EPCM Services for the India-Bangladesh Friendship Pipeline (IBFPL) Project in Bangladesh

TENDER DOCUMENT

(Document No : B185-TENDER_DOC-B185-000-81-41-CE-T-8000)

इंजीनियर्स इंडिया लिमिटेड
(भारत सरकार का उपक्रम)
ENGINEERS INDIA LIMITED
(A Govt. of India Undertaking)

Click on the Document Title to go to that section of the document

Table of Contents

Numaligarh Refinery Limited

INDIA BANGLADESH FREINDSHIP PIPELINE PROJECT

(BIDDING DOCUMENT NO. SM/B185-000-CE-T-8000/1002)

BIDDING DOCUMENT

FOR

PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH

Part - I: COMMERCIAL SECTION

Prepared by:

इंजीनियर्स इंडिया लिमिटेड
(भारत सरकार का उपक्रम)

ENGINEERS INDIA LIMITED
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MASTER INDEX

NAME OF WORK : **PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH FOR INDIA BANGLADESH PIPELINE PROJECT OF M/s NRL**

BIDDING DOCUMENT NO. : **SM/B185-000-CE-T-8000/1002**

PART – I : COMMERCIAL SECTION

NOTICE INVITING TENDER (NIT)

FOR

PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH FOR INDIA BANGLADESH FREINDSHIP PIPELINE (IBFL) PROJECT OF NRL

BIDDING DOC. NO.: SM/B185-000-CE-T-8000/1002

(DOMESTIC COMPETITIVE BIDDING)

E-Tendering

1.0 **INTRODUCTION:**

1.1 NRL intends to install approx. 130.361 km long transnational pipeline from the Siliguri marketing Terminal (SMT) of the Numaligarh Refinery Limited (NRL) in India to the Parbatipur depot of the Bangladesh Petroleum Corporation (BPC) in Bangladesh for transportation of Gasoil (HSD).

1.2 Engineers India Ltd. (EIL), New Delhi has been appointed the Project Management Consultant (PMC) for this project. EIL, on behalf of NRL, invites e-bids under Single Stage Two Part Bid System, for "**PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH** for IBFP project" from eligible Indian bidders with sound technical and commercial capabilities meeting the Bidder's Qualification Criteria stated in Cl. 5.0 below.

2.0 **BRIEF SCOPE OF WORK:**

2.1 The brief scope of work includes supply, installation & testing of bored cast-in-situ straight shaft RCC piles at SV-04, SV-05 & RT stations.

2.2 Pile Details

i) Type of Pile : Bored cast-in-situ straight shaft RCC pile

ii) Diameter of Pile : 450mm

iii) Length of pile : 13m to 15m (Approx.) below cut off level (COL)

iv) Number of Pile : 582 Numbers (approx.)

Carrying out initial pile load tests on the test piles specially installed for the purpose, routine pile load tests and low strain integrity test on job piles selected randomly by the Engineer-in-charge

2.3 For detailed scope of work, please refer Technical volume of bidding document.

3.0 **COMPLETION PERIOD :**

05 Months from the date of FOI/LOI.

4.0 **SALIENT DETAILS:**

a)	Bidding Document on Website	:	From **11.10.2019 to 01.11.2019**

b)	Site Visit	:	Shall be informed in pre bid meeting (Details of contact person are mentioned at 6.1 below)
c)	Last date of Receipt of Bidder's Queries for Pre-Bid Meeting	:	On **17.10.2019**
d)	Date of Pre Bid Meeting	:	at 1100 Hrs. (IST) on **18.10.2019** (Venue of Pre Bid shall be as per clause 6.0 below)
e)	Last Date and time of Online submission of Bids (Bid Due Date)	:	Up to 1200 Hrs. (IST) on **01.11.2019**
f)	Online Opening of Techno-commercial Un-priced Bid	:	1400 Hrs. (IST) on **04.11.2019 (26 Hrs after Bid due date/ time)** If above date happens to be a declared holiday in EIL Delhi, the next working day shall be considered.
g)	Earnest Money Deposit / Bid Security	:	**Rs. 15,00,000.00** **(Indian Rupees Fifteen Lakh only)**
h)	Cost of Bidding Document	:	Not Applicable
i)	Opening of Priced Bids	:	On date & time to be intimated later

The complete Bidding Document is available on Central Public Procurement Portal (CPPP) website http://eprocure.gov.in/eprocure/app. Link to download the same is also on EIL website http://tenders.eil.co.in. Bidders can view / download the document from any of the websites mentioned above.

All amendments, time extension, clarifications, etc. will be uploaded in the websites only and will not be published in Newspapers. Bidders should regularly visit the above website(s) to keep themselves updated.

Request for extension or any queries received from any bidder with less than four working days prior to bid due date shall generally be ignored, since there will not be adequate time for proper communication with Client and other Bidders.

Bidders shall submit the bid directly and in their own name without involving any intermediaries.

5.0 BIDDER'S QUALIFICATION CRITERIA (BQC):

Bidder shall fulfil the following qualification criteria:

5.1 TECHNICAL CRITERIA:

5.1.1 Bidder on his own should have executed and completed bored cast-in-situ straight shaft RCC piles of diameter 450mm or above of total length as per the following criteria during last seven (7) years period reckoned from the due date of submission of bid:

i) Total piling not less than 3250 meters in a single contract.

OR

ii) Total piling not less than 2450 meters each in two contracts.

5.2 EXPERIENCE CRITERIA:

5.2.1 The bidder should have successfully executed and completed at least one or two or three contracts of **Bored cast-in-situ RCC piling work**, of minimum value(s) as indicated below during the last 7 (seven) years reckoned from the due date for submission of bid.

One (01) contract of value not less than: (Value in INR)	Two (02) contracts each of value not less than: (Value in INR)	Three (03) contracts each of value not less than: (Value in INR)
9,68,80,000.00	6,05,50,000.00	4,84,40,000.00

5.2.2 For Experience based on Composite Works:

In case Bidder has executed composite works which includes any of the qualifying work(s) stated in 5.2.1 above, then value of such qualifying work(s) out of the total value of composite works shall be considered for the purpose of qualification.

For composite works, in the event the value of the qualifying work(s) cannot be ascertained from the work order/ completion certificate submitted by bidder, Copy of Schedule of Rates (SOR), relevant pages of Contracts, Copy of relevant pages of final bill certified by Owner for establishing requirement of BQC or written letter from their Owner specifying the nature of work with quantities and values excuted can be submitted for qualification.

5.3 FINANCIAL CRITERIA

5.3.1 Minimum Annual Turnover of the bidder as per their audited annual financial statement shall be Rs. 12,11,00,000.00 (India Rupees Twelve Crore Eleven Lakh) in at least one of the immediate preceding 3 financial years.

5.3.2 Working Capital of Bidder as per the immediate preceding year's audited annual financial results should be at least Rs. 1,21,10,000.00 (India Rupees One Crore Twenty One Lakh Ten Thousand only).

If the bidder's working capital is inadequate, the bidder should furnish a letter from the Bidder's bank having net worth not less than Rs 100 Crore, confirming the availability of the line of credit for the respective amount specified in Clause no. 5.3.2 above, irrespective of overall position of the working capital. For Example: In case a Bidder intends to quote and his working capital is inadequate, then bidder shall submit line of credit for Rs. 1,21,10,000.00 as specified above in the format enclosed as Annexure-I to NIT.

5.3.3 The financial net worth of the Bidder as per the immediate preceding year's audited annual financial results shall be positive.

"Net worth" means the aggregate value of the paid-up share capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated losses, deferred expenditure and miscellaneous expenditure not written off, as per the audited balance sheet, but does not include reserves created out of revaluation of assets, write-back of depreciation and amalgamation.

5.3.4 Financial year / previous periods as above shall be reckoned from the due date of submission of bids.

5.4 DOCUMENTS REQUIRED WITH BID:

5.4.1 The bidder shall, in his own interest, furnish complete documentary evidence to justify that the bidder meets the Qualification Criteria defined under clause no. 5.1 above.

The documents to be furnished should include the following:

a) Work order of Bored cast-in-situ RCC piling works mentioning the quantity and the scope of work, certified copy of final RA bill as documentary evidence.

b) Documentary evidence of successful completion of bored cast-in-situ RCC piling works from the client/main-contractor. Completion certificate shall contain volume of work in terms of total length indicating diameter and length of pile installed.

5.4.2 Bidder shall furnish documentary proof of fulfilling the "Bidder Qualification Criteria" as mentioned in Clause 5.1, 5.2 & 5.3. The documentation shall include but not limited to copies of work order(s) / contract agreements(s) / relevant pages of contract document(s), completion certificate(s), fulfilling the qualification criteria, complete annual reports containing audited balance sheets and profit & loss accounts statement and the documents as specified in the bidding document, etc. NRL / EIL reserves the right to complete the evaluation based on the details as furnished, without seeking any additional information.

Failure to meet the above qualifying criteria(s) will render the bid to be summarily rejected. Therefore, the bidder shall in his own interest furnish complete documentary evidence including certificates(s) from the Owner / Consultant / End user of the work executed etc, to justify that the bidder meets the qualifying criteria.

5.4.3 Bidder is to furnish annual audited financial results required as per Bidder's Qualification Criteria (Financial) including Balance Sheets and Profit & Loss account statement etc.

5.4.4 In case closing date of the last financial year is within 9 months of Bid Due date and audited annual report of immediate preceding financial year is not available, bidder has the option to submit the financial details of the three previous years immediately prior to the last financial year. Otherwise, it is compulsory to submit the financial details of the immediate three preceding financial years.

Example: In case, audited annual report of immediate preceding financial year (year ending 31st March) is not available and where bid closing date is up to 31st December, the financial details of the three previous years immediately prior to the last financial year may be submitted. However, in case the bid closing date is after 31st December, it is compulsory to submit the financial details of the immediate three preceding financial years only.

5.4.5 The financial statements stated under clause no. 5.4.2, shall be reviewed in respect of financial criteria under clause no. 5.3 above. However, in case any matter is referred in the "notes to accounts and schedules referred in balance sheet and profit & loss account" then, only quantified qualified / adverse / disclaimer opinion in the statutory auditor's report, if any, having impact on financial criteria shall be considered for evaluation.

5.4.6 In case a bidder (a Parent Company) is having wholly owned subsidiaries, but only a single consolidated annual report is prepared and audited which includes the financial details of their wholly owned subsidiaries, consolidated audited annual report shall be considered for establishing the financial criteria subject to statutory auditor of the bidder certifying that separate annual report of bidder (without the financial data of subsidiaries) is not prepared and audited.

Further, in case a bidder is a subsidiary company and separate annual report of the bidder is not prepared & audited, but only a consolidated annual report of the Parent Company is available, consolidated audited annual report shall be considered for establishing the financial criteria subject to statutory auditor of the parent company certifying that separate annual report of bidder is not prepared and audited.

5.5 CERTIFICATION OF BQC DOCUMENTS

All supporting documents, pertaining to “Bid Qualification Criteria (Experience as well as Financial)” including MSE certificate shall be submitted duly certified as follows:

Documents shall be submitted duly certified by CEO/CFO/Company Secretary or any member of the Board of Directors in case of limited companies (Private / Public limited).

CEO/CFO/Company Secretary or any member of the Board of Directors can either sign all the pages of the documents or submit a certificate as per Form-A, signed by them, listing out all the BQC documents/MSE document submitted in the bid along with basic details, duly referenced.

In case of Proprietorship / Partnership firms, the authentication shall be by the proprietor / any two partners and also notarised by public notary on all pages of the documents shall be required.

In addition to above, bidder shall furnish an undertaking as per Form-B, form the same authority (authorities) who had signed and certified the BQC documents.

5.5.1 Requirement of above certification shall not be applicable to published audited annual financial statements in English, if original booklets are submitted.

5.5.2 Submission of authentic documents is the prime responsibility of the Bidder. However, NRL/EIL reserves the right of getting the documents cross verified, from the document issuing authority.

5.5.3 NRL /EIL reserves the right to complete the evaluation based on the details furnished (without seeking any additional information) and / or in-house data, survey or otherwise.

5.5.4 Bidders are required to submit all such past experience(s) (PTR) meeting the BQC along with relevant supporting documents in the first instance itself, along with the bid.

5.5.5 Experience of only the bidding entity shall be considered.

A job executed by a bidder for its own plant/projects cannot be considered as experience for the purpose of meeting requirement of BQC of the tender.

However, jobs executed for Subsidiary/ Fellow subsidiary/ Holding company will be considered as experience for the purpose of meeting BQC subject to submission of tax paid invoice(s) duly certified by Statutory Auditor of the bidder towards payments of statutory tax in support of the job executed for Subsidiary/Fellow subsidiary / Holding company. Such bidders to submit these documents in addition to the documents specified in the bidding documents to meet BQC.

5.5.6 A job completed by a bidder as a sub-contractor authorized by Owner / end user shall be considered for the purpose of meeting the experience criteria of BQC subject to submission of following documents in support of meeting the "Bidder Qualification Criteria":

(a) Copies of work order along with SOR and completion certificate having details like work order no. /date, brief scope of work, ordered & executed value of the job, completion date etc. issued by main contractor.

AND

(b) Copy of completion certificates from the end user / Owner mentioning that the work has been executed by bidder as sub-contractor OR a copy of approval by end user / Owner for engaging the bidder as sub-contractor.

5.5.7 The bidder shall furnish documentary evidence by the way of track record, copies of work order, completion certificate and Balance Sheet or Audited Financial Statements including Profit & Loss Account etc. along with the Bid to establish his experience and track record meeting qualification criteria. Bidders should ensure submission of complete information/ documentation in the first instance itself. Qualification may be completed based on the details so furnished without seeking any subsequent additional information. Subsequent to

the submission of bid, bidders are not allowed to change the price or substance of the bid i.e. scope of work, specifications, delivery schedule, completion period etc. including modification of the bid to meet the BQC of the tender.

6.0 **PRE-BID MEETING & SITE VISIT**

6.1 Bidders are invited for site visit as per the date mentioned in Cl. 4.0 b) above. Details of contact person for Site visit is:

Sri. Debasish Das, Manager (Projects)
Numaligarh Refinery Limited
E-mail: debasish.das@nrl.co.in

Ph: 8761869555, 8638269208

6.2 Pre-bid Meeting shall be held at "Engineers India Limited, 1, Bhikaji Cama Place, N.Delhi (India)" as per the date mentioned in Cl. 4.0(d) above. Bidders or their authorized representatives are requested to attend the Pre-Bid Meeting so that their queries, if any, related to the Bidding Document and Scope of Work can be addressed during the meeting.

6.3 The bidders are requested to send clarifications/ queries, if any, by courier or by e-mail to reach EIL at least four days before the pre-bid meeting. The clarifications shall be provided during the pre-bid meeting.

6.4 Non-attendance of the pre-bid meeting shall not be a cause of disqualification of the bidder.

7.0 **SUBMISSION OF BID & VALIDITY**

7.1 Bids are required to be submitted only through Govt. of India CPP Portal at http://eprocure.gov.in/eprocure/app on or before the Bid submission date and time. Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: http://eprocure.gov.in/eprocure/app). No enrolment fee would be charged from the bidders. It may also be noted that the price details are required to be filled & submitted only on the Schedule of Price format downloaded from above e-Tendering website.

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

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

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

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

7.4 No physical Bids / Offers shall be permitted. The Offers submitted through e-tendering system shall only be considered for evaluation and ordering. Bids submitted through Fax/e-mail/courier/computer floppy/CD/Pen Drive shall be rejected.

7.5 Bid should be valid for **04 (Four)** months from the date of opening of Unprice bids.

7.6 All documents furnished by the bidder in support of meeting the technical, commercial and financial criteria (5.1, 5.2 and 5.3 above) of BQC as per NIT including Integrity Pact & Power

of Attorney shall be Digitally Signed authenticated copies and submitted in e-tendering website along with their offer. In such case, bidders shall not be required to submit the original authenticated documents including Power of Attorney & Integrity pact in physical form to EIL.

In case of submission of digitally signed authenticated copies of documents for meeting BQC, bidder shall not be required to submit the original authenticated documents in physical form in EIL subject to confirmation by bidder on Form-C attached with NIT.

7.7 Earnest Money Deposit & MSE certificate copy required to be submitted in original shall be submitted in sealed envelopes to the below mentioned address within 07 calendar days by bid due date and time. Scanned copy of the same to be uploaded on e-procurement Portal:

Kind Attention:
Mr. Sunita Mitra-GM (SCM),
1st Floor, EIB
Engineers India Limited,
1, Bhikaji Cama Place
New Delhi 110066

8.0 EARNEST MONEY DEPOSIT (EMD)

8.1 Bids must be accompanied with Earnest Money Deposit / Bid Security as specified in clause no. 8.2 below. Bids not accompanied with requisite Earnest Money deposit / Bid Security shall be considered as non-responsive and such Bids shall be summarily rejected.

EMD/ Bid Security shall be in favour of Numaligarh Refinery Limited, Numaligarh, in the form of crossed Demand Draft (Payable at Numaligarh Refinery Limited) or Bank Guarantee (in the prescribed proforma) from Schedule Commercial banks in India / Indian branch of foreign bank. The Bank Guarantee shall be valid for a period of 6 months from the bid due date.

EMD/ Bid Security through Swift message/ Cheque/ Cash shall not be acceptable.

However, EMD exemption shall be applicable for Micro or Small Enterprises registered with District Industries Centers or Khadi and Village Industries Commission or Khadi and Village Industries Commission or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises or Udyog Aadhaar Memorandum. The certificate issued should be valid on the date of opening of tender. The bidder shall submit notary attested NSIC registration certificate. However MSE bidders are not exempted from payment of security deposit.

There will be no waiver of EMD for Public Sector undertakings of central or state governments.

8.2 Bidders are required to submit the EMD in original at the time of bid submission in sealed envelope and are required to upload the scanned copy of EMD on CPP Portal along with e-Bid. EMD in original shall be submitted in a sealed envelope titled “Earnest Money Deposit for Bidding Document No. **SM/B185-000-CE-T-8000/1002**”.

Bidder must upload the scanned copy of original EMD on CPP Portal along with the e-bid or submit original EMD by bid due date and time. In case bidder fails to upload scanned copy of EMD on CPP Portal or submit original EMD by the bid due date & time, such bid shall not be considered for evaluation.

However, if the Bidder is unable to submit original EMD within the due date and time for Bid submission, he may submit the same within 7 days from the date of unpriced bid opening, provided scanned copy of the same had been uploaded on CPP Portal. In case the Bidder fails to submit the EMD in original within 7 days, his bid shall be rejected, irrespective of their status / ranking in tender and notwithstanding the fact that a copy of EMD was uploaded earlier by the Bidder.

9.0 AWARD METHODOLOGY

The Technically & Commercially acceptable qualified bid with the lowest evaluated price will be considered for award.

10.0 GENERAL

10.1 Bidders to note that verification of BQC credentials shall be taken up for L1 Bidder. The verification procedure would be initiated immediately upon establishing L1 bidder. Project progress shall continue including releasing the LOA / PO. However, first payment to the Bidder shall be released only on completion of verification. It will be the responsibility of the L1 bidder to facilitate timely completion of the verification as required. Despite all checks, if the frauds takes place, penal actions shall be taken in line with the provisions of Bidding Document and Banning Policy of EIL/NRL.

10.2 NRL/EIL reserves the right to carry out capability assessment of the bidder including referral to in house information.

10.3 NRL/EIL will not be responsible or liable for cost incurred in preparation & delivery of bids, regardless of the conduct or outcome of the bidding process.

10.4 NRL/EIL reserves the right to reject any or all the bids received at its discretion without assigning any reason whatsoever, and to annul the Bidding process at any stage.

10.5 In case any Bidder is found to be involved in cartel formation, his Bid will not be considered for evaluation / placement of order. Such Bidder will also be debarred from bidding in future.

