.

1.3.3 The scope of work in both the above cases shall include but not be limited to the following and shall be carried out by the Contractor as approved by the Employer and/or Consultant.

- a) Adjustment of the equipment and rectification of defects.
- b) Realignment of equipment and components.
- c) Checking, changing and adding lubricant.
- d) Re-tightening of all foundation and fixing bolts, flanges, couplings etc.

1.3.4 If at any time, any part of the equipment is required to be opened for inspection and checking by the Equipment Supplier or Consultant, this shall be done by the Contractor and if found defective the part shall be properly rectified and the same shall be satisfactorily tried after refitting.

If it is established that the defect is due to bad workmanship during installation and/or materials which are within the scope of Contractor's supply, then the charges for all rectification and refitting work inclusive of labour, materials and supervision will be borne by the Contractor. If however, the defects are due to the faulty materials or design of the equipment supplied to the Contractor, he will only have to bear charges for the opening and refitting.

1.3.5 Till the equipment are taken over by the Employer after the successful commissioning, the Contractor shall be responsible for any loss/damage/theft etc. for the equipment delivered to him.

1.3.6 Dye penetrant examination shall be carried out for detection of defects only opening out to the surface of the welds. Magnetic particle test shall be carried out for detection of defects both opening out to surface and sub-surface once up to a maximum depth of 3 mm. Radiography and ultrasonic tests shall be carried out for examination of through thickness of welds. All butt welds shall be radiographically tested



except for T-butt joints. T-butt joints shall be tested by ultrasonic examination.

H. THERMAL INSULATION FOR PIPES

1.0 SCOPE

1.1 This General specification covers the thermal insulation required for hot as well as cold services, for pipes, ducts and various other requirements. The term Thermal insulation used here generally covers all items of the assembly used to minimise heat gain by cold services or heat loss by hot services and to avoid injury to people due to contact with hot or very cold surfaces. Such assembly shall include, but not be restricted to the material of insulation; the items, securing the insulation material to the part to which it is applied; the coating or wrapping applied to secure the insulation and to act as a vapour seal and/or protect the insulation material from damage due to environmental conditions and mechanical damage and cladding to hold the insulation in position, protect it from damage, give the insulation a neat and aesthetically pleasing appearance, and to act as a heat reflector, etc.

1.2 The design and installation of all thermal insulation shall be complete in every way for the service intended and suitable for achieving the desired reduction in heat transmission as well as maintaining the surface temperature within allowable limits. The installation shall be complete in all respects including all items essential for proper installation, irrespective of whether the requirements are specifically mentioned in the Technical and General Specifications.

1.3 If any special insulation system, not covered by this specification is required, the same shall be submitted with the proposal with detailed functional description and specification for the insulation system for Engineers' approval.

2.0 STANDARDS

2.1 The thermal insulation shall be designed, manufactured, tested and installed as per the standards mentioned in this specification. Detailed instructions on such aspects as are not indicated herein shall be as per the standards, codes and recommendations of Bureau of Indian Standards (BIS) or as per the national standards of the country of origin or the codes of practices followed by the manufacturer.



2.2 Wherever applicable, the following Interplant Standards for Steel Industry (IPSS) developed by the Steel Authority of India Ltd shall be followed.

- i. IPSS:1-06-031-93 Code of Practice for Thermal Insulation of Cold Service
- ii. IPSS:1-06-015-93 Code of Practice for Thermal Insulation of hot pipelines and accessories

3.0 DESIGN BASIS

3.1 Thermal insulation shall be provided for all surfaces substantially hotter or cooler than ambient conditions. The thermal insulation provided shall ensure that the temperature of outside surface of insulation (Cladding) shall be as follows:

- a) For hot service: Outside surface temperature shall not exceed 10°C above maximum ambient temperature.
- b) For cold service: Outside surface temperature shall not be more than 10°C below the ambient temperature.

4.0 MATERIALS AND APPLICATION

4.1 Insulation for Hot Services

4.1.1 These cover pipelines carrying hot fluids such as steam, condensate, hot water, hot oils, hot air, hot flue gases, etc., as well as equipment operating at elevated temperatures.

4.1.2 Insulation materials

4.1.2.1 Mineral wool (made from rock, slag & glass) insulation materials shall be used for hot services. The insulation material shall be one of the following types.

4.1.2.2 For pipe work upto DN 350, pipe-sections of light resin-bonded mineral wool (rock/slag wool) as per IS:14164, IS: 3677 and IS: 3690 shall be used. In addition to the compulsory requirements indicated in clauses 4.1 to 4.11 of the IS code, optional requirements laid down in clauses 4.12.1 to 4.12.4 of the IS code shall be fulfilled in all cases.



4.1.2.3 For pipe sizes above DN 350 and for flat surfaces and equipment, resin bonded mineral wool (rock wool) mattress as per IS:8183, with factory stitched G.I. Wire netting on outer surface. In addition to the compulsory requirements indicated in clauses 4.1 to 4.9 of the IS code, optional requirements laid down in clauses 4.10.1 to 4.10.7 of the IS code shall be fulfilled in all cases.

4.1.2.4 The minimum bulk density of insulating materials shall be as per clause no. 2.3 of IPSS:1-06-015-93.

Anti-corrosive property:

The insulating material shall not cause corrosion of the surface on which it is applied. Chloride content of the insulation material shall not exceed 35 ppm, for application on stainless steel surface to avoid chloride corrosion. The thermal insulation shall be chemically inert and non-corrosive to GI. If chloride content of insulation exceeds 35 ppm at the time of application, GI foil wrapping (0.1 mm thick) shall be provided over the stainless steel surface before application of insulation.

Heat resistance:

The insulating material of the selected bulk density shall be suitable for continuous use at the maximum service temperature specified in the technical specification. When tested as per IS:3144 by heating to the maximum service temperature, the material shall maintain its general form and shall not suffer visible deterioration of the fibrous structure .

4.1.3 Insulation thickness

4.1.3.1 For hot service equipment the required thickness shall be provided to ensure that the outside surface temperature of Insulation is limited to values specified in clause 3.1 above. However, the minimum thickness of insulation adopted shall be 40 mm.

4.1.3.2 For hot service piping, the thickness of insulation shall not be lower than the thicknesses indicated in the table in Annexure-1. Where the actual maximum pipe surface temperatures are different, the required insulation thickness shall be provided to ensure that the outside surface temperature of insulation is limited to value specified in clause 3.1 above.



4.1.4 **Insulation application**

4.1.4.1 ***Cleaning of surface:***

The surfaces to be insulated shall be thoroughly cleaned, dried and made free from all loose scale, dirt, rust oil and grease.

All insulating materials shall be dry before application and shall be protected from moisture, weather and ingress of dirt.

For all types of insulation, expansion/contraction joints shall be provided at regular intervals not exceeding 8 metres.

These joints shall be made by providing a gap of 25 mm between adjacent sections and filling up the same by compressing loose insulation of the same material. Suitable expansion joints shall also be provided on the metal cladding over insulation.

4.1.4.2 ***Application of pipe section insulation:***

The preformed pipe sections shall be snapped on to the pipe surface in a staggered configuration. End joints of adjacent pipe section blocks (both for straight runs and for blocks/segments for valves, bends etc.) shall be staggered by one -and half of the length of the block. All insulation sections shall be trimmed and tightly butted to eliminate voids.

The insulation shall be firmly secured in place with at least three (3) loops of binding wire/band - two (2) located at 75 mm from each end and one (1) located at the middle. Mitred sections at bends and elbows shall be secured by minimum two (2) wire loops. Insulation at valves and other fittings shall also be suitably secured. Binding wire shall be 16 SWG (1.63 mm) G.I. wire. Band shall be of GI, 0.63 mm thick, and at least 20 mm wide. For pipe sizes DN 150 mm and below, insulation segments at bends shall be secured by spirally winding 16 SWG (1.63 mm) G.I. wire.