10.6 Canvassing in any other form by the bidder or by any other agency on their behalf may lead to disqualification of their bid.

10.7 Bidder should not be under liquidation, court receivership or similar proceedings.

10.8 The bidders who are on Holiday/ Negative list of NRL or EIL on the due date of submission of bid/ during the process of evaluation of the bids, the offers of such bidders shall not be considered for bid opening/ evaluation/ Award, even if the bidding document were issued inadvertently/ downloaded from website.

10.9 Bidders may view the Bid opening through Govt. of India CPP Portal i.e. http:// eprocure.gov.in/ eprocure/ app or may witness the bid opening in EIL Office New Delhi.

10.10 Bids sent through Fax/ or Telex or Telegram or E-mail/ Courier/ Computer floppy/CD/Pen Drive shall not be accepted.

10.11 Consultant for the Project or their subsidiary company or companies under the management of consultant, are not eligible to quote for the execution of the same job for which they are working as consultant.

10.12 Bids submitted on Consortium or unincorporated Joint-Venture basis shall not be accepted.

10.13 Price preferences under PPLC-2017 and MSE policy 2012 are not applicable.

10.14 NRL reserves its right to allow Public Sector Enterprises (Central/ State), purchase preference as admissible/ applicable from time to time under the existing Govt. policy.

10.15 For detailed specifications, terms and conditions and other details, refer complete Bidding Document.

10.16 Clarification, if any, can be obtained from Ms Sunita Mitra / Mr. Vivek Dixit through following number.

Telephone No. +91-11-2676 3504/3209

E-mail: s.mitra@eil.co.in;vivek.dixit@eil.co.in

General Manager (SCM)
Engineers India Limited, Delhi.

FORM-A

DECLARATION

(ON BIDDER'S LETTER HEAD BY CEO OR CFO OR COMPANY SECRETARY OR ANY MEMBER OF THE BOARD OF DIRECTORS)
(OTHER THAN PARTNERSHIP FIRM/ PROPRIETARY FIRM)

I, ..., S/o D/o _____, resident of _____, am *CEO OR CFO OR COMPANY SECRETARY OR A MEMBER OF THE BOARD OF DIRECTORS* of M/s.....having office at..... PIN..... do hereby solemnly affirm and state as under :-

1. That I am the *CEO OR CFO OR COMPANY SECRETARY OR A MEMBER OF THE BOARD OF DIRECTORS* of M/s.....

2. That the document (s) submitted, as mentioned hereunder, by M/s ..... alongwith the Bid Document submitted under covering letter no. ..... dated ..... towards Tender No. _____- for "_____" has / have been submitted under my knowledge.

Sr. No.	Document Reference no. & date	Document subject	Issuing Authority

3. That the document(s) submitted, as mentioned above, by M/s..... alongwith the Bid Document for meeting the Bid Qualification Criteria thereunder, vide covering letter no. ..... dated……....., towards Tender No. _____ for "_____" are authentic, genuine, copies of their originals and have been issued by the issuing authority mentioned above and no part of the document(s) is false, forged or fabricated.

4. That no part of this declaration is false and that this declaration in respect of genuineness of the documents has been made having full knowledge of (i) the provisions of the Indian Penal Code in respect of offences including, but not limited to those pertaining to criminal breach of trust, cheating and fraud and (ii) provisions of bidding conditions which entitle the Owner / EIL to initiate action in the event of such declaration turning out to be a misrepresentation or false representation.

5. I, ... do hereby verify that the factual contents of this declaration are true and correct. No part of it is false and nothing material has been concealed there from.

SIGNATURE OF CEO OR CFO OR COMPANY SECRETARY OR A MEMBER OF THE BOARD OF DIRECTORS :_____
NAME OF BIDDER : _____
COMPANY SEAL : _____

FORM-B

UNDERTAKING

I, _____ S/o/D/o of _____, working as _____ *{CEO/ CFO/ Company Secretary or any member of the Board of Directors in case of a limited company or proprietor / any two partners in case of Proprietorship / Partnership firms (indicate, as applicable)}* of the Company _____ having its registered office at _____ certify that all the details including documents pertaining to Bidder Qualification Criteria signed by undersigned vide our offer reference _____ against your Enquiry document _____, are true, authentic, genuine and exact copy of its original.

It is certified that none of the documents are false/forged or fabricated. All the documents has been submitted with full knowledge of (i) the provisions of the Indian laws in respect of offences including, but not limited to those pertaining to criminal breach of trust, cheating and fraud (ii) provisions of bidding conditions and iii) Suspension / Banning rules of Owner/ EIL, which entitle the Owner/EIL to initiate action in the event of such declaration turning out to be a misrepresentation or false representation.

I further certify that further documents, if any, required to be submitted by our company, shall be submitted under my knowledge and those documents shall also be true, authentic, genuine, exact copy of its original and shall not be false/forged or fabricated.

I also declare that in case, at a later date, any of the document submitted in our bid referred above is found to be false/forged or fabricated, I, shall be held responsible for the same and EIL/Owner has every right to take action against me and my company, as deemed fit as per law of land and provisions of the Bidding Documents and EIL/Owner's right to put our company on Suspension / Banning list for future business with EIL/Owner.

Specimen Signature of authorized representative

Signature

Name & Designation (*CEO/ CFO/ Company Secretary or any member of the Board of Directors in case of a limited company or proprietor / any two partners in case of Proprietorship / Partnership firms (indicate, as applicable)*)

FORM-C

SELF-CERTIFICATION OF ONLINE DOCUMENTS
(ON BIDDER'S LETTER HEAD)

I, _____ S/o/D/o of _____, working _____ (indicate, as applicable) in the Company _____ having its registered office at _____ certify that all the details including documents pertaining to Bidder Qualification Criteria submitted vide our offer reference _____ against Enquiry document _____, are true, authentic, genuine and exact copy of its original.

None of the documents are false/forged or fabricated. This certification is being submitted having full knowledge of (i) the provisions of the Indian laws in respect of offences including, but not limited to those pertaining to criminal breach of trust, cheating and fraud and (ii) provisions of bidding conditions which entitle the Owner/EIL to initiate action in the event of such declaration turning out to be a misrepresentation or false representation.

We also confirm that all documents submitted for meeting the BQC are certified as per the certification requirement mentioned in bidding document.

SIGNATURE :_____

(To be printed on Letter Head of bank)

DECLARATION FROM THE BANK FOR AVAILABILITY OF UNUTILIZED LINE OF CREDIT

Ref: _____ Date: _____

We _____, a Bank firm having our registered office address _____ confirm that the Company M/s _____, having its registered office at _____ is having account with our bank.

Presently, the credit limits of the company are as follows:

Fund Based Line of Credit (towards Working Capital like CC Limit)	**Amount in (Currency_____)**
Sanctioned Line of Credit	
Utilized Line of Credit	
Balance Line of Credit	

[Bank to specify as applicable]

We declare that we are scheduled bank in India; OR

We declare that we are a commercial bank having Net worth more than equivalent INR 1000 Million as per latest audited financial statements.

Yours Faithfully,

Signature
Name & Designation
e-mail ID
Fax number

INSTRUCTIONS TO BIDDERS

TABLE OF CONTENTS

GENERAL

1.0 INTRODUCTION

1.1 The existing practice of sending diesel from Numaligarh Refineries Limited (NRL) in India to Bangladesh is by rail. To establish and expansion of the oil and gas pipeline infrastructure in Bangladesh, India Bangladesh Friendship Pipeline (IBFP) Project has been launched, wherein it is proposed to construct a pipeline of approximately 130 km from the Siliguri Marketing Terminal (SMT) of the Numaligarh Refinery Ltd (NRL) in India to the Parbatipur depot of the Bangladesh Petroleum Corporation (BPC) in Bangladesh for transportation of High Speed Diesel.

1.2 NRL intends to install 10.75" OD x 130.361 km (approx.) long transnational pipeline from Siliguri in India to Parbatipur in Bangladesh.

1.3 The work shall be executed in the following two parts:

1.4 Part A: Pipeline Job to be executed in Bangladesh (approx. 125 kms. out of total approx. 130.361 kms. Line pipe).

1.5 Part B: Pipeline Job to be executed in India (approx. 5 kms. out of total approx. 130.361 kms. Line pipe).

1.6 Engineers India Limited (EIL) has been engaged for PCM services for the above pipeline project.

1.7 EIL for and on behalf of NRL invites e-Bids, under single stage two bid system, for the entire scope of work covered under the Bidding Document on item rate indivisible work contract basis (hereinafter for the purpose of these instructions collectively referred as "WORK").

1.8 It shall be Bidder's responsibility to have thorough understanding of the reference documents, site conditions and specifications included in the Bidding Document.

2.0 COST OF BIDDING

2.1 All direct and indirect costs associated with the preparation and submission of bid (including clarification meetings and site visit, if any), shall be to Bidder's account and the NRL/EIL will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

3.0 SITE LOCATION / SITE VISIT

3.1 Bidder is advised to visit and examine the site, its surroundings and familiarise himself of the existing facilities and environment, and collect all other information which he may require for preparing and submitting 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 NRL 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 NRL and his personnel and agents from and against all liability in respect thereof and will be responsible for personal injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, cost and expenses incurred as a result thereof.

4.0 ACKNOWLEDGEMENT & CONFIRMATION

4.1 Bidder shall acknowledge against the Tender on EIL's website http:tenders.eil.co.in/newtenders and confirm his intention to bid or reasons(s) of not participating in the tendering in case of regret/negative acknowledgment.

5.0 FRAUDLENT PRACTICE

5.1 NRL requires that Bidders/Vendors/Contractors observe the highest standard of ethics during the award/execution of Contract. "Fraudulent Practice" means a misrepresentation of facts in order to influence the award of a Contract to the detriment of the NRL, and

includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the NRL of the benefits of free and open competition.

5.2 The NRL will reject a bid for award if it determines that the bidder recommended for award has engaged in fraudulent practices in competing for the Contract in question.

Bidder is required to furnish the complete and correct information/ documents required for evaluation of their bids, if the information/ documents forming basis of evaluation is found to be false/ forged, the same shall be considered adequate ground for rejection of bids and forfeiture of Earnest Money Deposit. Earnest Money Deposit of a bidder forfeited by the NRL under fraudulent practices shall not be returned in any circumstances.

5.3 In case, the information/ document furnished by the Bidder/vendor/Contractor forming basis of evaluation of his bid is found to be false/ forged after the award of the contract, NRL shall have full right to terminate the contract and get the remaining job executed at the risk & cost of such Bidder/Vendor/ Contractor without any prejudice to other rights available to NRL under the contract such as forfeiture of CPBG/Security Deposit, withholding of payment etc.

5.4 In case, this issue of submission of false document comes to the notice after execution of work, NRL shall have full right to forfeit any amount due to the Bidder/Vendor/Contractor along with forfeiture of CPBG/Security Deposit furnished by the Bidder/Vendor/Contractor.

5.5 Further, such Bidder/Vendor/ Contractor shall be put on Blacklist/ Holiday/Negative List of NRL and EIL, debarring them from future business with NRL and EIL for a time period, as per the prevailing policy of NRL and EIL

6.0 ELIGIBLE BIDDERS

6.1 A bidder may be a firm or a company, who, have been issued the Enquiry / RFQ Document on Limited Competitive Basis.

6.2 A bidder who is on Holiday / Negative / Suspension/ Banning list of EIL/NRL on due date of submission of bid / during the process of evaluation of the bids, the offers of such bidders shall not be considered for bid opening/evaluation/award.

6.3 If a Bidder is placed on Holiday / Negative / suspension / banning after opening of price bid and such Bidder happens to be the lowest bidder, the enquiry shall be refloated for the items / parts for which the bidder is lowest.

6.4 The bidding is open only to the bidders to whom Enquiry Document has been issued.

6.5 As Purchaser intends to contract directly with suppliers of the goods for which bids are invited, the bids should be prepared by the suppliers and submitted directly. Purchaser reserves the right to reject offers made by intermediaries.

6.6 In case any bidder is found to be involved in cartel formation, his bid will not be considered for evaluation / placement of order. Such bidder will also be debarred from bidding in future.

B BIDDING DOCUMENT, CLARIFICATIONS AND AMENDMENT

7.0 BIDDING DOCUMENT

7.1 The Bidding Document shall be read in conjunction with any amendment issued in accordance with Clause 7.0 below.

- Invitation for Bid (IFB) / Letter Inviting Bid (LIB)
- Instructions to Bidders and its attachments (Proposal Forms).
- General Conditions of Contract (GCC) and its Addendum
- Special Conditions of Contract (SCC) and its attachments.
- Schedule of Rates (SOR)/ Schedule of Prices (SOP).
- Technical Specifications / Standards.
- Drawings, if any.

7.2 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 Master Index.

7.3 Bidding documents once issued / downloaded are non-transferable.

8.0 CLARIFICATION OF BIDDING DOCUMENT

8.1 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 IFB/LIB or prior to the Bid Closing Date. Such clarification requests shall be directed to the address given in LIB/IFB.

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

8.3 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. The queries raised (without identifying the sources of the query) and the responses will be uploaded on website.

8.4 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.

9.0 AMENDMENT OF BIDDING DOCUMENT

9.1 NRL/ EIL 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 the same duly signed and stamped in token of his acceptance.

9.2 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 of impact on quoted price/ revised price, if any.

10.0 CONFIDENTIALITY OF BIDDING DOCUMENT

10.1 Bidders shall treat the bidding documents and contents therein as strictly confidential.

10.2 The Bidding Document is and shall remain the exclusive property of the NRL without any right to Bidder to use them for any purpose except for the purpose of Bidding.

C PREPARATION OF BID

11.0 LANGUAGE OF BID

11.1 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.

12.0 BID REJECTION CRITERIA /COMPLIANCE TO BID REQUIREMENT

12.1 NRL/ EIL expect Bidder's compliance to requirement of Bidding Document without any deviation and submit substantially responsive bid.

12.2 Bids not in compliance to requirement of Bidding Document shall not be accepted and NRL/EIL may not seek any clarification/ correspondence from bidders in case sufficient acceptable bids are received. Therefore, bidders are requested to submit their bids complete in all respects.

12.3 **Bidders shall ensure that their bids are complete in all respects and conform to terms, conditions and Bid Evaluation criteria of Tender. Bids not complying with NRL's requirement may be rejected without seeking any clarifications.**

12.4 In any case, no exception or deviation shall be accepted to the following critical stipulations of Bidding Document and bids containing deviations/ exceptions to the these shall be considered to be non-responsive and are liable to be rejected:

- Bid security /EMD scanned copy to be uploaded on eproc website for unpriced bid open and Hard Copy if not received within 7 days from unpriced bid opening date
- Firm Price
- Warranty/Guarantee
- Bid Validity
- Schedule of Rates/Schedule of Prices
- Time Schedule
- Security Deposit/Performance Bank Guarantee
- Price reduction Schedule
- Arbitration/Resolution of Dispute/Jurisdiction of Court
- Force Majeure & applicable Laws
- Scope of Work / scope of Supply/specifications
- Integrity Pact
- Any other rejection criteria specified elsewhere in the Bidding Document.

13.0 DOCUMENTS COMPRISING BID

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

13.2 All supporting documents, pertaining to "Bid Qualification Criteria (Experience as well as Financial)" including MSE certificate shall be submitted duly certified as follows:

Documents shall be submitted duly certified by CEO/CFO/Company Secretary or any member of the Board of Directors in case of limited companies (Private / Public limited). CEO/CFO/Company Secretary or any member of the Board of Directors can either sign all the pages of the documents or submit a certificate signed by them, listing out all the BQC documents/MSE document submitted in the bid along with basic details, duly referenced.

However, in case of Proprietorship/Partnership firms, the authentication by notary public on all pages of the documents shall be acceptable.
Bidders shall be required to upload the required documents for meeting Bidder Qualification Criteria (BQC) as per IFB/LIB on CPP portal along with their offer.

13.3 The bid shall be submitted by uploading relevant document in respective covers provided in the e-tendering website.

- TECHNO-COMMERCIAL/UNPRICED BID
- PRICE BID

- BID SECURITY/EARNEST MONEY DEPOSIT

13.4 Techno-commercial/ Un-priced Bid shall contain the following documents and to be uploaded in e-tender website :

- Submission of bid letter as per PROPOSAL **FORM - A**
- Submission of copy of Master Index provided with the Bidding Document and Amendment (if any) duly signed and stamped by the Bidder in token of having received and read all parts of the Bidding Documents and having accepted and considered the same in preparing and submitting the Bid.
- Power of attorney in favour of signatory (ies) of the bid.
- Integrity Pact and affidavit for non-involvement into transgression in terms of Integrity pact.
- Information about Bidder as per PROPOSAL **FORM – B.**
- Copy of Partnership Deed in case of partnership firm or Memorandum & Article of Association in case of limited company.
- Details of specific experience fulfilling qualification criteria – **FORM – C**
- Scanned copy of duly certified certificate from ***CHARTERED ACCOUNTANT CERTIFICATE/ CERTIFIED PUBLIC ACCOUNTANT (CPA)*** in support of meeting the financial criteria as per PROPOSAL FORM**- C1**.
- Past experience as per FORM – C2.
- Declaration of Bidder's Income Tax Liability as per PROPOSAL **FORM-D**.
- Information about any Current Litigation/ Arbitration, if any, in which bidder is involved.
- Compliance to Bid requirement as per PROPOSAL **FORM-J** ~~**or** in case of Deviation/ Exceptions, as per PROPOSAL **FORM-K**. (Sheet- 1 for Commercial Section and Sheet-2 for Technical Section).~~
- Technical offer and Engineering details, if any, required as per Bidding Document.
- Check List duly filled in as per PROPOSAL **FORM-L**.
- Reply to Commercial Questionnaire as per PROPOSAL **FORM-M.**
- Submission of Declaration by Bidder as per PROPOSAL **FORM-O**.
- Submission of Declaration by Bidder as per PROPOSAL **FORM-P** regarding Black Listing/ Holiday Listing.
- Submission of Declaration regarding P.F etc as per PROPOSAL **FORM-Q**.
- Bank Mandate Form as per PROPOSAL **FORM-S**
- Cancelled Cheque of bidders
- PAN card copy
- Submission of Undertaking for non-engagement of child labour as per PROPOSAL **FORM- T**
- Preamble to SOR duly scanned, signed and stamped
- Signed & stamped copy of Short SOR FORM SP – 1 indicating Q / NQ (without price)
- FORM SP2 indicating applicable rate of taxes in %. indicating Q / NQ (without price)
- Signed & stamped copy of Detailed SOR
- Any other information required in the Bidding Documents or considered relevant by the bidder.
- Signed & stamped copy of key construction manpower to be mobilized by the contractor during execution enclosed as Annexure to SCC of Bidding Document.

- Signed & stamped copy of list of key requirement of Equipment to be mobilized by the contractor during execution enclosed as Annexure to SCC of Bidding Document.
- PAN No., Tax Residency Certificate and Form No.10F (in case of Foreign bidders)

13.5 Priced Bid shall consist of:

i) Schedule of Rates (Short Description in excel file) duly filled rates (including rebate, if any). (FORM SP-0).

ii) Summary of Price (FORM SP-1)

iii) Built in CIF Component and Custom duty included in the quoted prices

No stipulation, deviation, terms & conditions, presumption, basis etc. shall be stipulated in Price Part of the bid. Any condition if stipulated shall be treated as null and void and shall render the bid liable for rejection.

Bidders must fill their name in the price bid of excel sheet before submission through e-tender portal.

13.6 Bidder to upload the entire bid in the following three e-folders :

i) Bid Security / EMD Folder

ii) Unpriced Bid Folder

iii) Priced Bid Folder.