4.1.4.3 ***Application of mattress insulation:***

Regular surfaces: The surfaces to be insulated shall be cleaned of loose materials. Flat surfaces and larger diameter vessels/equipment shall be provided with M.S. spikes or studs welded to hold the insulation. Vertical pipelines shall be provided with



M.S. collars as per clause 4.3.2. The insulating mattresses shall be fitted closely to the surfaces, butting all joints tightly and laced down with 0.915 mm dia (20 SWG) G.I. wire joints in vertical as well as in horizontal planes which shall be staggered at least by 150 mm.

Irregular surfaces: In case of irregular surfaces after securing the insulation in place, all voids, depressions, cracks etc. shall be filled with loose insulation material. Valves shall be insulated upto bonnet flanges: the insulation shall be applied only after initial operation has stabilised tightness and operation of valves and specials. Insulation for a flanged joint shall be forged in the shape of a continuous ring block, reinforced with metal lathe or equal with sleeves to cover adjacent pipe ends by at least 50 mm and be butted with the pipe insulations; the flange insulation shall be applied only after pressure testing of the pipeline. In case of flanged joints at pipe terminations and connections to uninsulated equipment, the pipe insulation shall be nearly levelled down to the flange so as to end inside the bolt circle.

4.1.5 **Insulation finishing**

4.1.5.1 **Cladding support:** All insulation shall be provided with weather proof cladding of 0.63 mm thk GI sheets. The cladding shall be supported on spacers made of 25 x 3 mm thick steel flats, the spacers shall be fitted with 4 mm dia rivets to angle cleats, welded on to the surface being insulated. The angle cleats shall be of size, so that the gap between the surface being insulated and outer surface of the spacer is same as the desired insulation thickness. Pure asbestos mill board packing of 3 mm thickness shall be used between the cleats and spacers to minimize heat conduction. Spacer rings are not required for 80 mm dia and smaller pipes.

4.1.5.2 **Cladding application:** The cladding shall be bent true to shape, grooves made on all sides for making water tight joints and holes drilled for fixing. Each sheet shall be fixed to the spacers by means of studs: self-tapping, flat headed, nickel plated steel screws shall be used for jointing the sheet. Suitable bitumen washers shall be used below all screws and studs and bituminous felt strips used between sheet metal joints to ensure water proofing. Irregular items like flanges, valves etc. shall be clad with sheet metal boxes fitting the contour of insulation and continuous with



the main cladding. Openings in the cladding shall be avoided as far as possible. Where openings are essential e.g. around pipe saddles, hangers, clamps, anchors etc., they shall be well filled with insulating material and finished smooth with the pipe insulation.

4.1.5.2.1 The cladding shall be applied with minimum 50mm overlap on both longitudinal and circumferential joints. All overlaps shall be arranged to shed water. GI bands of 0.63 mm thick, 20 mm wide shall be fixed to secure the GI cladding, on a maximum 300 mm centres. One band shall be located on each circumferential joint and the distance between the joints divided into equal band spacing.

4.1.5.2.2 Metal cladding on vertical or near vertical piping with insulation outside diameters of 300 mm or more shall be supported from the adjacent lower section with minimum two (2) Nos. "S" clips fabricated from 0.63 mm thick GI sheet. The "S" clip shall be of sufficient length to allow minimum overlap of 50 mm.

4.2 Insulation For Cold Services

4.2.1 These cover pipelines carrying cold fluids, such as chilled water, cold drinking water, chilled brine, refrigerants, cold air ducts, air conditioned spaces etc as well as cold sections of refrigeration equipment, cold air handling units etc.

4.2.2 Insulation materials

4.2.2.1 For pipe work upto DN 350, pipe-sections of light resin-bonded mineral wool (glass wool) as per IS:9842/expanded polystyrene shall be used. In addition to the compulsory requirements indicated in clauses 4.1 to 4.11 of the IS code, optional requirements laid down in clauses 4.12.1 to 4.12.4 of the IS code shall be fulfilled in all cases.

4.2.2.2 For pipe sizes above DN 350 and for flat surfaces and equipment, resin bonded mineral wool (glass wool) mattress as per IS:8183/expanded polystyrene, with factory stitched G.I. Wire netting on outer surface. In addition to the compulsory requirements indicated in clauses 4.1 to 4.9 of the IS code, optional requirements laid down in clauses 4.10.1 to 4.10.7 of the IS code shall be fulfilled in all cases.



4.2.2.3 Expanded polystyrene boards/resin bonded glass wool shall be used as underdeck insulation for the building roofs exposed to sun. Similar insulation shall also be used for insulating building walls, whenever necessary. In fire hazard area, self-extinguishing type resin bonded glasswool shall be provided. Expanded polystyrene blocks and pipe sections/segments shall be used for chilled water pipelines/valves. The material shall conform to IS:4671 and shall be of type 1 unless specified otherwise. The apparent density shall be compatible with the loading conditions. Self-extinguishing (type 2) material shall be used where fire hazard exists.

4.2.3 **Insulation thickness**

4.2.3.1 For cold service equipment, the required thickness shall be provided to ensure that the outside surface temperature of insulation is limited to the values specified in Clause 3.3 above. However, the minimum thickness of insulation shall be 25 mm.

4.2.3.2 For cold service piping, the thickness of the insulation shall not be lower than the thicknesses limits indicated in the Table furnished in Annexure-1. Where the actual maximum pipe surface temperatures are different from Table-1, the required insulation thickness shall be provided to ensure that the outside surface temperature of insulation is limited to value specified in clause 3.1 above.

4.2.4 **Insulation application**

4.2.4.1 Before application of insulation a coat of solvent free anti-corrosive suitable primer shall be applied on the surface to be insulated. For galvanised steel surface, a special primer suitable for the purpose shall be used.

4.2.4.2 **Regular surfaces:** The surfaces to be insulated shall be thoroughly cleaned, dried and made free from all loose, scale, dirt, oil or grease and a coat of solvent free, anti-corrosive, suitable primer shall be applied. For galvanised steel surface, a special primer suitable for the purpose shall be used. Insulation blocks or shaped pieces shall be coated on the inside surfaces as well as edges, with hot industrial bitumen of grade 85/25 or other suitable solvent free bonding compound. The insulation shall then be stuck to the primed surfaces with adjacent sections tightly pressed; all joints shall be staggered and filled with bitumen. The insulation segments shall be secured by hexagonal G.I. wire netting of 0.915 mm dia (20 SWG) and the netting



stitched with 0.915 mm dia (20 SWG), G.I. wire.

4.2.4.3 **Irregular surfaces:** In case of irregular surfaces such as flanged joint, valves etc., the main insulation shall be terminated at a distance necessary for removal of bolts. All irregularities on the surface shall be filled up with a mixture of expanded polystyrene granules and bitumen on which suitably cut insulation blocks or shapes shall be stuck to as in the case of regular surface, overlapping the main insulation. The insulation shall be secured with the main insulation by metal bands or tape and not stuck to one another by industrial bitumen. Valves shall be insulated upto their bonnet flanges.