13.7 **BID SECURITY / EARNEST MONEY DEPOSIT**

EMD/Bid Security, in favour of Numaligarh Refinery Limited and shall be acceptable in the form of Crossed Demand Draft (Payable at Numaligarh Refinery Limited) or Bank Guarantee in the prescribed pro-forma from Scheduled Commercial banks in India/ Indian Branch of Foreign Bank. Bid Security/EMD from foreign bidders shall be either in the form of Crossed Demand Draft (Payable at Numaligarh) or Bank Guarantees (BG) from any Indian scheduled bank which includes Indian branch of foreign bank recognized as scheduled bank by RBI.:

- Original EMD : not later than Seven (7) calendar days from the date of Un-priced Bid Opening
- Copy of Original EMD : scanned & uploaded in E-Tendering Portal alongwith Un-priced Techno-commercial Bid.

In case of exemption of EMD as per clause 14 below, the scanned copy of the requisite documents should be uploaded in e-tender website however, original of the same should be sent to EIL within 07 days from the date of Unprice Bid Opening.

Bid Security/ EMD shall be uploaded in the form of scanned copy on the CPP Website . Also the hard copy of the same shall reach at the EIL office address as mentioned in clause no. 11.8 of ITB within seven days of unpriced bid opening. If the original EMD is not received within seven days from the date of un price bid opening, then the bid will be rejected.(In case neither soft or hard copy of EMD is received by bid due date, the technical bid will not be considered for further evaluation .)

In case of MSE vendor, certified copy of original MSE certificate needs to be submitted within seven days of unpriced bid opening at the EIL office address as mentioned in clause no. 11.8 of ITB.

13.8 Bidders shall submit the following documents in ORIGINAL within Seven (7) calendar days from the date of Un-priced Bid Opening, provided copy of the same have been uploaded on E-Tendering Website:

(i) Original EMD/Duly certified copy of valid MSE Certificate

The address for submission of original documents is as follow:

Receipt Section,
Engineers India Ltd,
1, Bhikaji Cama Place, New Delhi-11006
Attn.: Mr. Sunita Mitra
General Manager (SCM),
Ph : 011-2676 3504 / 3209

14.0 BID PRICES & BIDDING CURRENCY

14.1 Unless stated otherwise in the Bidding Documents, the Contract shall be for the total works as described in Bidding Document, based on the Schedule of Rates submitted by the Bidder and accepted by the NRL / EIL.

14.2 Rates/Amounts must be filled in the `Schedule of Rates' after downloading the file uploaded in the website referred in IFB. In case separate file is uploaded, and any variation in item description, unit & quantity are noticed; the bid is liable to be rejected. In any case, Bidder shall be presumed to have quoted against the tendered description of work as per the Schedule of Rates (detailed description- **Form SP-2**) and the same shall be binding on the Bidder.

14.3 The rates quoted by the Bidder shall be checked for arithmetic correction, if any, based on price filled by the Bidder in the Schedule of Rates/ Price **(Form SP-0).**

14.4 Price (arrived from Schedule of Rates i.e. **Form SP-0**) shall be deemed to be inclusive of all taxes and duties except "Goods and Services Tax" (hereinafter called GST) (i.e., IGST or CGST and SGST/UTGST applicable in case of interstate supply or intra state supply respectively and GST compensation Cess if applicable) in line with provisions mentioned in SCC.

It is for the bidder to assess and ascertain the rates of applicable Taxes & Duties for the tendered work. It is clearly understood that NRL / EIL will not have any additional liability towards payment of applicable Taxes & Duties as a result of Bidder's wrong assessment / interpretation of applicable taxes & duties.

14.5 Prices (arrived from Schedule of Rates i.e. **Form SP-0**) quoted by the bidder, shall remain firm and fixed and valid until completion of the Contract and will not be subject to variation on any account except as otherwise specifically provided in the Contract documents. Statutory variations in taxes & duties shall only be allowed as per the provisions indicated in SCC.

14.6 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 `Schedule of Rate/Price (SOR/SOP)' 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 cost incurred for such activity.

14.7 The prices shall be based on conditions specified in General Conditions of Contract, Special Conditions of Contract, Scope of Work, Scope of Supply, Technical Specifications and other contents of Bidding Document.

14.8 Prices quoted by the bidder, shall remain firm, fixed and valid until completion of the Contract performance and will not be subject to variation on any account except as otherwise specifically provided in the Contract documents.

14.9 Bidder shall quote/fill the rate in rupees in round figure (without any figure in decimal i.e. paisa).

14.10 Prices shall remain firm and fixed without any escalation except statutory variation in taxes and duties, within the contractual completion period, which shall be on NRL's account, against submission of documentary evidence for substantiating the variation by way of relevant notification. However in case of delay in completion period beyond the contractual

date, for reasons attributable to contractor, any increase in these rates shall be borne by the contractor, whereas any decrease shall be passed on to the NRL.

14.11 Prices shall remain firm & fixed without any escalation. However, any new taxes / duties imposed after the date of submission of Price Bid / Revised price bid (if any) & up to Contractual Completion date shall be to NRL's account but such Taxes / duties imposed beyond Contractual Completion date shall be to the Contractor's account.

14.12 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 `Schedule of Rate/Price (SOR/SOP)' 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 cost incurred for such activity.

14.13 Prices quoted by the bidder, shall remain firm, fixed and valid until completion of the Contract performance and will not be subject to variation on any account except as otherwise specifically provided in the Contract documents.

14.14 Currency of Bid and Payment shall be only in INR for Indian Bidders and US Dollars/ Euros/ Indian Rupees for Foreign Bidders.

14.15 It will be the duty of CONTRACTOR to duly observe and comply with all laws, rules, regulations, orders and formalities applicable to Customs Duty, Goods and Service Tax (GST) etc. on the manufacture, sale and/or supply of any material to NRL. The CONTRACTOR shall keep the NRL indemnified from and against any and all claims, demands, prosecutions, penalties, damages, demurrages and/or other levies whatsoever made or levied by any Court, Tribunal or the Customs or other Authorities with respect to any alleged breach, evasion or infraction of such duties, taxes, charges or levies or any breach or infraction of such laws, rules, regulations, orders or formalities concerning the same and from the consequence thereof.

14.16 No Mobilization Advance will be paid. However, secured advance shall be paid as per provision of General Condition of Contract (GCC).

14.17 In the event of award of contract, it shall be indivisible works contract.

15.0 BID VALIDITY

15.1 Bid shall remain valid for a minimum period of **04 (Four) months** from due date of submission of Bid. 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 NRL/ EIL. In case, bidders are revoking or cancelling their Bid or varying any terms in regard thereof without the written consent of NRL/ EIL, NRL/ EIL shall forfeit EMD and reject their bids. **Such Bidder also may be put on Holiday list.**

15.2 NRL/ EIL 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 in which case Bidder's offer will not be considered any further, however EMD will not be forfeited. 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.

16.0 EARNEST MONEY DEPOSIT (EMD)/BID SECURITY

16.1 Bidder shall furnish, as part of its Bid, EMD for an amount as indicated in the IFB/LIB. The Bids not accompanied with EMD or EMD not as per Pro-forma given in the Bidding Document shall be considered as non-responsive and such Bids shall be rejected. NRL shall not pay any interest on EMD furnished.

16.2 Details of EMD shall be entered before uploading of bid and copy of EMD shall be uploaded in the respective cover provided in the e-tendering website for a value specified in IFB/LIB.

16.3 Exemption of EMD will be applicable for Micro or Small Enterprises registered with District

Industries Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation (NSIC) or Directorate of Handicrafts and Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises.

However, no price preference or exemption from payment of security deposit shall be allowed for MSEs.

16.4 Documents to be submitted by MSEs along with un-priced bid :

a. Documentary evidence that the bidder is a Micro or Small Enterprises registered with District Industries Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises.

b. The above document submitted by the bidder shall be duly certified (in original) as per requirements mentioned in IFB/NIT/ LIB.

If the bidder does not provide the appropriate document or any evidence to substantiate the above, then it will be presumed that they do not qualify for any preference admissible in the Public Procurement Policy, 2012.

16.5 Bid securities of unsuccessful bidders will be returned upon award of Contract. However, EMD of the successful Bidder will be returned upon the Bidder's executing the Contract, and furnishing the Security Deposit.

16.6 The EMD may be forfeited:

i) If a Bidder withdraws its bid during the period of Bid Validity or does any breach of tendering terms and conditions, or

ii) If a bidder modifies his bid on his own.

iii) If a bidder after opening of price bid increases the price, though within the validity period and even though the offer remains lowest

iv) In case of a successful Bidder, if the Bidder fails, within the specified period:

a. to sign the Contract and/or

b. to furnish the Security Deposit in the form of BG/DD.

v) If bidder's documents are found to be forged / fabricated to get qualified as per BQC criteria for the job.

17.0 MULTIPLE/ ALTERNATIVE BID

17.1 A bidder (i.e. the bidding entity) shall, on no account submit more than one bid either directly (as a single bidder or as a member of consortium) or indirectly (as a sub-contractor) failing which following actions shall be initiated:

17.2 All bids submitted by such bidder (say 'A') directly & indirectly, shall stand rejected and EMD, if any, in case of direct bid submitted by bidder 'A' shall be forfeited.

17.3 If another bidder (say 'B') has proposed bidder 'A' as a sub-contractor then bidder 'B''s bid shall also be rejected. However, in case the bidder 'B' has also proposed an alternative sub- contractor who is other than the bidder 'A', then bidder 'B"s bid shall be evaluated with the proposed alternative sub-contractor only. Hence, every bidder shall ensure in his own interest that his proposed sub-contractor is not submitting alternative/ multiple bid.

Note: However, in case EIL has proposed a list of sub-contractors/ sub-vendors in the enquiry document itself which shall be common for all the Bidders, the provisions at 15.3 above shall not be applicable as long as only the sub-contractors / sub-vendors are common in in case of various bidders.

18.0 PRE-BID QUERIES

18.1 The purpose of the pre-bid queries will be to clarify issues and to answer questions on any matter pertaining to the Tender conditions that may be raised by bidders who have been issued the Bidding Document.

18.2 The bidder is requested to submit any queries/clarification/information pertaining to Bidding Document in writing delivered by hand or by fax/e-mail as per proposal **FORM – N** enclosed in the Bidding Document so as to reach EIL not later than the date specified in the Notice Inviting Tender. Queries/ Clarifications/ Information sought in any other manner shall not be responded to. The editable soft copies of the queries may also be e-mailed at the address s.mitra@eil.co.in & vivek.dixit@eil.co.in to enable EIL to prepare replies to the queries against each query in the same format expeditiously.

i) Responses to Bidder's queries/clarifications raised will be furnished as expeditiously as possible by EIL to all those who have downloaded the Bidding Document and shall be e-mailed to all other bidders who have downloaded the Bidding Document. Any modification of the Bidding Document, which may become necessary as a result of the pre bid queries shall be intimated to all bidders through the issue of an Addendum/Amendment.

19.0 FORMAT AND SIGNING OF BID

19.1 The bidder shall upload the Techno-commercial bid duly filled, signed and stamped and the price bid in excel file duly filled rates in respective folder provided in the e-tendering website.

19.2 All pages of bid shall be stamped and initialled by person(s) signing the bid.

19.3 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 by use of "white fluid" or otherwise is permitted. In case any erasure using "white correcting fluid is found, the offer shall be liable to be rejected. All corrections/ cuttings/ alterations shall be signed in full by the Bidder with date.

20.0 CHECK LIST FOR SUBMISSION OF BID

20.1 To assist Bidder in ensuring the completeness of bid, a checklist for submission of various documents/details in un-priced commercial part of bid, has been enclosed.

20.2 Bidder is required to fill the checklist and submit along with the bid for ready reference. All documents shall be submitted under various sections as per this Check List.

D BID SUBMISSION

21.0 SEALING AND MARKING OF BID

21.1 For submission of Bid, please refer instruction to bidders for e-tendering. Due date and time for submissions of bids have been mentioned in the IFB/LIB/ NIT. Bids cannot be uploaded by the bidders on the website beyond the Bid Due Date and time.

21.2 In case EMD is not applicable for the bidder based on the provision of bidding document then they will have to choose the reason for "**EMD NOT APPLICABLE** "which are available in the website.

21.3 Bidders are mandatorily required to enter their name in the each FORM of excel file of SOR provided in the e-tender portal for submission of price bid.

22.0 DATE, TIME & PLACE OF SUBMISSION

22.1 Bid must be submitted by the bidder through e-tendering on or before bid due date and time mentioned in the IFB/LIB or any extension thereof as duly notified in writing by EIL on Govt. Of India CPP portal at https://eprocure.gov.in/eprocure/app (**however, Bidders are**

requested not to ask any extension in due date for submission of Bids in view of tight project schedule).

22.2 Bidders are advised in their own interest to carefully go through Instructions for E-tendering and other related document available against various help links so as to ensure that bids are uploaded in E-tendering website well before the closing date and time of bid submission.
Various links such as “Help for Contractor”, “Information about DSC”, “FAQ”, “Resources Required”, “Bidders Manual Kit” etc. are available on home page of https://eprocure.gov.in/eprocure/app facilitating vendors to participate in the bidding process. Bidder are advised to download & utilize the available information/documents under these links for activities like Registration in CPPP, obtaining User ID & Password, uploading & submission of e-bids etc.

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

23.0 MODIFICATION AND WITHDRAWL OF BIDS

23.1 The Bidder may modify or withdraw its Bid after the Bid's submission but prior to the due date prescribed for submission of Bids by selecting the detaching option available in the e-tender portal.

23.2 No bid shall be allowed to be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the bidder. Withdrawal of a bid during this interval shall result in the forfeiture of bidder's EMD/Bid security.

23.3 There are two specific features in CPPP viz, “Withdraw” and “Re-Submission”. Bidders should not use the feature “withdraw” unless they have decided to withdraw their bids. It is to be noted that once “withdraw” feature is used they will not be allowed to re-submit their bid against this Tender Enquiry. In case a Bidder desires to change his bid for any reason before bid due date, Bidder shall use “Re-Submission” feature.

E BID OPENING AND EVALUATION

24.0 OPENING OF TECHNO-COMMERCIAL BIDS

24.1 The un-priced Bids shall be opened online through e-tender portal, at the specified date and time given in the Enquiry document or extended otherwise. The Bidders who have submitted their Bid will be able to view online the name & status of all the Bidders at their respective windows, after un-priced Bid opening by Buyer.

25.0 CLARIFICATION OF BIDS

25.1 NRL/ EIL, if necessary, will obtain clarifications on the Bid by requesting for such information/ clarifications 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 EIL/NRL.

26.0 EVALUATION OF TECHNO-COMMERCIAL BIDS

26.1 Prior to price opening of bids, the NRL/ EIL will determine whether each bid

- is accompanied by required EMD (as applicable)
- Fulfils the Qualification Criteria stated in IFB/LIB.
- totally compliance to the requirement of the Bidding Document
- provides any clarifications and/ or requirement pursuant to clause 23.0 above

26.2 Bidder shall submit all the details asked for with their Bid. However, NRL / EIL may give

opportunity to the Bidders to submit missing details or clarifications within the stipulated time. In case these are not submitted within stipulated time, offer of the Bidder will be evaluated based on available details. The same shall be considered, if found adequate or else shall be rejected.

26.3 NRL/ EIL reserve the right to use in-house information for assessment of capability of Bidder and their performance on jobs completed/ in progress for evaluation purpose.

26.4 Directives issued by Govt. of India from time to time shall be given due consideration during bid evaluation.

27.0 OPENING OF PRICE BID

27.1 Price part of only those bidders, whose bids are considered techno-commercially acceptable, shall be opened online. Bidders selected for opening of their price bids shall be informed about the date of price bid opening. The considered techno-commercially acceptable Bidder will be able to view online the price sheets of other techno-commercially acceptable bidders at their respective windows, after priced bid opening.

28.0 EVALUATION OF PRICE BIDS

28.1 The rates quoted by the Bidder shall be checked for arithmetic correction, if any, based on price filled by the Bidder in the Schedule of Rates/ Price. If various item rates are present in the tender and if there is correction/wrong entry or a difference between the values entered in figures and in words, the following procedure shall be adopted for evaluation.

i) When there is a difference between the rate in figures and in words for an item, the rate which corresponds to the amount worked out by the Bidder for the item based on the notional quantity specified, shall be taken as correct.

ii) When the rate quoted by the Bidder in figures and words tallies but the amount is incorrect, the rate quoted by the Bidder shall be taken as correct

iii) When it is not possible to ascertain the correct rate as detailed above, the rate quoted for the item in words shall be adopted as the quoted rate.

iv) If the total amount written against an item does not correspond to the rate written in figures and if the rate in words is not written by the bidder, then the higher of the rates, i.e. higher of the rate worked out by dividing the amount by the notional quantity and the rate quoted shall be considered for evaluation. In the event that such a bid is determined as the lowest bid, the lower of the rates shall be considered for ordering.

28.2 Conditional discount, if offered, shall not be considered for evaluation.

28.3 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. However, if reduction is from the recommended Bidder, such reduction shall be taken into account for arriving at the contract value and not for evaluation purpose.

28.4 The priced bids of the Bidders shall be rejected as non-responsive if they do not quote for certain items for which the cost estimate is more than 10% of the total estimate for the work. If such price impact of unquoted items is 10% or less, then for the purpose of comparison, the unquoted items shall be loaded by price impact calculated on the basis of highest of the rates quoted by other bidders. If the party happens to be L1 with such loading also, then for the purpose of award, the lower of lowest rate among all bidders and EIL cost estimate shall be considered for award. In case the bidder refuses to accept the award, the bid shall be liable for various actions in terms of the bidding document.

28.5 GST amount quoted by the bidder in SP FORM shall be considered for evaluation. 100% of GST amount quoted by the bidder shall be added to the Total Amount arrived from Schedule of Rate, Form SP-0 to arrive at the Evaluated price.

28.6 No tax input credit on account of Goods and Service Tax (GST), shall be considered for

the purpose of evaluation.

28.7 Foreign contractor's bid shall be compared considering RBI reference rate of foreign exchange published on the date of opening of the Price Bids. In case of RBI holiday on day of opening of price bid, exchange rates published on immediate preceding working day shall be considered.

29.0 UNSOLICITED POST TENDER MODIFICATION

29.1 Bidders are advised to quote as per terms and conditions of the Bidding Document and not to stipulate deviations/ exceptions. Once quoted, the bidder shall not make any subsequent price changes, whether resulting or arising out of any technical/ commercial clarifications and details sought on any deviations, exceptions or stipulations mentioned in the bid unless any amendment to Bidding Document is issued by NRL/ EIL. Similarly, no revision in quoted price shall be allowed should the deviations stipulated by him are not accepted by NRL and are required to be withdrawn by him in favour of stipulation of the Bidding Document. Any unsolicited proposed price change is likely to render the bid liable for rejection.

29.2 In the event of any suo-moto price increase sought by a bidder subsequent to the bid due date and which is not as a result of any change in scope of work or terms and conditions, the bid of such a bidder shall be rejected.

29.3 After opening of price bid, if the bidder increases the price, though within the validity period and even though the offer remains lowest, the bid shall be rejected. In such event, the EMD of bidder shall be forfeited and shall not be considered for future enquiries for such actions.

29.4 Suo-moto Price reduction after price bid opening shall be ignored for evaluation. However, if the same bidder happens to be the lowest based on original price bids, the benefit of such reduction will be availed while placing order.

29.5 Canvassing in any form will make the bid liable for rejection.

30.0 CONTACTING THE NRL/ EIL

30.1 Bidders are advised not to contact NRL/ EIL 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 NRL/ EIL 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

31.0 NRL'S RIGHT TO ACCEPT OR REJECT ANY BID

31.1 The NRL reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or Bidders or without any obligation to inform the affected Bidder or Bidders of the grounds or the reasons for the NRL'S action.

31.2 In the opinion of NRL, if the total price or certain item rates quoted by the Lowest Bidder are considered high, he may invite the Lowest Bidder for price negotiation. Lowest Bidder shall attend such negotiation meetings and if requested by NRL shall provide the analysis of rates/break-up of amount quoted by him for any or all items of Schedule of Rates to demonstrate the reasonability. As a result of negotiation, Bidder may offer rebate on his earlier quoted price.