4.2.5 **Insulation finishing**

4.2.5.1 For mineral wool insulation the insulation finish shall be as mentioned in clause 4.1.8. Before applying the GI cladding, a vapour barrier shall be provided as described below:

4.2.5.1.1 **Vapour barrier:**

A 3 mm (wet) thick coating of approved vapour seal mastic (suitable to retain its sealing properties at prevailing temperatures, non-corrosive to GI and stainless steel, compatible with the insulation material and fire resistant) shall be applied to the surface of the insulation as soon as possible, after erection, to reduce moisture ingress into the insulation system. Whilst this coat is still wet, open weave 10 mesh glass cloth (5 mil thick) shall be laid over the surface and embedded in the mastic. Care shall be taken to ensure that the glass cloth is laid smooth and free from wrinkles and that no pockets of air are trapped beneath the surface. At junctions in the glass cloth, the overlap shall not be less than 75 mm.

A second 3 mm coat of mastic shall be applied after approximately 12 hours. When dry, these two wet (3 mm + 3 mm = 6 mm) coats of mastic shall be converted to minimum 1.50 mm dry film thickness. The vapour seal shall be carried down over all exposed edges of insulation and bonded to the surface of pipe or vessel with a mastic fillet on long runs of pipe, the ends of insulation shall be sealed off at regular intervals, and the vapour seal shall be carried down to the pipe surface. The mastic shall not be applied over wet insulation. During the drying time, the insulation shall be protected from the weather by "Alkathene" film type tarpaulin or similar approved materials.



4.2.5.1.2 While fixing GI cladding, care should be taken to ensure that the vapour barrier is not punctured anywhere.

4.2.5.2 For expanded polystyrene insulation, Membrane type vapour barrier shall be used as per Clause 4.4 and 5.2.3 of IPSS:1 - 06-031-93. The finish of insulation shall be as indicated below.

4.2.5.2.1 For pipes, the insulation shall be covered with galvanised steel chicken wire of approved quality, finished with 1:4 cement sand plaster. Under deck insulation shall be applied at soffit of roof with two (2) coats of hot bitumen @ 2 kg/sqm over a primer coat of emulsion as per manufacture's specification. The insulation shall be covered with galvanised steel chicken wire of approved quality. For underdeck insulation, where there is no provision of false ceiling, the insulation shall be finished with 1:3 cement sand plaster.

4.2.5.3 The insulation shall be continuous as far as possible. Openings shall be made for supports, brackets, clamps etc., and where required timber saddles shall be provided on the lower half of pipe ~~or duct~~ in place of insulation.

4.3 Special Insulation

4.3.1 In case of special requirements not covered by clauses 4.1 & 4.2 of this specification, the insulation material, thickness, application and finish shall be subject to Purchaser's approval.

4.3.2 Vertical insulation supports

For all types of insulation on vertical or inclined piping (at an angle greater than 45 degree from horizontal), 6 thk M.S. collars (bolted) shall be provided at approximately 5 metres interval. O.D. of collar shall be 10 mm less than O.D. of insulation.

5.0 INSPECTION AND TESTING

5.1 Routine and type tests for various items shall be performed at manufacturer's works and test certificates including those for material/accessories furnished.



6.0 PAINTING

6.1 Hot surfaces provided with insulation and cladding need not be painted for corrosion protection. For cold surfaces provided with insulation and cladding, a primer coat as indicated in Clause 4.2.4 shall be applied.

6.2 Pipework having insulation and cladding shall however, be provided with colour identification for the fluids handled and for indicating direction of flow.

6.3 Equipment surfaces having insulation and cladding shall also have identification numbers and any other relevant data provided on the insulated surface.

6.4 All painting done as mentioned above for insulated surfaces shall conform to the standard Specification for Painting of NALCO.

7.0 MEASUREMENTS

7.1 Measurements for insulation shall be taken over the finished insulation surfaces, in accordance with the measurement clauses in IS:14164 (latest). In case of any dispute, the decision of the Purchaser/Engineer shall be final and binding.

8.0 PERFORMANCE TESTING

8.1 Performance of the installed insulation system may be assessed against the specified requirement as per clause 7.1 of IPSS:1 - 06-015-93.

9.0 DRAWINGS AND OTHER DOCUMENTS

9.1 The following types of drawings and technical information shall be provided by the Insulation Contractor:

9.1.1 Properties of the insulating materials and test certificates.

9.1.2 Complete design data and drawings for all insulation works.



-
- 9.1.3 Sketches/Technical literature showing insulation materials, finish and method of application.
 - 9.1.4 Manuals dealing with safety aspects and instructions for combating fire arising out of insulation work.
 - 9.1.5 Instruction on maintenance of insulation work and storage of spare insulating materials.



ANNEXURE - 1

MINIMUM THICKNESS OF INSULATION FOR PIPES (In millimetres)

	Hot Service			Cold Service
Pipe Size	Steam	Steam	Condensate	Chilled water (Supply and Return)
DN, mm	(315°C)	(190°C)	(170°C)	(7°C & 13°C)
15	60	40	40	25
20	60	45	40	25
25	60	45	40	25
40	65	50	40	40
50	70	50	40	40
65	75	55	40	40
80	75	55	50	40
100	80	55	50	50
125	90	60	50	50
150	90	60	50	50
200	90	60	60	75
250	100	65	75	75
300	100	65	75	75
350	100	65	75	75
400	100	65	75	75
450	105	65	75	75
500	105	70	75	75
550	105	70	75	75
600	110	70	75	75

NOTE:

- 1) The table above indicates the minimum insulation thicknesses for the above mentioned specific services. However, actual thickness shall be based on the above table or as per following, whichever is higher:
 - a) For hot service: Outside surface temperature of insulation cladding shall not exceed 10°C above maximum ambient temperature
 - b) For cold service: Outside surface temperature of insulation cladding shall not be more than 10°C below the ambient temperature.



- 2) In addition to the above the chilled water pipes (supply & return) will be insulated as follows:

The chilled water pipes will be insulated by PUF insulation or Closed cell Nitrile rubber/Polythene, CFC/HCFC free Insulation PUF insulation (Thermal conductivity 0.04 W/m deg C at 10 deg C mean temperature & density shall not be less than 40 kg/m³) thickness shall be as follows:

For pipe size 100 NB and below - 50 mm
For pipe size 125 NB and above - 75 mm

Closed cell Nitrile rubber/Polythene, CFC/HCFC free Insulation (Thermal conductivity 0.035 W/m deg C at 0 deg C mean temperature & density shall not be less than 60 kg/m³) thickness shall be as follows:

For pipe size 40 NB and below - 25 mm
For pipe size 50 NB and above - 32 mm

Aluminium cladding will be provided over insulation of chilled water pipes.