32.0 NOTIFICATION OF AWARD

32.1 NRL shall issue Letter/ Fax of Acceptance (LOA/ FOA) prior to expiry of bid validity. Bidder shall confirm acceptance by returning a signed copy of the FOA.

32.2 NRL/ EIL shall not be obliged to furnish any information/ clarification/ explanation to the unsuccessful Bidders as regards non-acceptance of their bids. Except for refund of EMD to unsuccessful Bidders, NRL/ EIL shall correspond only with the successful Bidder.

32.3 If the bidder backs out after issue of FOA/LOA, the bidder shall be debarred for future tenders and the EMD of the bidder shall be forfeited and bidder shall be put on holiday list as per NRL/EIL Policy for holiday listing of vendors.

33.0 CONTRACT AGREEMENT

33.1 The Contractor shall execute a formal contract with the NRL within specified period from the date of issue of Detailed Letter of Acceptance on a non-judicial stamp paper and of appropriate value. The cost of non-judicial stamp paper shall be borne by the Contractor.

33.2 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 NRL and bidders acceptance thereof shall constitute a binding contract between the successful Bidder and the NRL based on terms contained in the aforesaid documents and the finally submitted and accepted prices.

33.3 The contract shall be signed directly between NRL and Contractor.

33.4 The Contract document shall consist of the following:

i) Contract Agreement on Non Judicial Stamp Paper

ii) Detailed Letter of Award / Acceptance along with enclosures

iii) Original Bidding Document.

iv) Amendment/Corrigendum to original Bidding Document issued, if any.

v) Fax/Letter of Acceptance

vi) Integrity pact in respect of tender

33.5 For all works of value Rs. 2 (Two) Lakh and more, a formal agreement shall be signed between NRL and Contractor on non-judicial stamp paper of appropriate value. Cost of stamp paper shall be borne by the Contractor. Payments for such jobs shall be made by NRL only after signing agreement by authorized representatives of NRL and the Contractor. One original plus 2 (Two) copies of the contract documents shall be signed by the contractor and other copies shall be stamped. Original agreement on stamp paper shall be retained by NRL and one signed copy shall be given to Consultant and the Contractor.

34.0 MODIFICATION OF INSTRUCTIONS TO TENDERERS

34.1 Instructions to Tenderers of GCC stand modified to the extent as specified in this Instructions to Bidders.

35.0 CARTEL FORMATION

35.1 In case any Bidder is found to be involved in cartel formation, his bid will not be considered for evaluation/ placement of order. Such bidder will also be debarred from bidding in future.

36.0 DOCUMENTS REQUIREMENTS FROM FOREIGN BIDDERS

It is mandatory for the foreign bidder to furnish the documents for the compliance to requirement of PAN No., Tax Residency Certificate and Form No.10F (applicable for foreign bidder in case of services in India is required as per scope of bidding document) as per Income Tax Act in case his receipts are subject to tax deduction at source in India:

(a) PAN No.

PAN as per the Indian Income Tax requirements shall be submitted, failing which the Supplier/ Contractor/ Consultant shall be responsible for any additional tax deduction at source as per the provisions of the Indian Income Tax Act/Rules and the same shall be deducted from the payment made to supplier/contractor/consultant.

(b) Tax Residency Certificate (TRC)

TRC containing prescribed particulars as per the Annexure 5 of GCC from the Government of foreign country in order to claim the benefits of DTAA as per the Indian Income Tax requirements shall be submitted, failing which the relief under DTAA will not be available and consequently the actual rate of withholding tax will be applicable and

deducted from the payment made to supplier/contractor/consultant (i.e., non-resident taxpayer). The TRC shall be duly verified by the Government of the country of which the assesse claims to be a resident for the purposes of tax.

(c) Form 10F

In additional to TRC, in order to claim the benefits of DTAA, bidder shall also submit additional information in form no. 10F as per Annexure 6 of GCC. Form 10F has to be signed & verified by the assesse himself.

The above shall be furnished before release of any payment or within one month of the release of Order, whichever is earlier. In case of failure to submit the above information, any additional tax liability on NRL, will be deducted from the payment due to the contractor.

ANNEXURE-1 to ITB

Instructions to Bidders for e-Tendering [ANNEXURE-I TO INSTRUCTIONS TO BIDDER]

1.0 INSTRUCTIONS TO BIDDERS FOR E-TENDERING

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

Various links such as "Help for Contractor", "Information about DSC", "FAQ", "Resources Required", "Bidders Manual Kit" etc. are available on home page of http://eprocure.gov.in/eprocure/app facilitating vendors to participate in the bidding process. Bidder are advised to download & utilize the available information/documents under these links for activities like Registration in CPPP, obtaining User ID & Password, uploading & submission of e-bids etc. Bidders are advised in their own interest to carefully go through Instructions for E-tendering and other related document available against various help links so as to ensure that bids are uploaded in E-tendering website well before the closing date and time of bid submission.

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

2.0 REGISTRATION

2.1 Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: https://eprocure.gov.in/eprocure/app) by clicking on the link "Click **here to Enroll**" on the CPP Portal is free of charge.

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

2.3 Bidders are advised to register their valid email address and mobile numbers as part of the registration process and submit in EIL tender portal for updation of records (http://tenders.eil.co.in) . These details would be used for any communication from the CPP Portal.

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

2.5 Foreign Bidders have to refer "DSC details for foreign Bidders" for Digital signature Certificates requirements which comes under Download Tab at https://eprocure.gov.in/eprocure/app and the remaining part is same as above and below.

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

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

3.0 SEARCHING FOR TENDER DOCUMENTS

3.1 There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.

3.2 Once the bidders have selected the tenders they are interested in, the same can be moved to

the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.

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

4.0 PREPARATION OF BIDS

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

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

4.3 To avoid Network congestion, Bidder is recommended to upload file size of up to Maximum 35 MB per part. However, in case file size exceeds 35 MB, bidder may compress the files by scanning with 75 dpi setting as per s.no 4 below and can use additional 25 MB space ("My Documents") provided to the bidder as per s.no 5 below.

4.4 Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option. However, Price Schedule / SOR shall be strictly in RAR format without altering any contents of the formats uploaded by EIL in their Bidding Document.

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

5.0 SUBMISSION OF BIDS

5.1 Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

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

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

5.4 Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the Tender Processing Section, within the final bid due date & time. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.

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

5.6 The server time (which is displayed on the bidders' dashboard) will be considered as the

standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

5.7 All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done.

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

5.9 Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

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

6.0 RETENDER

6.1 Please note that if Tender has been retendered, than it is mandatory for the bidder to submit their offer again on CPP Portal.

7.0 WITHDRAWAL OF BID

7.1 It may please be noted that bidders now have an additional feature of withdrawing their bids before due date and time. After submitting the bid on the CPP Portal, if the bidder wishes to withdraw his bid, he can do so. However, if the bidder withdraws his bid, he will be exempted from further participation in the tender and won't be able to submit his bid again for that particular tender.

8.0 ASSISTANCE TO BIDDERS

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

8.2 Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 233 7315.

PROPOSAL FORMS

TABLE OF CONTENTS

FORM-A

FORM OF BID

(To be filled by the Bidder)

Serial No. **Date:**

To
NUMALIGARH REFINERY LIMITED

Dear Sirs,

Having examined the Bid Documents consisting of the Invitation For bids, Instructions to Bidders, General Conditions of Contract and its Addendum, Special Conditions of Contract with its annexures, Specifications, Technical requirements, Time Schedule, Form of Agreement, Form of Bid, Form of Price Schedule and Addendum(s) to the Bid Documents (if any), and having understood the provisions of the said Bid Documents and having thoroughly studied the requirements of Owner/Engineers India Ltd. relative to the work bid for in connection with the ---------- (Name of Work) and Bidding Document No.---------- for **INDIA BANGLADESH FREINDSHIP PIPELINE PROJECT** and having conducted a thorough study of the job site(s) involved, the site conditions, soil conditions, the climatic conditions, labour, power, water, material and equipment availability, the transport and communication facilities, the availability and suitability of Site Fabrication Areas, the availability of land and/or premises for temporary office and accommodation quarters and all other factors and facilities and things whatsoever necessary or relevant to the formulation of the Bid and the performance of work, I/we hereby submit our bid/offer for the performance of the proposed services and supplies in accordance with the terms and conditions and within the time mentioned in the Bid Documents at the rates/prices quoted by me/us in Schedule of Rates/Price included within the Bid Documents and arrived at rates/prices for the services and supplies as per the Schedule of Rates/Price. If the work is awarded to me/us, I/we undertake to perform the work and make the supplies in accordance with the Contract Documents as defined in the Form of Agreement forming part of the bid documents and accept the terms and conditions of Contract as laid down therein and undertake to submit within 15 (Fifteen) days of receipt of Notification of award of Bid for security deposit as specified in the Fax of Acceptance/Letter of Acceptance and to sign the formal Contract in terms of the Proforma of Agreement forming part of Bid Documents within 15 (Fifteen) days of receipt of the Detailed Letter of Acceptance (DLOA) from Owner.

I/ We further undertake to keep my/our Bid/offer valid for a period as mentioned in Instructions To Bidders from the date of opening of bids.

Yours faithfully,
(Signature(s) of the Bidders(s))

Name & Designation of authorised person signing the Bid on behalf of the Bidder(s)
Full Name and address of the Bidder(s).

FORM-B

INFORMATION ABOUT BIDDER

INFORMATION ABOUT TENDERER
(To be furnished with Tender)

To
NUMALIGARH REFINERY LIMITED

1.1	Bidder Name:	
1.2	Address of Registered Office:	_____ City_____ District _____State _____ PIN/ZIP_____
1.3	Operation Address if different from above:	_____ City_____ District _____State _____ PIN/ZIP_____
1.4	Telephone Number:	
1.5	Fax Number:	
1.6	Name & Mobile no. of Concerned person(s)	
1.7	E-mail address:	
1.8	Website:	
1.9	ISO Certification, if any	
1.0	GENERAL	
1.1	Income Tax PAN No. of the firm.	
1.2	Provident Fund Registration No. of the firm.	
1.3	ESI Registration No. of the firm	
1.4	Indian GSTIN No. of the firm.	

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

FORM –C

DETAILS OF SPECIFIC COMMERCIAL EXPERIENCE FULFILLING QUALIFICATION CRITERIA OF

(AS CALLED FOR IN "COMMERCIAL EXPERIENCE CRITERIA" OF NOTICE INVITING TENDER / INVITATION FOR BIDS FOR QUALIFICATION OF THE BID)

Name of Bidder: _____

Furnished below are the details required for meeting the qualifying requirements as called for in Experience Criteria of IFB:

(For applicability mark √ and Non applicability mark X in ☐

Bidder shall furnish their experience details with reference to the Work, which pre-qualify them in line with Experience Criteria mentioned of IFB.

(MARK ✓ FOR APPLICABILITY IN BOX)

S. NO.	DESCRIPTION	DETAILS
Details of work(s) executed by the Bidder complying the requirement of Para 5.0 of Notice Inviting Tender		
1.	Name of Project and its location	
2.	Description of work	
2.1	In case of Composite work, value of : Qualifying Work: Rs.....	
3.	Name of Owner, Postal Address, Phone/ Fax No./ E-mail Address	
4.	Name of Consultant, Postal Address, Phone/ Fax No./ E-mail Address	
5.	**Details of Work executed and its completed value**	
	Milestone Dates	• Date of award : _____ • Starting date :_____ • Scheduled Completion Date : _____ • Actual Completion Date : _____ • Reasons for delay, if any : _____

S. NO.	DESCRIPTION	DETAILS
6.	Supporting Document for Experience Criteria	• Whether copy of Work Order/ Contract Agreement enclosed YES NO Ref. No.: _____ dated • Whether Completion Certificate enclosed. YES NO Ref. No.: _____ dated Date of Completion _____ • Whether Client Certificate for Performance of work enclosed. YES NO Ref. No.: _____ dated _____ Date of Completion _____
7.	Whether Worked as Contractor directly with Client or Sub-contractor of Contractor	Executed the Work as • Main Contractor ( ) • Sub-contractor ( ) In case of sub-contractor:- Please indicate the following:- (i) All activities of work were executed by the Sub-contractor. ( ) Or Part activities were done by the Sub-contractor with the assistance from main Contractor. In such an event, following details shall be given:- Activities of work not done by Sub-contractor _____ _____ Assistance provided by main Contractor _____ _____
8.	Supporting Document for Financial Criteria	• Whether Annual Turnover Statement and P&L account is enclosed.

S. NO.	DESCRIPTION	DETAILS
		YES NO If Yes, submitted for the financial years 1. _____ 2. _____ 3. _____
9.	CONFIRMATIONS	BIDDER'S CONFIRMATION
9.1	Confirm that the above work has been completed within the qualifying period as mentioned in IFB/NIT.	Confirmed
9.2	Confirm that the above work is not an In-house work experience.	Confirmed
9.3	Confirm that the information/documentation furnished in this proforma are correct and in case of any original document is required by Owner/EIL the same shall be submitted for verification.	Confirmed
9.4	Confirm that all information/documentation for the work to be considered for qualification is furnished in this proforma along with supporting documents as detailed IFB/NIT. Non submission of above required information /documentation may lead to rejection of bid.	
9.6	Confirm that all documents furnished by the bidder in support of meeting the commercial experience & financial criteria of BQC have been duly authenticated as per requirements mentioned in Bidding Document.	

Notes:

1. Confirmed that Photocopy of the documents submitted by us in support of our Commercial Experience Criteria is mirror image of the original document. In case some area has been omitted while taking the Photocopy of original then in such event we have identified such area.
2. **Note: Bidder to use separate format for different works.**

SIGNATURE OF BIDDER : _____
NAME OF BIDDER : _____
COMPANY SEAL : _____

FORM – C1

FORMAT FOR CHARTERED ACCOUNTANT CERTIFICATE/ CERTIFIED PUBLIC ACCOUNTANT (CPA) FOR FINANCIAL CAPABILITY OF THE BIDDER

We have verified the Audited Financial Statements and other relevant records of M/s…… (Name of the bidder) and certify the following:

A. AUDITED ANNUAL TURNOVER* OF LAST 3 YEARS:

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

B. NETWORTH* AS PER LAST AUDITED FINANCIAL STATEMENT:

Description	**Year** _____
	Amount (Currency)
1. Net Worth	

C. WORKING CAPITAL* AS PER LAST AUDITED FINANCIAL STATEMENT :

Description	**Year** _____
	Amount (Currency)
1. Current Assets	
2. Current Liabilities	
3. Working Capital (Current Assets-Current liabilities)	

Refer Instructions

Note:

1.0 It is further certified that the above mentioned applicable figures are matching with the returns filed with Registrar of Companies (ROC) [Applicable only in case of Indian Companies]

2.0 We confirm that above figures are after referring instructions given below.

Name of Audit Firm:
Chartered Accountant/CPA
Date:

[Signature of Authorized Signatory]
Name:
Designation:
Seal:
Membership No.:
UDIN:

Instructions:

1. The Separate Pro-forma shall be used for each member in case of JV/ Consortium.

2. The financial year would be the same as one normally followed by the bidder for its Annual Report.

Page No. 1 of 2

3. The bidder shall provide the audited annual financial statements as required for this Tender document. Failure to do so would result in the Proposal being considered as non-responsive.

4. For the purpose of this Tender document:
   (i) **Annual Turnover** shall be “Sale Value/ Operating Income”
   (ii) **Working Capital** shall be “Current Assets less Current liabilities” and
   (iii) **Net Worth** shall be the aggregate value of the paid-up share capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated losses, deferred expenditure and miscellaneous expenditure not written off, as per the audited balance sheet, but does not include reserves created out of revaluation of assets, write-back of depreciation and amalgamation.

5. Above figures shall be calculated after considering the qualification, if any, made by the statutory auditor on the audited financial statements of the bidder including quantified financial implication.

6. This certificate is to be submitted on the letter head of Chartered Accountant/CPA.

Page No. 2 of 2

FORM – C2

PAST EXPERIENCE DURING SEVEN YEARS

SL. NO.	DESCRIPTION OF WORK	POSTAL ADDRESS OF CLIENT & NAME OF OFFICER IN CHARGE	CONTRACT VALUE	STARTING DATE	SCHEDULED COMPLETION DATE	ACTUAL COMPLETION DATE	REASONS FOR DELAY, IF ANY

Note: Copies of work order(s) and completion certificate(s) of at least two similar jobs should be submitted by the Bidder along with this FORM.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

FORM – D

DECLARATION OF BIDDER'S INDIAN INCOME TAX LIABILITY

(TO BE GIVEN ON BIDDER'S LETTERHEAD)

We, _____, hereby declare that we have no outstanding Indian Income Tax liability

OR

We, _____, hereby declare that we have an outstanding Indian Income Tax liability of Rs._____ (Rupees _____ only) made up as follows:

Assessment Year	Amount
	Total: _____

The said amount(s) is/are outstanding for the following reasons:
(State reasons).

We have furnished the following securities to secure payment(s) of the said outstanding:
(State securities (if any) and amounts secured)

SIGNATURE OF THE BIDDER : _____

NAME OF THE BIDDER : _____

DATE:

FORM-J

COMPLIANCE TO BID REQUIREMENT

Name of Work: _____

Bidding Document No. : _____

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 Amendment/ Addendum to the Bidding Documents, if any, for subject work.

We hereby further confirm that any terms and conditions if mentioned in our bid (Un-priced as well as Priced Part), shall not be recognised and shall be treated as null and void.

SIGNATURE OF BIDDER : _____

NAME OF BIDDER : _____

COMPANY SEAL : _____

FORM–K

DELETED

FORM-L

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 to be uploaded in "**Un-priced folder of** e-tender portal.

Please tick the box and ensure compliance:

(A) UNDER SECTION –I

(A.1) Bid Letter as per FORM-A

Submitted ☐

(A.2) Information about Bidder as per FORM-B

Submitted ☐

(A.3) EMD/ BID BOND / BID SECURITY

Bidder to confirm that EMD/ Bid Bond/ Bid Security has been submitted by them as per Tender Pro forma.

Submitted ☐

(1) BY BANK GUARANTEE

BG No. _____Dt. _____ From
Bank _____ Branch _____
For Rs. _____
Valid till _____

(2) BY DEMAND DRAFT

DD No. _____ Dt. _____
Drawn on _____
For Rs. _____

Original shall be submitted in original Bid and its copy in other copies of Bid.

(B) UNDER SECTION -2
(Proposal Forms)

(B.1) Details of Specific Experience/ Turnover as per FORM-C **– Not applicable**

(B.2) Past Experience as per FORM-C1

Submitted ☐

(B.3) Details of Tax liablity as per FORM-D
Submitted ☐

(B.4) Audited Balance Sheet including profit and loss account statement for the last three years.

Submitted ☐

Submitted for the years :

1. _____
2. _____
3. _____

(B.7) Power of Attorney in Favour of the person who has signed the bid on stamp paper of Appropriate value.

Submitted ☐

(B.8) Partnership Deed in case of partnership firm and Article of Association in case of limited Company.

Submitted ☐

(B.9) Declaration by Bidder regarding Black listing/ Holiday listing as per FORM-P.

Submitted ☐

(B.10) Declaration regarding PF etc as per FORM-Q.

Submitted ☐

C) UNDER SECTION - 3

(C.1) Compliance to Bid Requirement as per FORM-J.

Submitted ☐

(C.2) Exceptions/ Deviations as per FORM-K both technical and commercial part (Unpriced) ☐

Submitted

(C.3) Reply to commercial questionnaire as per FORM-M with Bidder's reply/ confirmation for each Sl. No. ☐

Submitted

(C.4) Reply to Technical questionnaire (if enclosed in technical part) with Bidder's Reply/ Confirmation for each Sl. No. ☐

Submitted

(C.5) Declaration by Bidder as per FORM-O. ☐

Submitted

(C.6) Blank copy (without price) of Price Part i.e. Schedule of Rates/Schedule of Prices ☐

Submitted

(D) UNDER SECTION – 4

(D.1) Technical Details/ Documents specified in Technical part.

Submitted ☐ Not Applicable ☐

(E) CONFIRM THE FOLLOWING

(E.1) All pages of the bid have been page numbered in sequential manner. ☐

YES

(E.2) The bid has been submitted in requisite number of copies as specified in Special Instructions to Bidders

YES ☐

(E.3) Master Index of Bidding Document, Compliance Letter for Addendum/ Amendment, if any, has been submitted along with offer, duly signed and stamped on each page. ☐

YES

(E.4) Blank copy (without price) of Schedule of Rates duly signed and stamped on each page has been submitted. ☐

YES

SIGNATURE OF BIDDER :_____
NAME OF BIDDER : _____
COMPANY SEAL : _____

FORM-M

COMMERCIAL QUESTIONNAIRE

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

SL. NO.	EIL'S QUERY	BIDDER'S REPLY/ CONFIRMATION
1.0	Confirm that your Bid is valid for **04 (Four)** months from the last date of submission of Bid.	
2.0	Confirm that Bid Security /Earnest Money Deposit (EMD) as per bid stipulations have been furnished along with bid.	
3.0	**Confirm that the following documents are submitted with Part-I:**	
a)	All documents as per CHECK LIST	
b)	Master Index as issued/ provided in the bidding document is submitted in un-priced part duly signed and stamped on each page.	
c)	Compliance letter for Addendum/ Amendments as a token of acceptance (Applicable, if issued).	
4.0	Confirm that price has been uploaded separately through e-tender portal.	
5.0	**Schedule of Rates (SOR)**	
a)	Price Part has been submitted as per provision of bidding document.	
b)	Confirm that deviation/terms & conditions are not mentioned in the price part. In case any terms and condition is mentioned in the price part, the same shall be treated as null and void.	
c)	Confirm that excel file of SOR has been downloaded and same used for submission of price bid.	
6.0	Confirm your compliance to critical stipulations of bidding document as mentioned in ITB.	
7.0	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.	
8.0	Confirm your compliance to total Scope of Work mentioned in the Bidding Document.	
9.0	Confirm your acceptance for `Scope of Supply' mentioned in the Bidding Document and confirm that all materials shall be supplied as per Standards and	

SL. NO.	EIL'S QUERY	BIDDER'S REPLY/ CONFIRMATION
	Specification.	
10.0	Confirm your acceptance for Time Schedule as mentioned in Bidding Document.	
11.0	Confirm that your bid is in compliance with taxes and duties as specified in SCC & ITB.	
12.0	Confirm that your quoted price includes all types of insurance as per the provisions of General Conditions of Contract and Special Conditions of Contract.	
13.0	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.	
14.0	Confirm that while submitting your price, you have taken consideration of scope of supplies, scope of work and technical requirement mentioned in Bidding Document.	
15.0	Confirm that you have your own QA/QC programme for executing this work. In case of award of work, you will submit all QA/QC documents as per specification No. 6-78-0001 Rev. 0.	
16.0	Confirm that Bidder is not involved in any Litigation/ Arbitration. Or Confirm that the current Litigation / Arbitration, in which Bidder is involved will not have any impact in work being tendered or in entering into contract during the validity of offer and performing the contract till all the contractual obligations under contract are performed. Notes: a) Evaluation shall be based upon Bidder's confirmation as above and reassessment of their financials provided in their annual balance sheet / profit & loss account due to the self-declaration shall not be carried out by NRL/EIL. b) In case bidder affirms that present litigations / arbitrations have impact on their obligations to perform the contract or does not provide the affirmation as above, their bid shall be rejected.	
17.0	Confirm that Bidder is not under liquidation, court receivership or similar proceedings.	
18.0	**Confirm the following**	
a)	The planning schedule, S-curves etc., submitted by the bidder with his Bid, are indicative and shall not be basis	

SL. NO.	EIL'S QUERY	BIDDER'S REPLY/ CONFIRMATION
	for extra compensation in case actual needs are higher.	
b)	Detailed planning schedule developed by CONTRACTOR after contract award may be subject to fluctuations depending upon actual progress of the project and available work front.	
c)	Co-ordination and making available by Contractor of all staff, manpower, construction equipment, tools, cranes, etc. and materials as required for a timely completion of all WORK as per Owner's construction and priority schedule and in accordance with the available work front are included in the quoted rates.	
d)	Confirm your compliance to the Minimum Manpower & Qualification & Experience requirement of Key personnel to be deployed as per SCC.	
19.0	Please note that : i) No Mobilization Advance shall be paid	
20.0	Confirm that adequate numbers of construction equipments, tools, tackles etc. shall be deployed to complete the work as per the time schedule.	
21.0	In case we happen to be the successful Bidder for this work, then in such an eventuality we shall submit a copy of Letter of Acceptance (LOA) duly signed & stamped by authorised signatory in token of our acceptance within 03 (three) days from the date of issue of LOA. We further confirm that the time schedule for completion of work shall be reckoned from the date of issue of LOA.	
22.0	Please confirm that un-priced copy of Schedule Of Rates (SOR) has been submitted in un-priced folder of e-tender portal.	

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 e-mail to: s.mitar@eil.co.in ; & vivek.dixit@eil.co.in

DECLARATION BY THE BIDDER

Name of Work: _____

Bidding Document No. : _____

We _____ (Name of the Bidder) hereby represent that we have gone through and understood the Bidding Document TECHNICAL AS WELL COMMERCIAL REQUIREMENTS and that our Bid has been prepared accordingly in compliance with the requirement stipulated in the said documents.

We are submitting Master Index of Bidding Document as part of our Bid duly signed and stamped on each page in token of our acceptance. We undertake that 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. Further, we shall sign and stamp each page of Bidding Document as a token of Acceptance and as a part of the Contract in the event of award of Contract to us.

We further confirm that we have indicated prices in Schedule of Rates (SOR) with prices, considering detailed description of items given in Schedule of Prices and submitted in Price Bid in separately sealed envelope. We confirm that price quoted by us includes price for all works/activities/supply etc. as mentioned in item description of the items in Schedule of Prices (with detailed item description) which has been issued to us.

SIGNATURE OF BIDDER :_____

NAME OF BIDDER : _____

COMPANY SEAL : _____

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

DECLARATION OF BLACK LISTING/ HOLIDAY LISTING

Name of Work: _____

Bidding Document No. : _____

In the case of a Proprietary Concern:

I hereby declare that neither I in my personal name or in the name of may Proprietary concern M/s_____ which is submitting the accompanying Bid/Tender nor any other concern in which I am proprietor nor any partnership firm in which I am involved as a Managing Partner have been placed on black list or holiday list declared by Owner or its Administrative Ministry (presently the Ministry of Petroleum & Natural Gas), except as indicated below:

(Here give particulars of blacklisting or holiday listing, and in absence thereof state "NIL")

In the case of a Partnership Firm:

We hereby declare that neither we, M/s_____, submitting the accompanying Bid/Tender nor any partner involved in the management of the said firm either in his individual capacity or as proprietor or managing partner of any firm or concern have or has been placed on blacklist or holiday list declared by Owner or its Administrative Ministry (presently the Ministry of Petroleum & Natural Gas), except as indicated below:

(Here give particulars of blacklisting or holiday listing, and in absence thereof state "NIL")

In the case of company:

We hereby declare that we have not been placed on any holiday list or black list declared by Owner or its Administrative Ministry (presently the Ministry of Petroleum & Natural Gas), except as indicated below:

(Here give particular of blacklisting or holiday listing, and in absence thereof state "NIL")

It is understood that if this declaration if found to be false in any particular, Owner or its Administrative Ministry, shall have the right to reject my/our bid, and if the bid has resulted in a contract, the contract is liable to be terminated.

SIGNATURE OF BIDDER :_____

NAME OF BIDDER : _____
COMPANY SEAL : _____

DETAILS OF P.F. REGISTRATION

Name of Work: _____

Bidding Document No. : _____

PF REGISTRATION NO. :
DISTRICT & STATE :

ESI 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).

Bidder shall be solely responsible to fulfil all the obligations of PF and ESI registration without any additional financial liabilities / implications to EIL / OWNER

SERVICE TAX REGISTRATION NO. :

PAN No.:

(SIGNATURE OF BIDDER)

DELETED

FORM-S

BANK MANDATE FORM

1. Bidder Name :
2. Bidder Code :
3. Address of the Bidder :
4. Particulars of Bank Account of Bidder :
   a. Name of the Bank :
   b. Name of the Branch and Address of the Branch :
   c. Branch Code :
   d. 9-Digit MICR code Number of the Bank & Branch
      (As appearing in the MICR Cheque issued by the bank)
      (Please do not give multicity cheque book code Number)
   e. Type of account (Saving Bank, Current or Cash Credit) :
   f. Account Number :
   g. RGTS/IFSC Code (11 digit) :
   h. NEFT Code No. :
5. E-mail address of the Bidder :
6. Contact Person(s) of the Bidder :

I/we declare that the particulars given above are correct and complete and I/we accord our consent for receiving all our payments through Electronic Mechanism.

_____

(Signature and designation of the Authorised person(s) of Bidder)

Official seal of the Bidder
Place :
Date :

BANK CERTIFICATION

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

Place :
Date :

_____

Signature of the Authorised Official of the Bank

Bank's Stamp

FORM–T

UNDERTAKING FOR NON-ENGAGEMENT OF CHILD LABOUR

Name of Work:
Bidding Doc. No.

I/ We hereby declare that:

a) We are committed to elimination of child labour in all its forms.

b) Neither we nor any of our nominated sub-contractor(s) are engaging Child Labour in any of our work(s) in terms of the provisions of The Child Labour (Prohibition and Regulation) Act, 1986 and other applicable laws.

c) We as well as our nominated sub-contractor(s) undertake to fully comply with provisions of The Child Labour (Prohibition and Regulation) Act, 1986 and other applicable labour laws, in case the work is awarded to us.

d) It is understood that if I/We, either before award or during execution of Contract, commit a transgression through a violation of Article b /c above or in any other form, such as to put my/our reliability or credibility in question, the Owner is entitled to disqualify us from the Tender process or terminate the Contract, if already executed or exclude me / us from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Owner. Such exclusion may be for a period of 1 year to 3 years as per the procedure prescribed in the guidelines for holiday listing of the Owner.

e) I/We accept and undertake to respect and uphold the Owner's absolute right to resort to and impose such exclusion.

Place: Signature of Bidder

Date: Name of Signatory

GENERAL CONDITIONS OF CONTRACTS

SECTION I

1.0 DEFINITION OF TERMS

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 provided that if any interpretation is required under any circumstance, the decision of the owner/company with regard to the same shall be final and binding on the parties:

1. The "OWNER/COMPANY" shall mean followings:
   Numaligarh Refinery Limited or NRL in short having its registered office at 122A, GS Road, Christian Basti,Guwahati-781005.

2. 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.

3. The “Managing Director” shall mean the Managing Director of the Numaligarh Refinery Limited (NRL) or his successor in office as designated by the Owner.

4. The "Engineer-in-Charge" shall mean the person nominated from time to time by the Consultant/owner and shall include those who are expressly authorised by Consultant/owner to act for and on its behalf for operation of this CONTRACT.

5. The "WORK" shall mean and include all works to be executed in accordance with the CONTRACT or part thereof as the case may be and shall include all extras, additional, altered, or substituted works as required for the purpose of the CONTRACT.

6. "PERMANENT WORK" shall mean and include works which will be incorporated in and form a part of the work to be handed over to the owner by the contractor on completion of the contract.

7. "CONSTRUCTIONAL PLANT/EQUIPMENT" shall mean all Appliances/Equipment or things of whatsoever nature required in or for the execution, completion, operation or maintenance of the works or temporary works (as hereinafter defined) but does not include materials or other things intended to form or forming part of the permanent works.

8. "SITE" shall mean the land and waters and other places on, under, in or through which the WORK is to be carried out and any other lands, water or places provided by Owner for the purpose of the CONTRACT together with any place designated in the CONTRACT as forming part of the SITE.

9. The "Contract document" shall mean collectively the Tender Documents, Designs, Specifications Schedule of Rates/Prices, purchase order / outline agreement-contract of Tender, Agreed variation, if any and other documents constituting the Tender and acceptance thereof.

10. The "CONTRACT" shall mean the agreement between OWNER and CONTRACTOR for the execution of the WORK including therein all documents such as the Request for Quotation, Instructions to Tenderers, General Conditions of Contract, Special Conditions of Contract, Specifications, General Requirements, Time Schedule, Prices, Purchase Order, Outline Agreement - Contract, Agreed Variations, if any, etc.

11. "Consultant" shall mean the Consulting Engineers to the OWNER engaged for a particular project/service.

12. The "Sub-contractor" shall mean any person or firm or company (other than the CONTRACTOR) to whom any part of work has been entrusted by the CONTRACTOR, with the complete knowledge of the Engineer-in-Charge, and the Legal Representatives, Successors and permitted Assigns of such person, firm or Company

13. "SPECIFICATIONS" shall mean all directions, various technical specifications, provisions and requirements attached to the tender document, which pertain to the method and manner of performing the WORK to the quantities and qualities of the WORK and the materials to be furnished under the CONTRACT for the WORK as may be exemplified or modified by Owner during the performance of the CONTRACT in order to provide for the unforeseen conditions or in the best interests of the WORK. It shall also include the latest edition including all addenda/corrigenda of relevant Indian Standard Specifications and other relevant Codes before entering into contract.

14. "DRAWINGS" shall include maps, plans, sketches and tracings or prints thereof with any modifications approved in writing by the owner/Engineer-in-Charge and such other Drawings as may from time to time be furnished or approved in writing by the Owner/Engineer-in-Charge.

15. The "Tender" shall mean the tender along with supporting documents submitted by the CONTRACTOR for acceptance by OWNER.

16. The “Alteration/Variation/Change Order" means an order given in writing by the Engineer-in-Charge to effect additions to or deletions from and alterations in the WORK.

17. “Virtual completion” means completion of all important/essential works pending certain small value works kept in abeyance by the owner to achieve required co-ordinate completion with other inter linked unavoidable activities.

18. The "COMPLETION CERTIFICATE" shall mean certificate to be issued by the Engineer-in-Charge when the WORK has been completed in accordance of contract document to his satisfaction.

19. The "FINAL CERTIFICATE" in relation to the WORK shall mean the certificate regarding the satisfactory compliance of the various provisions of the CONTRACT by the CONTRACTOR issued by the Engineer-in-Charge after the period of liability is over.

20. The “Period of Liability" in relation to a WORK means the specified period from the date of completion of WORK as indicated in completion certificate upto the date of issue of final certificate during which the CONTRACTOR stands responsible for rectifying all defects that may appear in the WORKS executed by the contractor in pursuance of the contract and includes workmanship defects, warranties against manufacturing/fabrication defects covering all materials, plants, equipment, components and the like supplied by the contractor.

21. The “Appointing Authority” for the purpose of arbitration, if any, shall be the person so designated by the Owner.

22. "TEMPORARY WORK" shall mean all temporary works of every kind required in or about the execution, completion or maintenance of the WORK.

23. “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.

24. "Notice in Writing or Written Notice" shall mean a notice written, typed or printed form sent (unless delivered personally) or otherwise proved to have been received by the addressee 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 as if it would have been delivered.

25. "Approved" shall mean approved in writing including subsequent written confirmation of previous verbal approval and “Approval" means approval in writing including as aforesaid.

26. Fax / Letter of Intent shall mean intimation by a Fax/Letter to Tenderer that the Tender has been accepted in accordance with the provisions contained therein.

27. “Day” means a day of 24 hours from the midnight to midnight irrespective of the number of hours worked in that day.

28. “Working Day” means any day other than declared to be holiday or rest day by the Owner.

29. “Week” means a period of any consecutive seven days.

30. “Metric System” all technical documents regarding the construction of works are given in the metric system and all work in the project should be carried out according to the metric system. All documents concerning the work shall be maintained in the metric system.

31. “Value of Contract” means 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.

32. “Language of Drawings and Instruction” all the drawings, titles, notes, instruction, dimensions etc. shall be in English language.

33. “Mobilization” shall mean establishment of sufficiently adequate infrastructure by the Contractor at “Site” comprising of construction equipment, aids, tools, tackles including setting of site offices with facilities such as power, water, communication etc., establishing manpower organization comprising of Resident Engineers, Supervising personnel and an adequate strength of skilled, semi-skilled and un-skilled workers, who, with the so established infrastructure shall be in a position to commence execution of work at site (s), in accordance with the agreed time schedule of completion of work. Mobilization shall be considered to have been achieved, if the Contractor is able to establish infrastructure as indicated above to begin work at all site (s) / locations as per the Time Schedule, where so warranted in accordance with agreed schedule of work implementation to the satisfaction of Engineer-in-charge/Owner.

34. “Commissioning ”shall mean putting into service of the system including the plant(s), equipment(s), Vessel (s), Pipeline, machiner(ies), or any other section or sub section of installation (s) pertaining to the work of the Contractor after successful testing and trial runs of the same.

    “Commissioning” can be either for a completed system or a part of combination of systems or sub system and can be performed in any sequence as desired by Owner and in a manner established to be made suited according to availability of prerequisites. Any such readjustments made by Owner in performance of “Commissioning” activity will not be construed to be violating Contract provisions and Contractor shall be deemed to have provided for the same.

SECTION II

2.0 GENERAL INFORMATION

2.1 LOCATION OF SITE AND ACCESSIBILITY:

The SITE for the work is as defined in the Special Conditions of Contract or elsewhere in the tender document and unless otherwise stated, is within the Refinery premises and its associated infrastructures e.g. Township, marketing terminal etc. It is served by all normal weather roads. The intending Tenderer should inspect the SITE and make himself familiar with site conditions and available Communication facilities.
Location of Refinery :
Numaligarh Refinery, PO-NR Project, Golaghat, Assam-785699

Entry into the refinery area is restricted. Only pass and permit holders as also vehicles with special permits only are permitted within the boundary of the refinery. Inside the premises access to various Workspots is also further regulated by permits issued for each area.

Contractor if necessary shall build other temporary access road to the 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/personnel of the owner or 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 this tender for any inconvenience he anticipates on such account.

Non availability of access roads and/or railway siding or permits for entry of Vehicles' & Equipment to any specific area shall in no case be the cause to condone any delay in the execution of the works or be the cause for any claims or extra compensation.

2.2. SCOPE OF WORK :

The scope of Work is defined in the tender document. The CONTRACTOR shall provide all necessary materials, equipment and labour etc. for the execution and maintenance of the WORK till completion unless otherwise specifically mentioned in the tender. All materials that go with the WORK shall be approved by Engineer-in-Charge prior to procurement and use.

2.3 WATER SUPPLY:

Contractor will have to make his own arrangements for supply of water to his labour camps and for works. All pumping installation, pipe net work and distribution system will have to be carried by the contractor at his own cost.

Alternatively the owner at his discretion may endeavor to provide water to the contractor at the owner's source of supply at one point, provided the contractor make his own arrangement for piping net work and arrangement from source of supply and distribution pipe net work shall have the prior approval of the Engineer-In-Charge, so as not to interfere with the layout and progress of the other construction works.

However, the owner doesn't guarantee the supply of water and this does not relieve the contractor of his responsibility in making his own arrangement and for the timely completion of the various works as stipulated.

OWNER may provide source of supply at one point depending on the location as specified in Special Conditions of Contract (SCC) of the tender condition.

2.4 POWER SUPPLY

2.4.1 OWNER may provided source of supply of power at one point depending on the location as specified Special Conditions of Contract (SCC) of the tender condition.