ANNEXURE-2

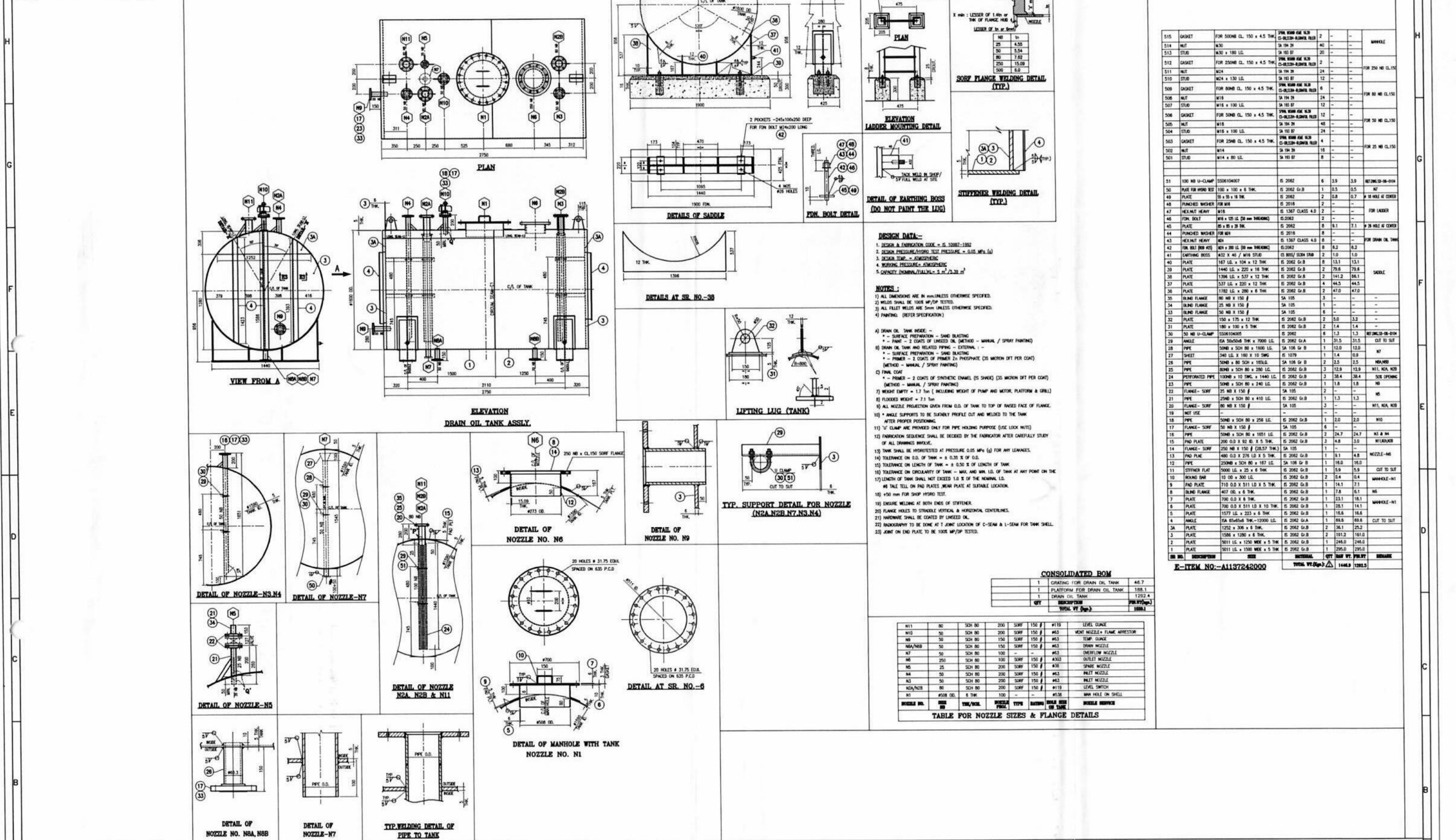
SL. No	<u>LIST OF FREE ISSUE MATERIALS</u>
1	Drain Oil Tank with Coil Heaters, Flame arrester and associated Instrumentation as per design code IS 10987 - 1992 - 5 Cu.m Capacity
2	ERW Black Pipe 508 mm x 6.3 mm thk. IS 3589 Gr.FE 410
3	ERW Black Pipe 457 mm x 6.3 mm thk. IS 3589
4	ERW Black Pipe 355.6 mm x 5.6 mm thk. IS 3589
5	ERW Black Pipe 273 mm x 6.3 mm thk. IS 3589
6	60.3 mm OD x 3.91 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends
7	219.1 mm OD x 6.3 mm thk., IS 3589, ERW Black pipe, Beveled Ends
8	168.3 mm OD x 7.11 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends
9	114.3 mm OD x 6.02 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends
10	88.9 mm OD x 5.49 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Beveled Ends
11	21.3 mm OD x 2.77 mm thk., Seamless Carbon Steel Pipe, as per ASTM A106 Gr.B, Plain ends
12	508 mm x 6.35 mm thk., 90 deg. Elbow
13	508 mm x 6.35 mm thk., 45 deg. Elbow
14	508 mm x 6.35 mm thk., Carbon Steel Equal Tee
15	508 mm x 6.35 mm By 273 mm x 6.35 mm thk., Unequal Tee
16	508 mm x 6.35 mm By 355.6 mm x 6.35 mm Reducer
17	DN 500, Class 150, Blank flanges
18	DN 500, Class 150, Slip on, raised face flanges to B16.5 forged steel to ASTM A105, bevelled ends with bolts, nuts and gaskets.
19	457 mm x 6.35 mm 90 deg. Elbow
20	457 mm x 6.35 mm 45 deg. Elbow
21	457 mm x 6.35 mm B.W Equal Tee
22	457 mm x 6.35 mm By 273 mm x 6.35 B.W reducer
23	DN 450, Class 150 raised face flange
24	DN 450, Class 150, Blank flanges
25	355.6 mm x 6.35 mm By 273 mm x 6.35 mm Unequal Tee
26	355.6 mm x 6.35 mm 90 deg. Elbow
27	355.6 mm x 6.35 mm 45 deg. Elbow
28	355.6 mm x 6.35 mm B.W Equal Tee
29	355.6 mm x 6.35 mm By 168.3 mm x 7.11 mm Unequal Tee
30	355.6 mm x 6.35 mm By 273 mm x 6.35 mm Reducer
31	DN 350, Class 150, Blank flanges
32	DN 350, Class 150, raised face flanges
33	273 mm x 6.35 mm 90 deg. Elbow