. The number of local switch board/power outlets and location being at the discretion of the OWNER and CONTRACTOR shall make his own arrangements for connecting his CONSTRUCTIONAL PLANT/EQUIPMENT etc. to the said switch board/power outlets. All the work will be done as per IEA regulations and NRL Safety Systems and procedures and duely approved by the Engineer-in-Charge. The temporary lines will be removed forthwith after the completion of the WORK or if there is any hindrance caused to other Works due to the alignment of these lines, the CONTRACTOR will reroute or remove the temporary lines at his own cost. OWNER shall not, however guarantee the supply of electricity and no compensation for any failure or short supply of electricity will be entertained.

However, the contractor shall make his own arrangement of DG sets for all welding jobs.

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 and proper circuit protection requirement at site. All cabling, equipment, installation etc. shall comply in all respects with the latest statutory requirements and safety provisions i.e. as per the Central / State Electricity Acts and Rules etc. The contractor will ensure that his equipment and electrical wiring etc. are installed modified, maintained by a licensed Electrician/Supervisor. A test certificate is to be produced to the Engineer – In – Charge for this approval, before power is made

available. Non adherence of safety code shall render the Contractor to be penalized as deemed fit by Engineer-in- Charge.

The Contractor will have to provide and install his own light and power meters duly tested by State Electricity Board /NRL Testing laboratory which will be governed as per Central / State Government Electricity Rules. The meter shall be sealed by the Owner.

The total requirement of powers with equipment wise break - up shall be indicated by the tenderer along with his tender.

2.4.2 At all times IEA regulation 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 the authorized electrical supervisors.

2.4.3 The owner is not liable for any loss or damage to the contractor's equipment as a result of variation of voltage or frequency or interruption in power supply or other loss to the contractor arising there from.

2.4.4 In case of damage of 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 replace 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. Ratings of fuses to be provided/use by the contractor shall not be more than the rating approved by owner.

2.4.5 The total requirement of power with equipment wise breakup shall be indicated by the tenderer along with his tender.

2.5 LAND FOR CONTRACTOR'S FIELD OFFICE, GODOWN AND WORKSHOP:

OWNER may at his own discretion and convenience and for the duration of the execution of the WORK make available near the SITE on chargeable basis as per prevailing rate or free of cost, land for construction of CONTRACTOR' S field office, godowns, workshops and assembly yard required for the execution of the CONTRACT. The CONTRACTOR shall at his own cost construct all temporary buildings and provide suitable water supply and sanitary arrangement approved by the Engineer-in-Charge.

On completion of the WORK undertaken by the CONTRACTOR, he shall remove all temporary Works erected by him and have the SITE cleaned as directed by Engineer-in-Charge. If the CONTRACTOR shall fail to comply with these requirements the Engineer-in-Charge may at the expenses of the CONTRACTOR remove such surplus and rubbish materials and dispose of the same as he deems fit and get the SITE cleared as aforesaid and the CONTRACTOR shall forthwith pay the amount of all expenses so incurred and shall have no claims in respect of any such surplus material disposed of as aforesaid. But OWNER reserves the right to ask the CONTRACTOR any time during the pendency of the CONTRACT to vacate the land by giving seven (7) days notice on security reasons or on national interest or otherwise.

If the contractor fails to clear/vacate the site and clean the debris the same shall be done by the Engineer-in-charge engaging any agency and the cost incurred for doing so shall be recovered from bill/S.D or any other works.

2.5.1 PUTTING UP BUILDINGS ON PROJECT SITE:

The contractor may put up temporary structures as required by them for their office, fabrication shop and construction stores only in the area allocated to them on the project site by the owner or his authorized representative.

Approval shall be obtained from EIC for design/material of construction of such aforementioned temporary structures before putting up the same.

No unauthorized buildings, construction or structure s should be put up by the contractor anywhere on the project site. For uninterrupted fabrication of the work, Contractor, shall put up temporary covered structures at his cost within area (12M&50M or as considered necessary) in the location allocated to them in the project site by the owner or his authorized representatives, but after written approval from the owner.

2.6 SAFETY STANDARDS FOR TEMPORARY BUILDINGS

All temporary buildings, sheds, workshops, field station, etc. shall be constructed in conformation with the safety and security regulations of the OWNER, as regards location and type of structures.

SECTION III

GENERAL INSTRUCTIONS TO TENDERERS

3.0 SUBMISSION OF TENDER:

3.1 Instructions for Online Bid Submission:

i) The bidders are required to submit soft copies of their bids electronically on the designated e-procurement portal, using valid Digital Signature Certificates (DSC).

ii) Bidders are required to enroll on the e-Procurement module of the designated portal.

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

3.2 **SUBMISSION OF TENDER**:

3.2.1 Tenders must be submitted without making any additions, alterations, and as per details given in other clauses here under. The requisite details shall be filled in by the contractor of tender document. The rates shall be filled in the schedule given in this tender document.

3.2.2 Addenda/Corrigenda to tender document, if issued, must be signed and submitted along with the tender document. The tenderer should write clearly the revised quantities in the schedule of rates of tender document and should price the work based on revised quantities when amendments of quantities are issued in addenda.

3.2.3 Tenderers are advised to submit quotation strictly based on the Terms and Conditions and Specifications contained in the Tender Document and not stipulate any deviations. Should it, however, become unavoidable deviations should be stipulated with reference to the clause and page number of Tender Document. OWNER/Consultant reserves the right to evaluate quotations containing deviations having financial implications after adding the cost for such deviations as determined by Owner/Consultant.

3.2.4 Tender should be submitted in double sealed envelope (in case of manual bid submission) with the name of WORK super scribed thereon. The full name, postal address, telegraphic address and telex/telephone no. of the Tenderers shall be written on the bottom left hand corner of the sealed cover.

3.2.5 All information, correspondence, letters and details accompanying the Tender Document and all further correspondence in connection with the Tender shall be submitted along with the offer, unless otherwise stated.

3.2.6 Instructions for two part bidding:

i) The bid should be submitted in two parts viz.

a) Techno commercial bid

b) Price bid

ii) Techno commercial bid shall have the following information / details

a) Technical deviation if any

b) Commercial deviation if any

c) Copy of price bids with prices blanked off

d) Documents required as per the tender to establish techno-commercial acceptability of the bid.

e) Any other relevant documents/ information.

iii) Priced part of the bid shall have only prices as per schedule of rates

iv) Techno – commercial bid and priced bid shall be enclosed in two separate envelopes (in case of manual bid submission) with the subject job, type of bid, bidders name superscribed on top. Both these envelopes shall be sealed in a common envelope and submitted as specified above.

3.2.7 Tenderers are deemed to have read through and fully understood all terms and conditions of the tender.

3.2.8 Tender, on submission as mentioned above, shall be the property of the OWNER and it shall not be returned to the tenderer on any account.

3.3 **ALL PAGES TO BE INITIALLED (For Manual Tender):**

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

3.4 **RATES TO BE IN FIGURES AND WORDS (For Manual Tender):**

The Tenderer should quote in English both in figures as well as in words the rates and amounts tendered by him in the Schedule of Rates forming part of the Tender Document in such a way that interpolation is not possible. The amount for each item should be worked out and entered and requisite total given of all items, both in figures and in words. The tendered amount for the WORK shall be entered in the Tender and duly signed by the Tenderer. If some discrepancies are found between the rates given in words and figures of the amount shown in the Tender, the following procedure shall be followed :

i) 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.

ii) When the rate quoted by the Tenderer in figures and words, tallies but amount is incorrect, the rate quoted by the Tenderer shall be taken as correct.

iii) When it is not possible to ascertain the correct rate as prescribed above, then the rate in words shall be adopted.

3.5 **CORRECTION AND ERASURES (For Manual Tender):**

All corrections and alteration in the entries of Tender papers will be signed in full by the Tenderer with date. No erasures or over writings are permissible.

3.6 **SIGNATURE OF TENDERER:**

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 all 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 in that behalf shall accompany the Tender. A copy of constitution of the firm with names of all partners shall be furnished.

3.7 **DETAILS OF EXPERIENCE:**

The Tenderer should enclose documents to show that he has previous experience in similar type of works and has successfully completed in the recent past works of this nature, together with the names and address of Owners, their schedule, location of sites, value of contracts, date of commencement and completion of works. The information so provided if found partly or fully false shall render the tender of such Contractor liable for rejection and the tenderer shall be liable to be put into Holiday list of NRL or even banned.

3.8 **PURCHASE PREFERENCES:**

Owner reserves the right to allow MSEs purchase preferences as admissible/applicable from time to time under the existing Govt. policy.

Owner reserves the right to allow exemption of EMD to PSEs/ Govt. Dept. and Agencies, Govt. aided autonomous bodies/ Education Institutions as admissible.

3.9 **EARNEST MONEY DEPOSIT:**

3.9.1Submission of EMD:

1. Bidders will open the link https://easypay.axisbank.co.in/nrl and type the Tender ID for which EMD is to be paid and click on the option "Validate".

2. The web page will auto populate Tender Name, Last Date of Payment, Bid Opening date and EMD (not editable).

3. The bidder will enter his Company/ Firm Name, Address, e-Mail ID, Amount and Mobile Number.

4. The bidder is also required to enter twice his preferred account No. and IFS Code for receiving EMD refund. In case of any mismatch in the account No. or IFS Code entered twice, the web page will prompt the bidder to correct the data and then allow to proceed with payment.

5. The Bidder is then required to enter verification code as displayed in the web page and click on the option "Submit".

6. The next Web Page will then display the summary of the EMD payment along with an Unique Reference Number (URN).

7. Bidder is required to accept the payment Terms and Conditions and select his preferred mode of payment from the options provided, viz: Net Banking (Axis Bank or Other Banks), Credit/ Debit Cards or NEFT/RTGS.

8. In case of Net Banking, the bidder will enter his User ID/ Password/ Transaction Password and One time password as per the online payment system of the Bidder's Bank.

9. For Credit/ Debit Card payment, the Bidder will enter his Card Number, Expiry Date, CVV and 'Verified by VISA' or 'Master Secure' password as applicable.

10. For bidders selecting the payment option of NEFT/ RTGS, the web page will generate a challan with a Dynamic/Virtual Account Number, IFS Code, Account Name and Amount. The bidders can take a print out of this challan or just note the relevant details and initiate the NEFT payment from their Bank.

11. A receipt will be generated after successful payment (irrespective of the mode of payment). Bidder can take print out for onward submission with tender as well as save a soft copy of the receipt.

3.9.2 Tenderer can also furnish EMD in the form of Bank Gaurantee drawn on either State Bank of India or any Nationalised/ Scheduled Bank in favour of Numaligarh Refinery Limited. The Bank guarantee to be furnished in lieu of Earnest money shall be kept valid for a period of "SIX MONTHS" from the date of opening of tender.

3.9.3 No interest shall be paid by the OWNER on the Earnest Money deposited by the Tenderer. The Earnest Money of the unsuccessful Tenderer will be refunded after priced bid opening.

3.10 CONVERSION OF EMD TO SECURITY DEPOSIT:

The earnest money deposit (EMD) of the contractor whose tender may be accepted, if paid in forms other than Bank Guarantee, can be converted to security deposit for due performance of the contract if the contractor so desires. The "performance security deposit/retention money" vide clause 3.15 shall also be applicable limiting to a maximum of 10% of the contract value.

3.10 **VALIDITY:**

The tender submitted by Tenderer shall remain valid for acceptance for a period of six (6) months from the date of opening and the tenderer shall not be entitled during the said period of six (6) 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 the Tenderer revokes/cancels/varies/withdraws his tender within the above period, the OWNER shall have the right to forfeit the EMD without any further notice to the tenderer.

In case of such revocation or cancellation or variation by the Tenderer, without the consent of the OWNER, the OWNER shall have the right to put the tenderer on holidaylist, barring the tenderer from participating in any tender for future works / Contracts /services etc.

3.12 ADDENDA/CORRIGENDA:

3.12.1 Addenda/Corrigenda to the Tender Document may be issued till closing of Tender submission to clarify documents or to reflect modification in the design or CONTRACT terms.

3.12.2 Each addendum/corrigendum issued by the owner will be published in NRL & Govt. website and e-tender portal, as applicable. Tendered will consider this addendum/corrigendum for submission along with his Tender and can keep a copy for him for future reference. All addenda/corrigenda issued by the owner shall become part of Tender Document.

3.13 RIGHT OF OWNER TO ACCEPT OR REJECT TENDER:

3.13.1 The right to accept the Tender will be absolutely with the OWNER. The OWNER, however, does not bind itself to accept the lowest tender, and reserves to itself the authority to reject any or all the Tenders received without assigning any reason whatsoever. The works may be split up between two or more agencies or only part of the work may be awarded to selected tenderer if felt necessary.

3.13.2 Tenders in which any of the particulars and prescribed information are missing or are incomplete in any respect and / or the prescribed Conditions are not fulfilled are liable to be rejected at the discretion of the OWNER without assigning any reason.

3.13.3 Canvassing in connection with tenders is strictly prohibited and tenders submitted by the tenderer who resort to canvassing will be liable to rejection. Tenders containing uncalled remarks or any additional conditions are liable to rejection.

3.14 HOLIDAY LISTING: The guidelines and procedures for holiday listing as adopted by NRL shall be applicable.

3.15 SECURITY DEPOSIT:

The person/ persons whose tender may be accepted (here after called the contractor) shall within 10 days of the receipt by him of the notification of the acceptance of the tender, shall remit/deposit the initial security deposit of 2.5% of the accepted value of the tender to Numaligarh Refinery Limited. For further details refer to Clause No. 4.6

3.16 TIME SCHEDULE:

3.16.1 Time is the essence of the Contract in all respects. The time allowed for carrying out the work is as shown in the document. This shall be signed and submitted along with the tender. Requests for revision of contractual period after tenders are opened will not be considered. In case the work is continued beyond the

period of completion as per the time schedule either by extension of time or otherwise it shall not be considered as a waiver of this condition on the OWNER, and time shall continue to be the essence of the Contract.

If the contractor shall desire an extension of the time for completion of the work on the grounds of his having been unavoidably hindered in its execution or on any other grounds, he shall apply in writing to the Engineer-in-Charge within two weeks of the date of hindrance on account of which he desires such extension as aforesaid, and the Engineer-in-Charge shall if in his opinion (which shall be final), reasonable grounds have been shown thereof, authorize such extension of time as may in his opinion be necessary or proper. In the event of extension of Time of the contract, if granted, the contractor shall be required to suitably extend the period of Bank Guarantee if submitted, towards security Deposit/retention money suitably.

3.16.2 A joint programme of execution of the work will be prepared by the Engineer-in -Charge and Contractor based on priority requirements of the project. This programme will take into account the time for completion in 3.16.1 and the time allowed for the priority works by the Engineer-In-Charge.

3.16.3 Monthly/Weekly programmes will drawn up by the Engineer-in- Charge jointly with the contractor based on availability of work fronts and the joint construction program as per 3.16.2 above. The contractor shall scrupulously adhere to these targets/programmes by deploying adequate personal, construction tools and tackles and he shall also supply himself all materials of his scope of supply on good time to achieve the target programmes. In all matters concerning the extent of target setout 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.

3.17 COLLECTION OF DATA-TENDERER'S RESPONSIBILITY:

The Tenderer shall visit the SITE prior to quoting and acquaint himself fully of the SITE. No claims whatsoever will be entertained on the plea of ignorance of difficulties involved in execution of WORK or carriage of materials, market price of all inputs – man, machine , material, services, royalties, taxes and duties etc. required to complete the work in all aspects.

3.18 RETIRED GOVERNMENT OR COMPANY OFFICERS:

No Engineer of Gazetted rank or other Gazetted Officer, employed in Engineering or administrative duties in Engineering Department of the State/Central Government or of the OWNER/Consultant of owner is allowed to work as a Contractor for a period of two (2) years after his retirement or resignation from Government Service or from the employment of the OWNER/Consultant of owner without the previous

permission of the OWNER/Consultant. 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 the permission of the State/Central Government or of the OWNER/Consultant as aforesaid before submission of Tender, or engagement in the CONTRACTOR'S service as the case may be**.**

3.19 SIGNING OF CONTRACT AGREEMENT:

If specified in the Special Conditions of Contract, the successful Tenderer shall be required to execute an Agreement in the Proforma attached to the Tender Document within Ten (10) days of the receipt by him of the notification of Acceptance of Tender. In the event of failure on the part of the successful Tenderer to sign the Agreement within the above stipulated period, the Earnest money will be forfeited and the Acceptance of the Tender shall be considered as cancelled.

On cancellation of the acceptance of the Tender by the Company as stated above, the Contractor (i.e., the successful tenderer) shall be liable to make good the damages that may be caused to the Company.

3.20 FIELD MANAGEMENT:

3.20.1 The field management will be under the control of the Engineer-in-Charge. The Engineer-in-Charge may also authorise his representatives to perform his duties and functions.

3.20.2 Clause 5.19 of the General Conditions of Contract shall be referred to in this connection.

3.21 CO-ORDINATION OF WORK

The Engineer-in-Charge shall co-ordinate the works of various Agencies engaged at SITE to ensure minimum disruption of Work carried out by different Agencies. It shall be the responsibility of the CONTRACTOR to plan and execute the WORK strictly in accordance with instructions from Engineer-in-Charge to avoid hindrance to the Work being executed by other Agencies. The CONTRACTOR is deemed to have full knowledge with regard to such situation and shall not be entitled to raise any claim as against the OWNER on that account.

3.22 FOREIGN BIDDERS:

It is mandatory for the foreign bidder to furnish the documents for the compliance to requirement of PAN No. , Tax Residency Certificate and Form No.10F (applicable for foreign bidder in case of services in India is required as per scope of bidding document) as per Income Tax Act in case his receipts are subject to tax deduction at source in India:

(a) **PAN No.**

PAN as per the Indian Income Tax requirements shall be submitted, failing which the Supplier/Contractor/Consultant shall be responsible for any additional tax deduction at source as per the provisions of the Indian Income Tax Act/Rules and the same shall be deducted from the payment made to supplier/contractor/consultant.

(b) **Tax Residency Certificate (TRC)**

TRC containing prescribed particulars as per the Annexure 5 from the Government of foreign country in order to claim the benefits of DTAA as per the Indian Income Tax requirements shall be submitted, failing which the relief under DTAA will not be available and consequently the actual rate of withholding tax will be applicable and deducted from the payment made to supplier/contractor/consultant (i.e., non-resident taxpayer). The TRC shall be duly verified by the Government of the country of which the assessee claims to be a resident for the purposes of tax.

(c) **Form 10F**

In additional to TRC, in order to claim the benefits of DTAA, bidder shall also submit additional information in form no. 10F as per Annexure 6. Form 10F has to be signed & verified by the assessee himself.

The above shall be furnished before release of any payment or within one month of the release of Order, whichever is earlier. In case of failure to submit the above information, any additional tax liability on Owner, will be deducted from the payment due to the contractor.

3.23 SCHEDULE OF RATES:

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

3.23.2 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.

3.23.3 Rate must be filled in the copies of pages of Schedule of Rates of original Tender Documents. If quoted in separate typed sheet, no variation in item description or specification shall be accepted. Any exception taken by the tenderer to the Schedule of Rates shall be brought out in the terms and conditions of offer, but it does not guarantee acceptance of the same by the owner.

3.23.4 In case of e-TENDERING:

Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the prices bid has been given as a standard BOQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required

to download the BOQ file, open it and complete unprotected cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.

3.23.5 The quantities shown against the various items are only approximate. Any increase or decrease in the quantities shall not form the basis of alteration of the rates quoted and accepted. However any likely increase in quantity of any items should be brought to the notice of Engineer-In- Charge well in advance prior to execution. Contractor shall not execute excess quantity other than the ordered quantity without prior approval from EIC.