ANNEXURE-2

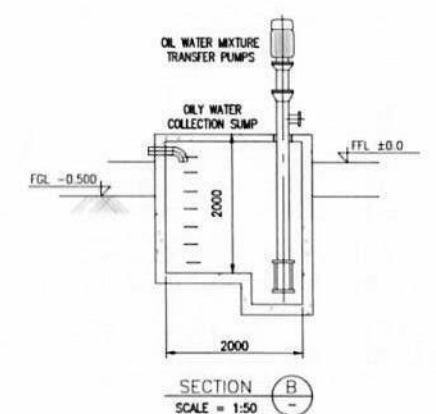
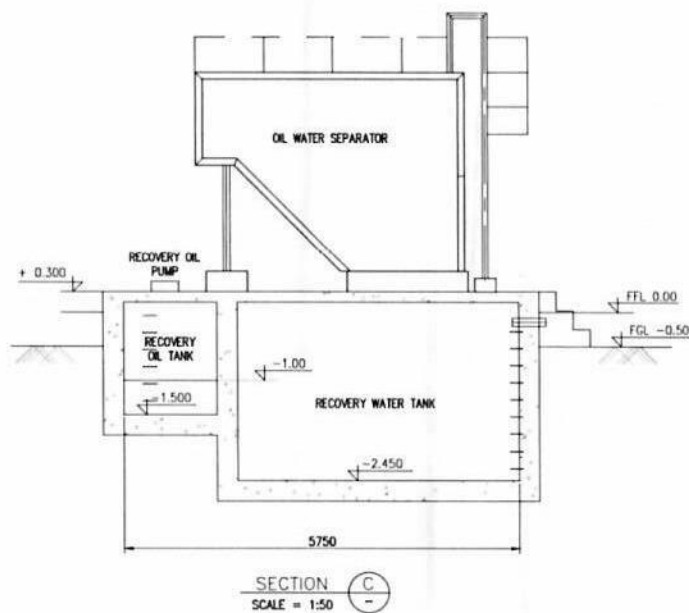
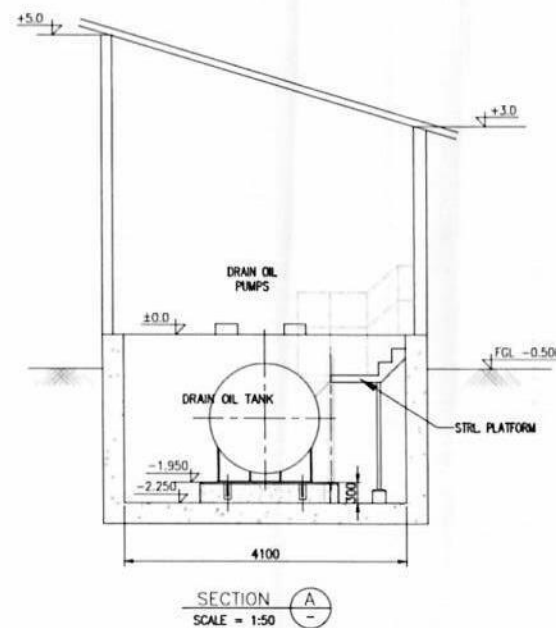
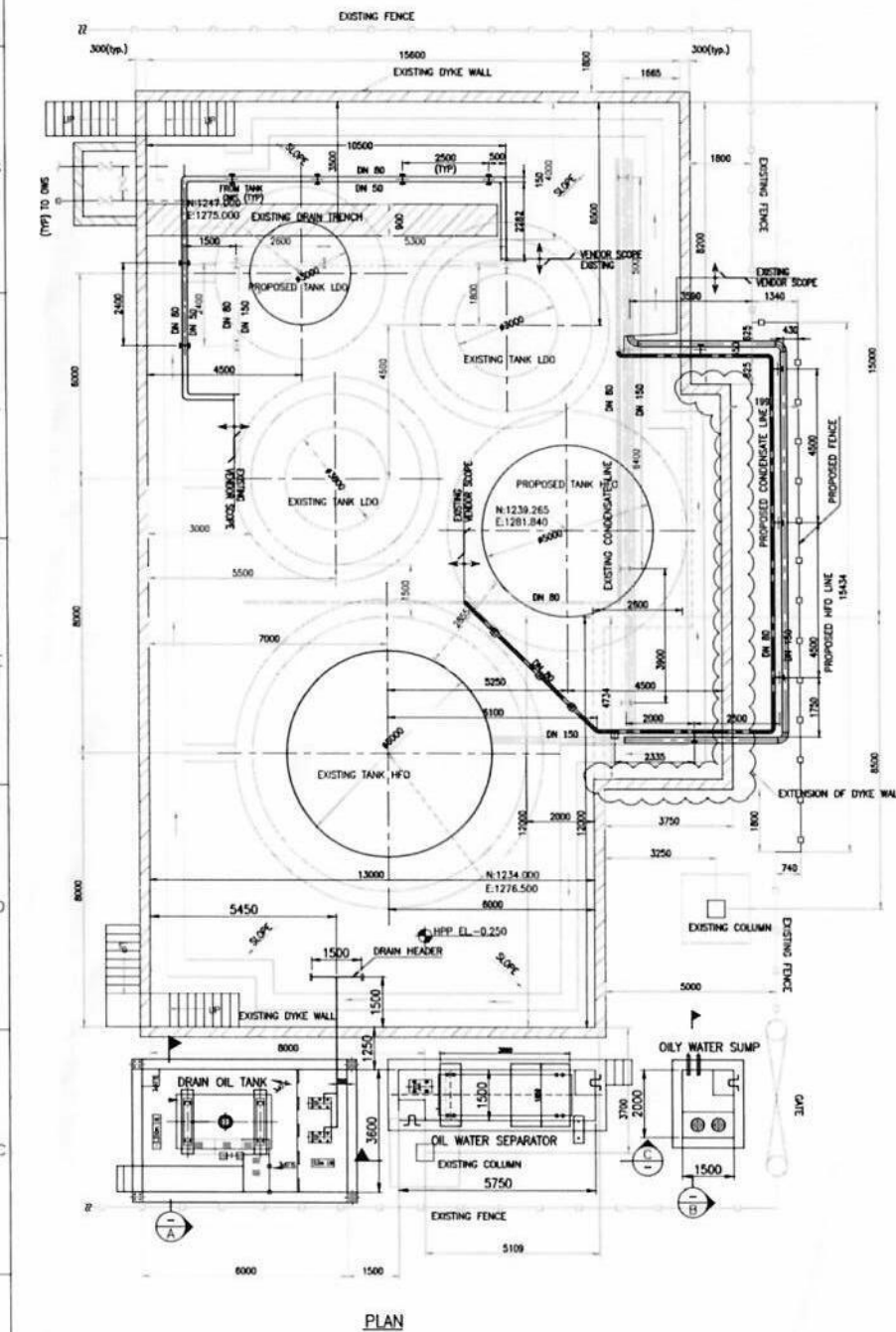
SL. No	<u>LIST OF FREE ISSUE MATERIALS</u>
34	273 mm x 6.35 mm B.W Equal Tee
35	DN 250, Class 150, Raised face flanges
36	DN 250, Class 150, Blank flanges
37	219.1 mm x 6.35 mm 90 deg. Elbow
38	DN 200, Class 150, raised face flanges
39	DN 200, Class 150, Blank flanges
40	168.3 mm x 7.11 mm 90 deg. Elbow
41	168.3 mm x 7.11 mm B.W Equal Tee
42	DN 150, Class 150, Blank flanges
43	DN 150, Class 150, raised face flanges
44	114.3 mm x 6.02 mm 90 deg. Elbow
45	DN 100, Class 150, raised face flanges
46	DN 100, Class 150, Blank flanges
47	88.9 mm x 5.49 mm 90 deg. Elbow
48	88.9 mm x 5.49 mm 45 deg. Elbow
49	88.9 mm x 5.49 mm thk., B.W Equal Tee
50	DN 80, Class 150, raised face flanges
51	DN 80, Class 150, Blank flanges
52	60.3 mm x 3.91 mm 90 deg. Elbow
53	60.3 mm x 3.91 mm B.W Equal Tee
54	DN 50, Class 150, Blank flanges
55	DN 15 Forged carbon steel 90 deg. Elbow
56	DN 15 Forged carbon steel Tee B16.11
57	DN 25 Half coupling, A 105 class 3000 rating
58	DN 250, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
59	DN 200, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
60	DN 150, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
61	DN 100, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
62	DN 100, Non return Valve Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.

ANNEXURE-2

SL. No	<u>LIST OF FREE ISSUE MATERIALS</u>
63	DN 80, Class 150, Cast Carbon Steel Gate Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
64	DN 80, Class 150, Cast Carbon Steel Plug Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
65	DN 80, Class 150, Cast Carbon Steel Non return Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
66	DN 50, Class 800, forged carbon steel gate valve, body to ASTM A105, Trim material to ASTM A182 Gr.F6, bolted bonnet, outside screw and yoke rising stem, SW ends to ANSI B16.11
67	DN 50, Class 150, Cast Carbon Steel Plug Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
68	DN 50, Class 150, Cast Carbon Steel Non return Valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
69	DN 50, Class 150, Cast Carbon Steel ball valve, body to ASTM A216 Gr.WCB, trim material to ASTM A182 Gr.F6, bolted bonnet, raised face, flange ends as per B16.5 with companion flanges, bolts, nuts and gaskets.
70	DN 50, Y-type Strainer, Carbon Steel
71	Blow down Pumps - Vertical Centrifugal single stage - 9 Cu.m/hr with Electrics and associated instrumentation work.
72	Drain Oil Pump - Vertical single screw as per API 676 - 10 Cum/hr with electrics and associated instrumentation work.
73	Oil water mixture transfer pump - Vertical single screw as per API 676 - 2 Cu.m/hr with electrics and associated instrumentation work.
74	Recovery oil transfer pump - Vertical single screw as per API 676 - 2 Cu.m/hr with electrics and associated instrumentation work.
<u>Note:</u>	The above list of Free issue materials will be provided by NALCO. However, some incidental items & consumables such as Bolts, Nuts, Gaskets & O-Rings etc, for Flanges are in the scope of Successful Vendor during execution of work at site.



1. THE EXACT NORTH POSITION WILL BE DECIDED DUE TO ENGINEERING.				APPROVAL				DASTUR				M. N. DASTUR & COMPANY (P) LTD CONSULTING ENGINEERS, KOLKATA			
FOR TENDER PURPOSE ONLY				SCALE	1:1	DATE	FOR	SCALE	1:1	DATE	FOR	NATIONAL ALUMINIUM COMPANY LIMITED BHUBANESWAR, ODISHA			
				DESIGN. BY	PKR	30.10.2023		DESIGN. BY	PKR	30.10.2023		INSTALLATION OF STEAM AND POWER PLANT FOR 5th STREAM ALUMINA REFINERY EXPANSION AT DAMANJODI, ODISHA UNDER PHASE-3 EXPANSION OF M&R COMPLEX			
				DRAWN BY	SI	30.10.2023		DRAWN BY	SI	30.10.2023		G.A. OF LDO DRAIN OIL TANK			
				CHECK. BY	PKR	30.10.2023		CHECK. BY	PKR	30.10.2023					
				APPV. BY	SUD	30.10.2023		APPV. BY	SUD	30.10.2023					
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				REV.				0							



LOAD DATA FOR PIPES :-
DN 50 - 20kgs/m
DN 80 - 50kgs/m
DN 150 - 100kgs/m

1. ALL DIMENSIONS ARE IN 'mm' AND ALL ELEVATIONS & CO-ORDINATES ARE IN 'M' UNLESS OTHERWISE SPECIFIED.
2. DRAIN OIL PIPING SHALL BE ROUTED TO SUIT SITE CONDITION AS PER THE SCHEME IN DRG NO. 28812-3CA-VBA-UTL-0010

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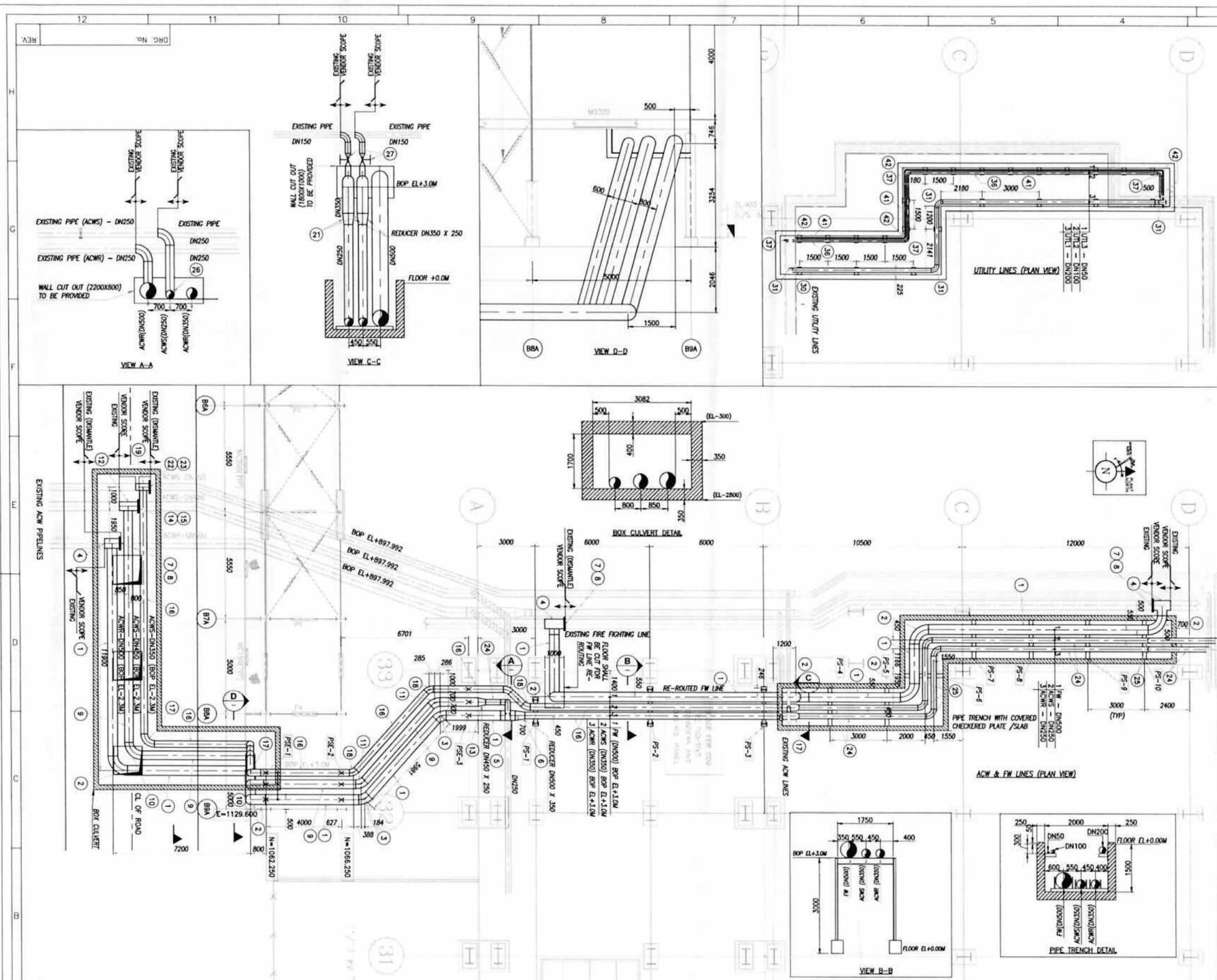
M. N. DASTUR & COMPANY (P) LTD
CONSULTING ENGINEERS, KOLKATA

NATIONAL ALUMINIUM COMPANY LIMITED
BHUBANESWAR, ODISHA

INSTALLATION OF STEAM AND POWER PLANT FOR 5th STREAM ALUMINA REFINERY
EXPANSION AT DAMANJODI, ODISHA UNDER PHASE-3 EXPANSION OF M&R COMPLEX
CIVIL & STRUCTURAL ASSIGNMENT LAYOUT FOR
FUEL OIL SYSTEM