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

3.24 AWARD OF CONTRACT:

3.24.1 The acceptance of tender will be intimated to the successful tenderer by the means defined as LETTER OF ACCEPTANCE /FOA/Purchase Order. Once the tender is accepted and Letter of Acceptance/ FOA/ PO is issued, the contract shall be deemed to have been established and the same shall be binding on the contractor to execute the job as per tender agreed terms and conditions, however party has to execute the contract agreement as per prescribe format immediately after issuance of LOA/FOA/PO.

3.25 LOCAL CONDITIONS:

3.25.1 It will be imperative on each tenderer to inform himself of all local conditions and factors which may have any effect on the execution of WORK covered under the tender document.

Tenderer shall familarize himself with all taxes and duties such as Income Tax, Sales Tax, Excise Duty, WCT, VAT, Service Tax, Octroi, etc applicable as of bid closing date from various Govt Authorities such as Central Govt, State Govt., Municipal / local bodies etc. Applicability of Taxes and Duties shall be investigated by the Tenderer prior to submission of bids.

3.25.2 It must be understood and agreed that such factors have properly been investigated and considered while submitting the tender. No Claim for financial or any other adjustments due to lack of clarifications of such factors shall be entertained.

3.26 **ABNORMAL RATES:**

The tenderer are expected to quote rate for each item after careful analysis of coast involved for the performance of the completed item considering all specifications and condition of contract. This will avoid loss of profit or gain in case of curtailment or change of specification for any item. In case it is noticed that the rates quoted by the tender for any item are unusually high or unusually low (i.e +- over 25% between tender rate and estimate), it will be sufficient cause for rejection of the tender unless the owner is convinced about the reasonableness after scrutiny of the analysis for such rates to be furnished by the tenderer (on demand).

SECTION IV

GENERAL OBLIGATIONS

4.0 INTERPRETATION OF CONTRACT DOCUMENT:

4.1 Except if and to the extent otherwise provided by the CONTRACT, the provisions of the General Conditions of Contract and Special Conditions of contract shall prevail over those of any other documents forming part of the CONTRACT. Several documents forming the CONTRACT are to be taken as mutually explanatory. Should there be any discrepancy, inconsistency, error or omission in the CONTRACT or any of the CONTRACT documents, the matter may be referred to Engineer-in-Charge who shall give his decision and issue to the CONTRACTOR instructions directing in what manner the WORK is to be carried out. The decision of the Engineer-in-Charge shall be final and conclusive and the CONTRACTOR shall carry out WORK in accordance with this decision.

Works shown in the Drawing but not mentioned in the Specifications or described in the specifications without being shown in the Drawings shall nevertheless be held to be included in the same manner as if they had been specifically shown in the Drawings and described in the Specification.

4.2 HEADINGS AND MARGINAL NOTES:

All headings and marginal notes to the clauses of these General Conditions of Contract or to the Specifications or to any other part of Tender Document are solely for the purpose of giving concise indication and not a summary of the contents thereof, and they shall never be deemed to be part thereof or be used in the interpretation or construction thereof of the CONTRACT.

4.3 SINGULAR AND PLURAL:

In this Contract Document unless otherwise stated specifically, the singular shall include the plural and vice versa wherever the context so requires. Words implying 'Persons' shall include relevant corporate companies / Registered Associations / Body of individuals / Firm of Partnership.

4.4 SPECIAL CONDITIONS OF CONTRACT:

4.4.1 Special conditions of Contract shall be read in conjunction with the General Conditions of Contract, Specifications of Work, Drawings and any other documents forming part of this CONTRACT wherever the context so requires.

4.4.2 Notwithstanding the sub-division of the documents into these separate sections and volumes, every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the CONTRACT so far as it may be practicable to do so.

4.4.3 Where any portion of the General Conditions of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, then unless a different intention appears, the provisions of the Special Conditions of Contract shall be deemed to over-ride the provisions of the General Conditions of Contract and shall to the extent of such repugnancy, or variations, prevail.

4.4.4 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 own cost.

4.4.5 The Materials, Design and Workmanship shall satisfy the relevant Indian Standards Specifications contained herein and Codes referred to. Where the Specifications stipulate requirement in addition to those contained in the standard Codes and Specifications, these additional requirements shall be satisfied.

4.5 CONTRACTOR TO OBTAIN HIS OWN INFORMATION:

The CONTRACTOR, in fixing his rate, shall for purposes whatsoever, be deemed to have himself independently obtained all necessary information for the purpose of preparing the Tender and his tender as accepted shall be deemed to have taken into account all contingencies as may arise due to such information or lack of same. The correctness of the details, given in the Tender Document to help the CONTRACTOR to make up the Tender is not guaranteed.

The CONTRACTOR shall be deemed to have examined the Contract Document, to have generally obtained his information in all matters whatsoever that might affect the carrying out the WORK at the Scheduled Rates and to have satisfied himself to the sufficiency of his Tender. Any error in description of 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 have known the scope, nature and magnitude of the work and the requirements of Materials and Labour involved etc. and as to what all WORK he has to complete in

accordance with the CONTRACT whatever be the defects, omissions or errors that may be found in the Contract Document. The CONTRACTOR shall be deemed to have visited surroundings, to have satisfied himself to the nature of all existing structures, if any and also as to the nature and the conditions of the railways, roads, bridges and culverts, means of transport and communications, whether by land, water or air, and as to possible interruptions thereto and the access and egress from the SITE, to have made enquiries, examined and satisfied himself as to the Sites for obtaining sand, stones, bricks and other materials, the Sites for disposal of surplus materials, the available accommodation as to whatever required, Depots and such other Buildings as may be necessary for executing and completing the WORK to have local independent enquires as to the sub-soil, sub-soil water and variations thereof, storms, prevailing winds, climate conditions and all other similar matters affecting the WORK. He is deemed to have acquainted himself as to his liability for payment of Government taxes, customs duty and other charges. Whatsoever prevailing at present or changed in future.

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

No verbal agreement or inference from conversation with any officer or employee of the Owner/ Consultant either before or after the execution of the Contract Agreements shall in any way affect or modify any of the terms or obligations herein contained.
Any change in layout due to site condition or technological requirement shall be binding on the contractor and no extra claim on this account shall be entertained.

The CONTRACTOR’s attention is drawn towards various notifications and laws in force for use of Forest products like sand, stone, timber etc. regarding payment of Royalty to the Government of Assam. The CONTRACTOR will have to obtain necessary permit from the local District Forest Officer after payment of royalty applicable at that time. The owner shall facilitate the CONTRACTOR by way of issue of letters to the various Government Agencies in order to enable the CONTRACTOR to get the Forest Produce on payment of royalty.

4.6 SECURITY DEPOSIT

4.6.1 Security Deposit:

A sum of Ten percent (10%) of the accepted value of the Tender shall be deposited by the person/persons (hereafter called the CONTRACTOR) as Security Deposit with the OWNER. This may be deposited initially at two and half percent (2.5 %) of the value of CONTRACT (referred as Initial Security Deposit) within Ten (10) days of receipt by him of the Work Order and the balance Seven and half percent (7.5%) will be recovered in installments through deductions at the rate of Ten percent (10%) of the value of each running account bill till total Security Deposit amount is collected, after which no further deductions from Bills will be made on this account, subject to Clause 4.6.2 below.

Alternatively, the CONTRACTOR may, at his option, deposit the full amount of Ten percent (10%) of the accepted value of the Tender towards the Security Deposit within Ten (10) days of receipt by him of the Work Order. CONTRACTOR can furnish the Initial or Total Security Deposit amount through a Bank Guarantee from any Scheduled Bank in the prescribed form.

However if the value of WORK as per actual execution exceeds the accepted value of Tender i. e. value given in the Purchase Order , further recoveries towards Security Deposit shall be effected at Ten percent (10%) of the value in excess of the accepted value of the Tender from running Bills and final Bill. Similarly if the value as per actual execution is less than the accepted value of Tender, recovery towards Security Deposit, effected in the running Bills, in excess of Ten percent (10%) of the value of WORK as per actual execution shall be refunded to the CONTRACTOR along with final Bill.

4.6.2 If the CONTRACTOR/Sub-contractor or their employees shall break, deface or destroy any property belonging to the OWNER or others during the execution of the CONTRACT, the same shall be made good by the CONTRACTOR at his own expenses and in default thereof, the Engineer-in-Charge may cause the same to be made good by other Agencies and recover expenses from the CONTRACTOR (for which the certificate of the Engineer-in-Charge shall be final) in any manner the owner may choose. In such a case, OWNER is at liberty to enforce the Bank Guarantee and to get the amount whenever a claim is put forward by OWNER against CONTRACTOR irrespective of any dispute regarding the claim between OWNER and the CONTRACTOR.

4.6.4 All compensation or other sums of money payable by the contractor to the owner under terms of this contract may be deducted from or paid by the encashment or 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 and in the event of his security deposit being reduced by reasons of any such deductions or a sale of said, the aforesaid contractor shall within ten days thereafter make good in cash or Bank drafts as aforesaid any sum or sums which may have been deducted from his security deposit, or any part thereof. No interest shall be payable by the owner for sum deposited as security deposit.

4.7 TIME OF PERFORMANCE:

4.7.1 TIME FOR MOBILISATION:

The work covered by this contract shall be commenced after receipt of Work Order or Letter of Intent and within 7 days or within the period as mentioned in the Tender document after receipt of instruction from EIC and should be completed in stages as mentioned in the Time Schedule of completion of work. The contractor should bear in mind that time shall be the essence of the contract. Request for revision of completion time after tenders are opened will not be entertained at all.

4.7.2 Time Schedule

4.7.2.1 The general Time Schedule of construction is given in the Tender Document. CONTRACTOR should prepare a detailed monthly or weekly construction programme jointly with the Engineer-in-Charge immediately on receipt of the LOI/ Work Order / outline agreement-contract of Tender. The WORK shall be executed strictly as per the Time Schedule given in this Document. The period of construction given includes the time required for testing, rectification, if any, re-testing and completion in all respects to the entire satisfaction of the Engineer-in-Charge.

4.7.2.2 The contractor shall submit a detailed PERT net work within the time frame agreed above consisting of adequate number of activities covering various key phases of the work such as design, procurement, manufacturing, shipment and field erection activities within 15 days from the date of LETTER OF ACCEPTANCE OF TENDER. This network shall indicate the interface facilities to be provided by the owner and the dates by which such facilities are needed.

4.7.2.3 Contractor shall discuss the network so submitted with the owner and the agreed net work which may be in the form as submitted with the owner or in revised form in line with the out come of discussions shall form part of the contract, to be signed within thirty (30) days from the date of LETTER OF ACCEPTANCE OF TENDER. During the performance of the contract, if in the opinion of the owner proper progress is not maintained suitable change shall be made in the contractors operation to ensure proper progress. If however owner feels that progress is not as per pre agreed progress which will have re-persuasion on timely completion of the contract, owner will have liberty either to terminate the contract or impose suitable penalty for delay.

The above PERT network shall be reviewed periodically and report shall be submitted by the Contractor as directed by Owner/EIL.

4.8 FORCE MAJEURE:

Any delays in or failure of the performance of either party hereto shall not constitute default hereunder or give rise to any claims for damages, if any, to the extent such delays or failure of performance is caused by occurrences such as Acts of God or the public enemy; expropriation or confiscation of facilities by Government authorities, compliance with any order or request of any Governmental authorities, acts of war, rebellion or sabotage or fires, floods, explosions, riots , quarantine restrictions and freight embargoes or illegal joint strikes of all the workers of all the contractors.

The CONTRACTOR shall keep records of the circumstances leading to delays or failure of performance and bring this to the notice of Engineer-in-Charge in writing immediately on such occurrences.

If any of the force majeure condition exists in the place of operation of the contractor even at the time of submission of the bid, he will categorically specify the same in the bid and state that this has been taken into consideration in his quotation.

4.9 EXTENSION OF TIME

If the CONTRACTOR shall desire an extension of the time for completion of the WORK on the grounds of his having been unavoidably hindered in its execution or any other grounds, he shall apply in writing to the Engineer-in-Charge within ten (10) days of the date of the hindrance on account of which he desires such extension as aforesaid, and the Engineer-in-Charge shall, if in his opinion (which shall be final) reasonable grounds have been shown therefore, authorizes such extension of time as may, in his opinion, be necessary or proper. Provided that such extension shall not change the agreement that time is the essence of Contract and provided further that the CONTRACTOR shall continue the work during consideration of the request for extension.

In the event of extension of time of the contract, if granted, the contractor shall be required to extend the period of Bank guarantee if submitted towards Retention Money or otherwise suitably.

Until a final decision is taken by the owner on the application of the CONTRACTOR for extension of time on any ground, a provisional time extension may be given by Engineer-in-charge in order to keep the contract alive without prejudice towards the rights, claims, contentions of the owner to take action against the CONTRACTOR as per terms of the contract.

Provisional penalty (percentage as decided by the engineer-in-charge) for delay shall be kept on hold during provisional time extension period and the amount shall be recovered from the subsequent Running Bills and other bills & dues of the CONTRACTOR till final closing of the contract.

4.10 COMPENSATION FOR DELAY (LIQUIDATED DAMAGES):

4.10.1 The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor. The work shall throughout the stipulated period of the contract be proceeded with all the diligence (time being deemed to be essence of the contract) and the contractor shall pay to the owner as compensation an amount equal to 0.5% or such smaller amount as the Engineer-In-Charge (whose decision in writing shall be final), may decide on the amount of the contract value for every week that the work may remain incomplete as per the time schedule, subject to a maximum compensation of 5% of the contract value after which period action will be taken by the Engineer-In-Charge under the provisions of the contract.

The parties shall agree that this is a genuine pre-estimate of the loss/damage which will be suffered by the OWNER on account of delay on the part of the CONTRACTOR and the said amount will be payable on demand without there being any proof of the actual loss of damages having been caused by such delay/breach. The OWNER shall be at liberty to adjust or deduct the said amount of liquidated damages from any amount due to the CONTRACTOR including the retention money / Performance Bank Guarantee.

For special nature of works eg. short duration work of shutdown job or any other kind of emergent situation, owner may decide to incorporate in the SCC, an enhanced rate and limit of maximum penalty on account of delay.

4.11 SUM PAYABLE BY WAY OF COMPENSATION TO BE CONSIDERED AS REASONABLE COMPENSATION WITHOUT REFERENCE TO ACTUAL LOSS:

4.11.1 All sums payable by way of compensation under any of the conditions shall be genuine pre estimate of damages and shall be considered as reasonable compensation without reference to the actual loss or damage, which shall have been sustained.

4.12 RIGHTS OF THE OWNER TO FORFEIT SECURITY DEPOSIT:

Whenever any claim against the CONTRACTOR for the payment of a sum of money arises out of or under the CONTRACT and the CONTRACTOR fails to make good such amount through any other means, the OWNER shall be entitled to recover such sum by appropriating in part or in whole the Retention Money / PBG of the CONTRACTOR. In the event of the Retention Money being insufficient or if no Retention Money , has been taken from the CONTRACTOR then the balance of 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.

4.13 **FAILURE BY THE CONTRACTOR TO COMPLY WITH THE PROVISIONS OF THE CONTRACT** :

In any case, under any clause or clauses of this CONTRACT, if the CONTRACTOR have forfeited the whole of his Retention Amount or have committed a breach of any of the terms contained in this CONTRACT, the OWNER shall have power to adopt any of the following courses as he may deem best suited to his interest :

a) To rescind the CONTRACT (of which recession notice in writing to the CONTRACTOR under the hand of the OWNER shall be conclusive evidence) in which case the Retention Amount Deposit of the CONTRACTOR shall stand forfeited and be absolutely at the disposal of the OWNER.

b) To employ labour paid by the OWNER and to supply materials to carry out the WORK or any part of the WORK, debiting CONTRACTOR with the cost of labour, cost of tools and, plants and equipment charges, the cost of materials for which a certificate of the Engineer-in-Charge shall be final and conclusive against the CONTRACTOR and Ten percent 10% of costs as above to cover all departmental charges and crediting him with the value of the Work done, in all respects in the same manner and at same rates as if it had been carried out by the CONTRACTOR under the terms of CONTRACT. The certificate of Engineer-in-Charge as to the value of the Work done shall be final and conclusive against the CONTRACTOR.

c) To measure up the Work of the CONTRACTOR and to take such part thereof as shall be unexecuted out of his hand to give it to another Contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to CONTRACTOR, if the WORK had been executed by him (the certificate in writing of the Engineer-in-Charge of the excess amount shall be final and conclusive) shall be borne and paid by the CONTRACTOR and may be deducted from any money due to him by the OWNER under the CONTRACT or otherwise or from his Retention Amount or from the proceeds of sale thereof, of a sufficient part thereof.

In the event of any of the above course being adopted by the OWNER, the CONTRACTOR shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any agreements or made any advances on account of or with a view to the execution of the WORK of the performance of the CONTRACT. In case the CONTRACT shall be rescinded under the provision aforesaid, the CONTRACTOR shall not be entitled to recover or be paid any sum for any WORK actually performed under this CONTRACT unless the Engineer-in-Charge will certify in writing the performance of such work, and the value

payable in respect thereof and he shall only be entitled to be paid the value so certified, after recoveries and deductions if any to be made by the owner as per contract.

4.14 **LIABILITY TO PAY COMPENSATION IF ACTION NOT TAKEN UNDER CLAUSE 4.13**

If any case in which any of the powers conferred upon the OWNER by clause 4.13 thereof shall have become exercisable and the same had not been exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any further case of default by the CONTRACTOR for which any clause or clauses thereof, he is declared liable to pay compensation and the liability of the CONTRACTOR for past and future compensation shall remain unaffected. In the event of the OWNER putting in force the power under sub-clause (a), (b) or (c) vested in him under the preceding clause he may, if he so desires, take possession of all or any tools and plants, materials and stores in or upon the WORK or the SITE thereof belonging to the contractor or procured by him and intended to be used for the execution of the work or any part thereof paying or allowing or for the same in account at the contract rates or in the 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 foreman 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 expense or sell them by auction or private sale on account of the CONTRACTOR and at his risk in all respects without any further notice as to the date, time or place of sale and the certificate of the Engineer-in-Charge as to the expense of any such removal and the amount of the proceeds and expense of any such sale shall be final and conclusive against the CONTRACTOR.

4.15 **CHANGES IN CONSTITUTION:**

Where the CONTRACTOR is a partnership firm, prior approval, in writing, of the OWNER shall be obtained before any change is made in the constitution of the firm. Where the CONTRACTOR is an individual or a Hindu undivided family business concern, such approval as aforesaid, shall likewise be obtained before such CONTRACTOR enters into any agreement with other parties, where under the reconstituted firm would have the right to carry out the WORK hereby undertaken by the CONTRACTOR. In either case if prior approval as aforesaid is not obtained, the CONTRACT shall be deemed to have been allotted in contravention of clause 4.21 (i) hereof and the same action may be taken and the same consequence shall ensure as provided in the said clause.

4.16 IF THE CONTRACTOR DIES

Without prejudice to any of the rights or remedies under this CONTRACT, if the CONTRACTOR dies, the OWNER shall have the option of terminating the CONTRACT without compensation to the CONTRACTOR.

4.17 EMPLOYEES OF THE OWNER NOT INDIVIDUALLY LIABLE:

No Director, or Official or employee of the OWNER shall be in any way 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 or performance of any of the acts, matters or things which are herein contained.

4.18 OWNER NOT BOUND BY PERSONAL REPRESENTATION:

The Schedule of rates or the Contract value as accepted by OWNER shall be firm. The CONTRACTOR shall not be entitled to any increase on the Schedule Rates or any other right or claim whatsoever by reason of any representation, explanation or statement or alleged representation, promise or guarantees given or alleged to have been given to him by any person.

4.19 CONTRACTOR'S OFFICE AT SITE:

The CONTRACTOR shall provide and maintain an office at the SITE for accommodation of his agent and staff and such office shall be open at all reasonable hours to receive instructions, notices or other communications.