JOB No. 28812 DRG. No. 28812-3CA-VBA-UTL-0016 REV. 0

NOTES



BILL OF MATERIAL				
S No.	SIZE	DESCRIPTION	MATERIAL	QTY.
01	DN 500	PIPE, 508 mm OD x 6.3 mm THK ERW	IS-3589 Gr. FE410	100 M
02	DN 500	90 DEG ELBOW, 508 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	12 Nos.
03	DN 500	45 DEG ELBOW, 508 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	3 Nos.
04	DN 500	EQUAL TEE, 508 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	4 Nos.
05	DN 500x250	UNEQUAL TEE, 508 mm OD x 6.35 mm THK/273 mm OD x 6.35 mm THK SEAMLESS CS, BW ENDS	ASTM A234 Gr.WPB	2 Nos.
06	DN 500x350	CONCENTRIC REDUCER, 508 mm OD x 6.35 mm THK/355.6 mm OD x 6.35 mm THK SEAMLESS CS, BW ENDS	ASTM A234 Gr.WPB	2 Nos.
07	DN 500	BLANK FLANGE, DN 500 CLASS 150 WITH BOLTS, NUTS AND GASKETS	ASTM A105	4 Nos.
08	DN 500	SUPON RAISED FACE FLANGE, DN 500 CLASS 150 WITH BOLTS, NUTS AND GASKET	ASTM A105	4 Nos.
09	DN 450	PIPE, 457 mm OD x 6.3 mm THK ERW	IS-3589 Gr. FE410	45 M
10	DN 450	90 DEG ELBOW, 457 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	5 Nos.
11	DN 450	45 DEG ELBOW, 457 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	3 Nos.
12	DN 450	EQUAL TEE, 457 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	2 Nos.
13	DN 450x250	CONCENTRIC REDUCER, 457 mm OD x 6.35 mm THK/273 mm OD x 6.35 mm THK SEAMLESS CS, BW ENDS	ASTM A234 Gr.WPB	2 Nos.
14	DN 450	BLANK FLANGE, DN 450 CLASS 150 WITH BOLTS, NUTS AND GASKETS	ASTM A105	2 Nos.
15	DN 450	SUPON RAISED FACE FLANGE, DN 450 CLASS 150 WITH BOLTS, NUTS AND GASKET	ASTM A105	2 Nos.
16	DN 350	PIPE, 355.6 mm OD x 5.6 mm THK ERW	IS-3589 Gr. FE410	100 M
17	DN 350	90 DEG ELBOW, 355.6 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	7 Nos.
18	DN 350	45 DEG ELBOW, 355.6 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	5 Nos.
19	DN 350	EQUAL TEE, 355.6 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL, BW ENDS	ASTM A234 Gr.WPB	2 Nos.
20	DN 350x150	UNEQUAL TEE, 355.6 mm OD x 6.35 mm THK/168.3 mm x 7.11 mm THK SEAMLESS CS, BW ENDS	ASTM A234 Gr.WPB	2 Nos.
21	DN 350x250	CONCENTRIC REDUCER, 355.6 mm OD x 6.35 mm THK/273 mm OD x 6.35 mm THK SEAMLESS CS, BW ENDS	ASTM A234 Gr.WPB	2 Nos.
22	DN 350	BLANK FLANGE, DN 350 CLASS 150 WITH BOLTS, NUTS AND GASKETS	ASTM A105	2 Nos.
23	DN 350	SUPON RAISED FACE FLANGE, DN 350 CLASS 150 WITH BOLTS, NUTS AND GASKET	ASTM A105	2 Nos.
24	DN 250	PIPE, 273 mm OD x 6.3 mm THK ERW	IS-3589 Gr. FE410	100 M
25	DN 250	90 DEG ELBOW, 273 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL	ASTM A234 Gr.WPB	24 Nos.
26	DN 250	EQUAL TEE, 273 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL	ASTM A234 Gr.WPB	4 Nos.
27	DN 150	GATE VALVE DN 150, CLASS 150 BODY TO ASTM A216 WCB TRIM TO ASTM A182 Gr.F6, BOLTED BONNET, RAISED FACE FLANGED ENDS AS PER ASME B16.5 WITH COMPANION FLANGES, BOLTS, NUTS AND GASKET	ASTM A216 Gr.WCB	2 NOS.
28	DN 250	WELD NECK RAISED FACE FLANGE, DN 250 CLASS 150 WITH BOLTS, NUTS AND GASKETS	ASTM A105	12 Nos.
29	DN 250	BLANK FLANGE, DN 250 CLASS 150 BW ENDS WITH BOLTS, NUTS AND GASKETS	ASTM A105	2 Nos.
30	DN 200	PIPE, 219.1 mm OD x 6.3 mm THK ERW	IS-3589 Gr. FE410	50 M
31	DN 200	90 DEG ELBOW, 219.1 mm OD x 6.35 mm THK SEAMLESS CARBON STEEL	ASTM A234 Gr.WPB	15 Nos.
32	DN 200	GATE VALVE DN 200, CLASS 150 BODY TO ASTM A216 WCB TRIM TO ASTM A182 Gr.F6, BOLTED BONNET, RAISED FACE FLANGED ENDS AS PER ASME B16.5 WITH COMPANION FLANGES, BOLTS, NUTS AND GASKET	ASTM A216 Gr.WCB	2 Nos.
34	DN 200	WELD NECK RAISED FACE FLANGE, DN 200 CLASS 150 WITH BOLTS, NUTS AND GASKETS	ASTM A105	5 Nos.
35	DN 200	BLANK FLANGE, DN 200 CLASS 150 WITH BOLTS, NUTS AND GASKETS	ASTM A105	2 Nos.
36	DN 100	PIPE, 114.3 mm OD x 6.02 mm THK SEAMLESS	ASTM A106 Gr.B	50 M
37	DN 100	90 DEG ELBOW, 114.3 mm OD x 6.02 mm THK SEAMLESS CARBON STEEL	ASTM A234 Gr.WPB	15 Nos.
38	DN 100	GATE VALVE DN 100, CLASS 150 BODY TO ASTM A216 WCB TRIM TO ASTM A182 Gr.F6, BOLTED BONNET, RAISED FACE FLANGED ENDS AS PER ASME B16.5 WITH COMPANION FLANGES, BOLTS, NUTS AND GASKET	ASTM A216 Gr.WCB	2 Nos.
39	DN 100	WELD NECK RAISED FACE FLANGE, DN 100 CLASS 150 WITH BOLTS, NUTS AND GASKETS	ASTM A105	5 Nos.
40	DN 100	BLANK FLANGE, DN 100 CLASS 150 BW ENDS WITH BOLTS, NUTS AND GASKETS	ASTM A105	2 Nos.
41	DN 50	PIPE, 60.3 mm OD x 3.91 mm THK ERW	ASTM A106 Gr.B	50 M
42	DN 50	90 DEG ELBOW, 60.3 mm OD x 3.91 mm THK SEAMLESS CARBON STEEL	ASTM A234 Gr.WPB	15 Nos.
43	DN 50	GATE VALVE DN 50, CLASS 800 BODY TO ASTM A105 TRIM MATERIAL TO ASTM A182 Gr.F6, OUTSIDE SCREW AND Yoke RISING STEM, SW ENDS TO ANSI B16.11	ASTM A105	2 Nos.
44	DN 50	WELD NECK RAISED FACE FLANGE, DN 200 CLASS 150 WITH BOLTS, NUTS AND GASKETS	ASTM A105	5 Nos.
45	DN 50	BLANK FLANGE, DN 200 CLASS 150 SCH 20 BW ENDS WITH BOLTS, NUTS AND GASKETS	ASTM A105	2 Nos.
46	DN 150	PIPE, 168.3 mm OD x 7.11 mm THK ERW	IS-3589 Gr. FE410	10 M
47	DN 150	90 DEG ELBOW, 168.3 mm OD x 7.11 mm THK SEAMLESS CARBON STEEL	ASTM A234 Gr.WPB	5 Nos.

NO.	DATE	ZONE	REVISION	REMARKS	BY	APP.	DRG. No./DETAILS	REFERENCE DRAWINGS
22	09/22			REVISED AS PER SITE CONDITIONS				

NOTES:

- ALL DIMENSIONS ARE IN MM. ELEVATIONS ARE IN METERS.
- THE EXISTING UNDERGROUND PIPE ROUTING IS TENTATIVE.
- THE PROPOSED RE-ROUTING OF ACW PIPELINE IS SUGGESTIVE. PIPE SHALL BE ROUTED TO SUIT SITE CONDITION.
- THE BILL OF MATERIALS IS TENTATIVE AND MAY VARY BASED ON SITE ROUTING.

PSE - PIPE SUPPORT ARRANGEMENT FROM EXISTING STRUCTURES.
PS - PIPE SUPPORT ARRANGEMENT FROM NEW STRUCTURES.

APPROVAL

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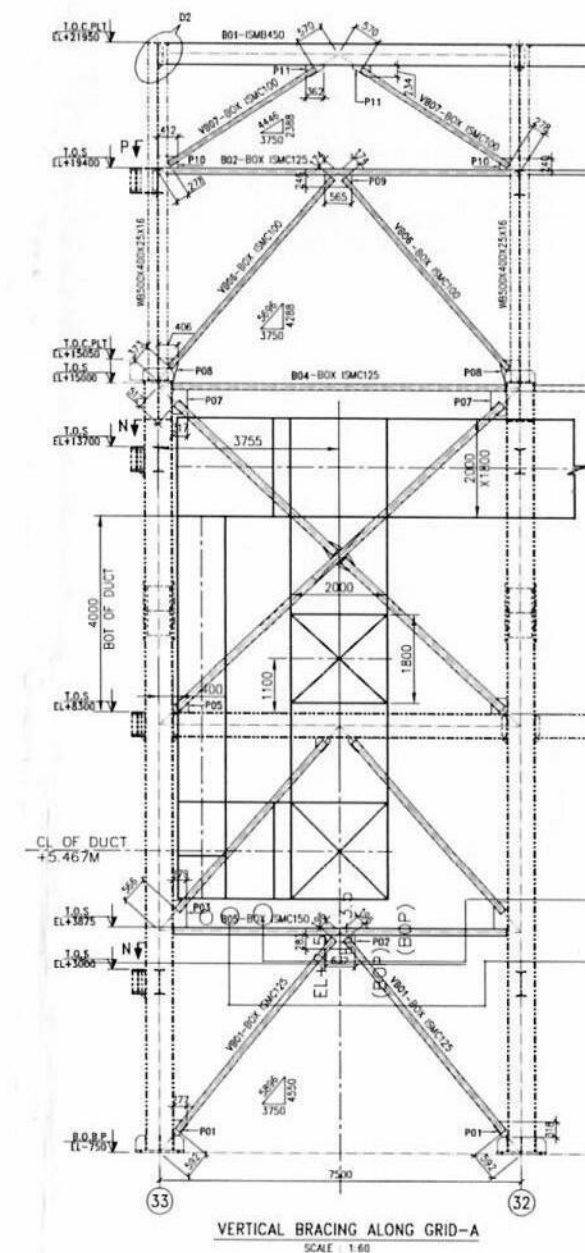
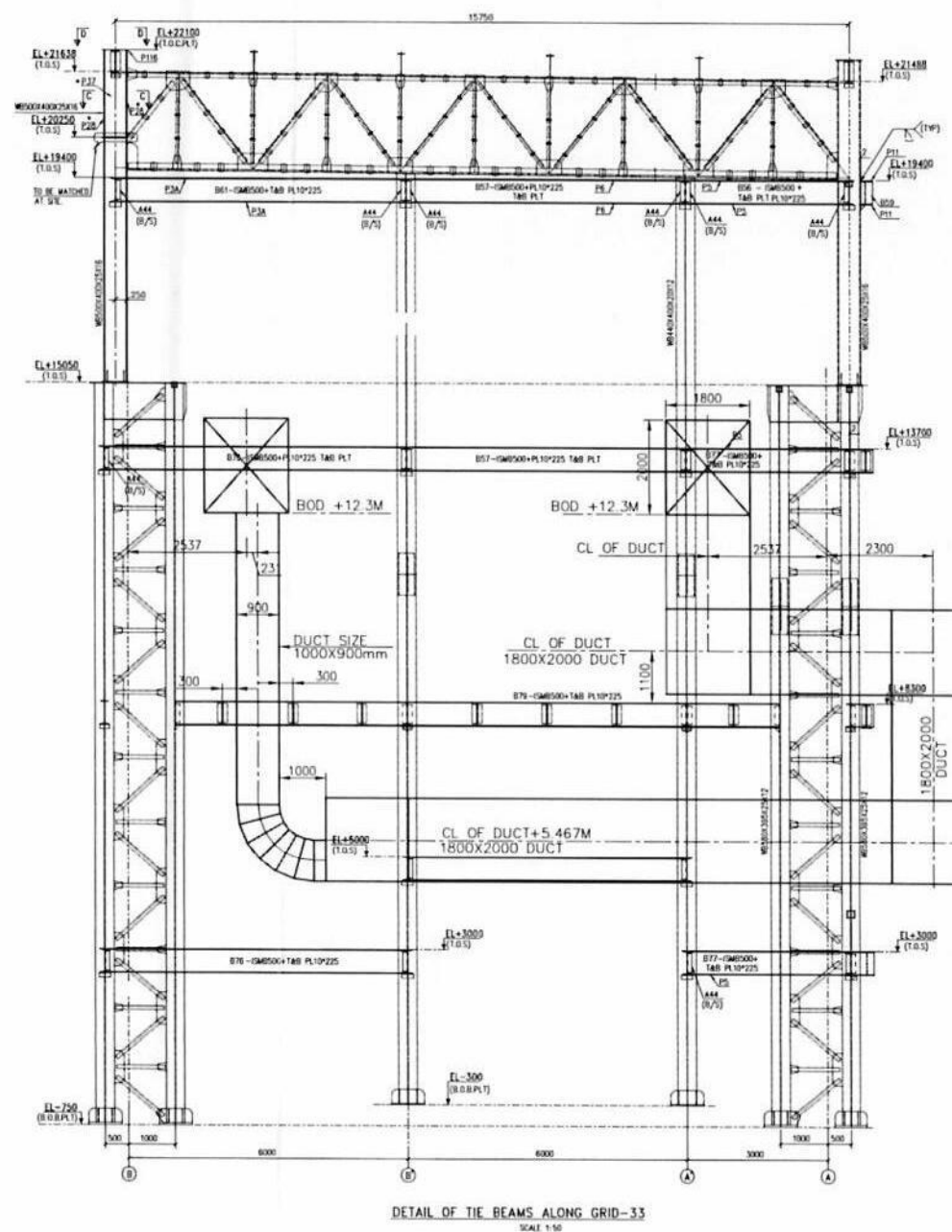
DASTUR

M. N. DASTUR & COMPANY (P) LTD
CONSULTING ENGINEERS, KOLKATA

FOR
NATIONAL ALUMINIUM COMPANY LIMITED
BHUBANESWAR, ODISHA

INSTALLATION OF STEAM AND POWER PLANT FOR 5th STREAM ALUMINA REFINERY
EXPANSION AT DAMANJODI, ODISHA UNDER PHASE-3 EXPANSION OF MAR COMPLEX
ACW AND OTHER UTILITY PIPING RE-ROUTING DRAWING IN TO BUILDING

JOB No. **28812** DRG. No. **28812-3CA-VBA-UTL-0018** REV. **A**



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CRF	CHN-
IRM	CHN-
MMH	MUM-
PML	MUM-
RLM	PM
STM	SUE

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PURPOSE ONLY**

REV	DEPT	BY	DATE

FOR **NATIONAL ALUMINIUM COMPANY LIMITED**
BHUBANESWAR, ODISHA

INSTALLATION OF STEAM AND POWER PLANT FOR 5th STREAM ALUMINA REFINERY
EXPANSION AT DAMANJODI, ODISHA UNDER PHASE-3 EXPANSION OF M&R COMPLEX

MODIFICATION OF VENTILATION DUCT

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28812	28812-000-000-UTV-0001	B

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REVISION					REFERENCE DRAWINGS	