4.20 CONTRACTOR'S SUBORDINATE STAFF AND THEIR CONDUCT:

4.20.1 The CONTRACTOR, on or after award of the WORK shall name and depute a qualified engineer having sufficient experience in carrying out WORK of similar nature, to whom the Equipment, materials, if any ,shall be issued and instructions of work given. The CONTRACTOR shall also provide to the satisfaction of the Engineer-in-Charge sufficient and qualified staff to supervise the execution of the WORK, competent sub-agents, foremen and leading hands including those specially qualified by previous experience to supervise the type of works comprised in the CONTRACT in such manner as will ensure work of the best quality and expeditious working. Whenever in the opinion of the Engineer-in-Charge

additional properly qualified supervisory staff is considered necessary, they shall be employed by the CONTRACTOR without additional charge on account thereof. The CONTRACTOR shall ensure to the satisfaction of the Engineer-in-Charge that Sub-contractors, if any, shall provide competent and efficient supervision, over the Work entrusted to them.

4.20.2 If and whenever any of the CONTRACTOR or Sub-Contractor' s agents, sub-agents, assistants, foremen or other employees shall in the opinion of Engineer-in-Charge be guilty of any misconduct or be incompetent or insufficiently qualified or negligent in the performance of their duties or that in the opinion of the OWNER or the Engineer-in-Charge, it is undesirable for administrative or any other reason for such person or persons to be employed in the WORK, the CONTRACTOR, if so directed by the Engineer-in-Charge, shall at once remove such person or persons from NRL site thereon. Any person or persons so removed from the WORK shall not again be employed in connection with the WORK without the written permission of the Engineer-in-Charge. Any person so removed from the WORK shall be immediately replaced at the expense of the CONTRACTOR by a qualified and competent substitute. Should the CONTRACTOR be requested to repatriate any person removed from the WORK he shall bear all costs in connection herewith.

4.20.3 The CONTRACTOR shall be responsible for the proper behaviour of all the staff, supervisor, workmen, and others and shall exercise a proper degree of control over them and in particular and without prejudice to the said generality, the CONTRACTOR shall be bound to prohibit and prevent any employees from trespassing or acting in any way detrimental or prejudicial to the interest of the community or of the properties or occupiers of land and properties in the neighbourhood and in event of such employees so trespassing, the CONTRACTOR shall be responsible therefore and relieve the OWNER of all consequent claims or actions for damages or injury or any other grounds whatsoever. The decision of the Engineer-in-Charge upon any matter arising under this clause shall be final. Contractor shall ensure that none of their employees are ever engaged in any anti national activity.

4.20.4 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.

Contractor may be required to obtain entry passes for his staff/employees from Owner to work within operating areas.

4.21 SUB-LETTING OF WORK:

i) No part of the CONTRACT nor any share or interest therein shall in any manner or degree be transferred, assigned or sub-let by the CONTRACTOR directly or indirectly to any person, firm or corporation whatsoever except as provided for in the succeeding sub-clause without knowledge of the OWNER.

ii) If Contractor goes for sub contracting any part of the job which includes man power supply also, same will be done with complete knowledge of EIC/OWNER. Formal Work order shall be issued by the Contractor to the subcontractor with scope of work and contractual details. However such sub contractor shall not be in holiday list of NRL.

iii) For certain specialized/urgent nature of job, NRL may specify suitable Pre qualification criteria for selection of Sub contractor by Contractor.

iv) At the commencement of every month the CONTRACTOR shall furnish to the Engineer-in-Charge list of all Sub- Contractors or other persons or firms engaged by the CONTRACTOR for working at the SITE during the previous month with particulars of the general nature of the subcontract or WORK.

v) 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 CONTRACTOR shall be and shall remain solely responsible for the quality and proper and expeditious execution of the WORK and the performance of all the conditions of the CONTRACT in all respects as if such sub-letting or sub-contracting had not taken place, and as if such WORK had been done directly by the CONTRACTOR.

v) If any Sub-Contractor engaged upon the WORK at the SITE executes any Work which in the opinion of the Engineer-in-Charge is not in accordance with the Contract Document, the OWNER may by written notice to the CONTRACTOR request him to terminate such contract and the CONTRACTOR upon the receipt of such notice shall terminate such sub-contract and dismiss the Sub-Contractors and the latter shall forthwith leave the WORK failing which the OWNER shall have the right to remove such Sub-Contractors from the SITE.

vii) Any 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 to compensation, extension of time or otherwise, failing which the owner shall have the right to remove such sub-contractors from the site.

viii) Following scope of jobs shall not be allowed to be sub-let and shall be retained with the CONTRACTOR in all cases:

- Safety compliance with all jobs.
- Planning and scheduling activities.
- Quality assurance and quality control activities.
- Resource mobilization including critical machinery.
- All statutory provisions

ix) Not above 50% and below 5% of the contract on original SOR basis or Rs. 10.00 lacs whichever is higher shall be acceptable to be subcontracted to a single sub contractor as a financial limit of subcontracting to ensure contractor's responsibility.

x) All labor related Gate pass formalities, pertaining to the scope of sublet job shall be in the scope of concerned subcontractor, but the same is to be forwarded by SIC of the CONTRACTOR . [Compliance of all statutory and safety requirement related to workers shall be with the CONTRACTOR]

xi) Skilled/ Unskilled manpower (age limit upto 65 years) supply type contract can also be acceptable as subletting of job with all other labor related statutory compliances. [Compliance of all statutory and safety requirement related to workers shall be with the CONTRACTOR]

xii) Subcontractor performance shall also be reported separately along with overall progress status to identify progress and constraint, and concerned EIC of Subcontractor may also be called for Periodic and Monthly review meeting taken by Client.

xiii) Owner shall not allow any process of Sub Contractor to be further sub contracted

4.22 POWER OF ENTRY:

If the CONTRACTOR shall not commence the WORK in the manner previously described in the Contract Document or if he shall at any time in the opinion of the Engineer-in-Charge:-

i) fail to carry out the WORK in conformity with the Contract Document, or

ii) fail to carry out the WORK in accordance with the Time Schedule, or

iii) Substantially suspend WORK for a period of fourteen (14) days without authority from the Engineer-in-Charge, or

iv) fail to carry out and execute the work to the satisfaction of the Engineer-in-Charge, or

v) fail to supply sufficient or suitable constructional plant and equipment, temporary works, labour materials or things, or

vi) Commit or suffer, or permit any other breach of any of the provisions of the CONTRACT to be performed on his part or observed to persist in any of the above mentioned breaches of the CONTRACT for fourteen (14) 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) Shall abandon the work, or

viii) 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

WORK and take possession thereof and of the materials, temporary works, constructional plant and equipment and stock thereon, and to revoke the CONTRACTOR'S licence to use the same, and to complete the WORK by his Agents, other Contractors or Workmen, or to re-let 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 authorise the use of any materials; temporary works, constructional plant and equipment and stock as aforesaid, without making payment or allowance to the CONTRACTOR for the said materials other than such as may be certified on writing by the Engineer-in-Charge to be reasonable, and without making any payment or allowance to the CONTRACTOR for the use of the temporary said works, constructional plant and equipment and stock or being liable for any loss or damage thereto, and if the OWNER shall incur additional expenditure by reason of his taking possession, of the works which are being completed by other Contractor (due account being taken of any extra work or works which may be omitted) then the amount of such additional expenditure 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 plant and equipment materials etc. constructed by or belonging to the Contractor and to recoup and retain the said deficiency or any part thereof out of the proceeds of the sale. The owner shall also have right to blacklist/ holidaylist the tenderer from future works/contracts/services etc.

This will be in line with Clause 4.13.

4.23 **CONTRACTOR'S RESPONSIBILITY WITH OTHER AGENCIES:**

Without repugnance to any other condition, it shall be the responsibility of the Contractor to work in close co-operation and co-ordinatation with other contractors working in the same area or influencing the work of other contractors. For example, Contractor executing the Work of Civil construction 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 walls, slabs, beams and columns etc. and making good the same to the desired finish as per Specifications for the placement of Electrical, Intercommunication cables, Conduits, Air-conditioning inlet and outlet grills and other Equipment etc. where required. For the above said requirements in the false ceiling and other partitions, the Contractor before starting up the work shall in consultation with the Electrical, Mechanical, Intercommunication, Air-conditioning Contractors, and other Agencies prepare and put up a joint scheme, showing the necessary openings, grooves, recesses, cuts, the methods of fixing required for the work of the

aforesaid, and the finishes therein, to the Engineer-in-Charge and get the approval. The Engineer-in Charge before communicating his approval to the scheme, with any required modifications, shall get the final agreement of all the Agencies, which shall be binding. No claim shall be entertained on account of the above.

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

4.24 **OTHER AGENCIES AT SITE:**

The CONTRACTOR shall have to execute the WORK in such place and condition where other Agencies will be engaged for other Works such as Site Grading, Filling and Levelling, electrical and Mechanical Engineering Work, etc. No claim shall be entertained due to Work being executed in the above circumstances.

4.25 NOTICES:

Any notice hereunder may be served on the CONTRACTOR or his duly authorised representative at the SITE or may be served by registered mail/ E-mail/ Fax direct to the address furnished by the CONTRACTOR. Proof of issue of any such notice will be conclusive of the CONTRACTOR having been duly informed of all contents therein.

4.26 **RIGHTS OF VARIOUS INTERESTS:**

i) The OWNER reserves the right to distribute the WORK between more than one Contractor. The CONTRACTOR shall co-operate and afford other Contractor's reasonable opportunity for access to the WORK for the carriage and storage of materials and execution of their Work.

ii) Wherever the Work being done by any department of the OWNER or by other Contractors employed by the OWNER is contingent upon WORK covered by this CONTRACT, the respective rights of the various interests involved shall be determined by the Engineer in Charge to secure the completion of the various portions of the WORK in general harmony.

4.27 **RIGHT OF OWNER TO DETERMINE/TERMINATE CONTRACT:**

1. The OWNER shall, at any time, be entitled to determine and terminate the CONTRACT, if in the opinion of the OWNER the cessation of the WORK becomes necessary owing to paucity of funds or for any other cause whatsoever. On such determination / termination, the cost of approved materials, brought by the CONTRACTOR and lying at the site, at current market rates as verified and approved by OWNER'S Engineer and of the value of the work done to date by the CONTRACTOR shall be paid for in full at the rate specified in the Contract. A notice in writing from the OWNER to the CONTRACTOR of such determination and termination and reasons thereof shall be the conclusive proof of the fact that the Contract has been so determined and terminated by the OWNER.

2. Should the CONTRACT be determined under sub-clause 1 of this Article and the CONTRACTOR claims payment to compensate expenditure incurred by him in the expectation of completion the work, the OWNER shall consider and admit such claim as are deemed fair and reasonable and are supported by the vouchers to satisfaction of the Engineer-in-Charge. The OWNER'S decision on the necessity and propriety of such expenditure shall be final and conclusive and binding on the CONTRACTOR.

3. The contractor shall not be entitled to get any possible loss of profit that he could have earned had the contract been not determined / terminated under sub clause 1 of this section.

4.28 PATENTS AND ROYALTIES:

4.28.1 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 practised 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 practised or employed in the performance of this CONTRACT, is covered by a patent under which the CONTRACTOR is not licensed then the CONTRACTOR before supplying or using the Equipment, Machinery, Materials, compositions method or processes shall obtain such licences, and pay such royalties and licence fees as may be necessary for performance of the CONTRACT. In the event the CONTRACTOR fails to pay any such royalty or obtain any such licence 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 any damages and costs awarded in such suit.

The CONTRACTOR shall promptly notify the OWNER if the CONTRACTOR has acquired knowledge of any patent 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. CONTRACTOR agrees to and does hereby grant to OWNER together with the right to extend the same to any of the subsidiaries of the OWNER as irrevocable, royalty free licence to use in any country any invention made by the CONTRACTOR or his employees in or as a result of the performance of the work under the CONTRACT.

With respect to any sub contract entered into by CONTRACTOR pursuant to the provisions of the relevant clause there of, 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.

4.29 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 done by the contractor.

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

4.31 All drawings, blue prints, tracings, reproducible, models, plans, specification and copies thereof, furnished by the Owner as well as drawings, tracings, reproducible, plans specifications, design, calculations etc. prepared by the contractor for the purpose of execution of works covered in or connected with this contract shall be the property of Owner and shall not be used for any other work but are to be delivered to the Owner at the completion of the contract.

4.32 Where so desired by Engineer-in-Charge, the contractor agrees to respect the secrecy of any document, drawings etc. issued to him for the execution of this contract, and restrict access to such documents, drawing etc. to the minimum and further, the contractor agrees to execute an individual SECRECY agreement from each or any person employed by contractor having access to such documents, drawings and to any other agency or individual, without the written approval by Engineer-in-Charge.

4.34 The Contractor shall indemnify and save harmless the Owner from any loss on account of claims against the Owner for the contributory infringement of patent right arising out and based upon the claim that the use by the Contractor of the process included in the design prepared by the Contractor and used in the operation of the plant infringes on any patent right. With respect to any sub contract entered into by contractor pursuant to the provisions of the relevant clause hereof, the contractor shall obtain from the sub contractor an undertaking to provide the owner with the same patent protection that contractor is required to provide under the provisions of clause 4.28.1.

4.4 LIENS

4.4.1 If at any time, there should be evidence of any lien or claim for which the OWNER might have become liable and which is chargeable to the CONTRACTOR, the OWNER shall have the right to retain out of any payment then due or thereafter to become due an amount sufficient to completely indemnify the OWNER against such lien or claim and if such lien or claim be valid the OWNER may pay and discharge the same and deduct the amount so paid from any money which may be or may become due and payable to the CONTRACTOR. If any lien or claim remain unsettled after all payments are made, the CONTRACTOR shall refund or pay to the OWNER all moneys that the latter may be compelled to pay discharging such lien or claim including all costs and reasonable expenses.

4.4.2 The Owner shall have general lien over all tools, equipment, machinery and materials etc. belonging to the CONTRACTOR for any amount due from the CONTRACTOR to the Owner on any account. The owner shall have a general lien, over any amount payable to the contractor on any account whether presently due or not, for any amount due from the contractor to the owner on any account whatsoever including under any previous jobs/contracts and owner shall have full right for adjustments/ appropriation of such amounts without notice to the contractor.

4.4.3 The final payment shall not become due until the contractor delivers to the Engineer-In-Charge a complete release or waiver of all lien arising or which may arise out of his agreement or receipt in full certification by the contractor in a form approved by Engineer-In-Charge that all invoices for labour, materials, services have been paid in lien thereof and if required by the Engineer-In-Charge in any case an affidavit that so far as the contractor has knowledge or information the releases and receipts include all the labour and material for which a lien could be filled.

4.4.5 CONTRACTOR will indemnify and hold the owner harmless, for a period of two year after the issue of final Certificate, from all liens and other encumbrances against the owner on account of debts or claims

alleged to be due from the contractor or his sub contractor to any person including sub due from the CONTRACTOR or his sub contractor to any person including sub or litigation in connection therewith. CONTRACTOR shall defend or contest at his own expense any fresh claim or litigation brought against the owner or the contractor by any persons including his sub contractor, till its satisfactory settlement even after the expiry of two years from the date of issue of final certificate.

4.5 OPERATION OF CONTRACT:

4.5.1 Law Governing:

Regardless of the place of contracting, place of performance or otherwise, this Agreement, and all amendments, modifications, alterations, or supplements, thereto shall be governed by the laws of India and respective state laws for the nature, validity and interpretation thereof.

4.5.2 Non-Waiver of Default:

Any failure by the Owner or Contractor at any time, or from time to time, to enforce or require the strict keeping and performance of any of the terms or conditions of this agreement, or to exercise a right hereunder, shall not constitute a waiver of such terms, conditions or rights, and shall not affect or impair same, or the right of the Owner or the Contractor, as the case may be at any time to avail itself of same.

SECTION V
PERFORMANCE OF WORK

5.0 EXECUTION OF WORK:

All the WORK shall be executed in strict conformity with the provisions of the Contract Document and with such explanatory detailed Drawings, Specifications and Instructions as may be furnished from time to time to the CONTRACTOR by the Engineer-in-Charge, whether mentioned in the CONTRACT, or not. The CONTRACTOR shall be responsible for ensuring that WORK throughout are executed in the most substantial, proper and workman like manner with the quality of material and workmanship in strict accordance with the Specifications and to the entire satisfaction of the Engineer-in-Charge.

5.1 CO-ORDINATION AND INSPECTION OF WORK:

The co-ordination and inspection of the day-to-day WORK under the CONTRACT shall be the responsibility of the Engineer-in-Charge. The written/ verbal instructions regarding any particular work will normally be passed by the Engineer-in-Charge or his Authorised Representative. A work order book /log book will be maintained by the CONTRACTOR for each job in which the aforesaid instructions will be entered. These will be signed by the CONTRACTOR or his authorised representative by way of acknowledgment within Twelve (12) hours. The non maintaining of the order book/ log book or non-signing by the contractor shall not preclude the contractor from complying with the instructions.

5.2 ALTERATIONS IN SPECIFICATIONS AND DESIGNS AND EXTRA WORK:

5.2.1 The work covered under this contract having to be executed by the contractor on a lumpsum firm price/item rate quoted by him, the owner will not accept any proposals for changes in value of contract or extension in time on account of any such changes which may arise to the contractor's scope of work as a result of detailed Engineering and thereafter during the execution of work. The only exception to this will be a case where the owner requests in writing to the contractor to up grade the specifications or the size of any major pieces of equipment's, plant or machinery beyond what is normally required to meet the scope of work as defined in the contract document.

In such cases a change order will be initiated by the contractor at the appropriate time for the Owner's prior approval giving the full back up data for their review and for final settlement of any impact on price within 30(Thirty) days thereafter.

5.2.2 The Engineer-in-Charge shall have power to make any alterations in, omission from, additions to or substitutions for, the schedule of rates, the original Specifications, Drawings, Designs and instructions that may appear to him to be necessary or advisable during the progress of WORK and CONTRACTOR shall be bound to carry out such altered extra/new items of Work in accordance with any instruction which may be given to him in writing signed by the Engineer-in-Charge, and such alterations, omissions, additions or substitutions shall not invalidate CONTRACT and any altered, additional or substituted Work which CONTRACTOR may be directed to do in manner above specified as part of the Work shall be carried out by CONTRACTOR on the same conditions in all respects on which he agreed to do the WORK. The time for completion of WORK may be extended for the part of the particular job at the discretion of the Engineer-in-Charge, for only such alterations, additions or substitutions of Work, as he may consider as just and reasonable. The rates for such additional, altered or substituted Work under this clause shall be worked out in accordance with the following provisions:

I. FOR ITEM RATE CONTRACT:

a) If the rates for additional, altered or substituted Work are specified in 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 CONTRACT.

b) If the rates for the additional, altered or substituted Work are not specifically provided in CONTRACT for WORK, the rates will be derived from the rates for similar class of Work as are specified in CONTRACT for the WORK. The opinion of the Engineer-in-Charge, as to whether or not the rates can be reasonably so derived from the items in the CONTRACT will be final and binding on CONTRACTOR.

c) If the rates for the altered, additional or substituted Work cannot be determined in the manner specified in the sub-clause (a) & (b) above, then CONTRACTOR shall, within seven (7) days of the date of receipt of order to carry out WORK, inform the Engineer-in-Charge 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 Engineer-in-Charge shall determine the rate or rates on the basis of the prevailing market rates of materials, labour cost at schedule of labour plus fifteen percent (15%) thereon to cover CONTRACTOR'S supervision, over-heads and profit and pay the CONTRACTOR accordingly. The opinion of the Engineer-in-Charge as to the current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding on CONTRACTOR.

d) Where the items of work will be execute by the CONTRACTOR through nominated specialist agency as approved by the Engineer-In-Charge, then the actual amount paid to such nominated agency supported by

the documentary evidence and as certified by Engineer-In-Charge shall be considered plus 10% (Ten percent) to cover all contingencies, overhead, profits to arrive at the rates.

e)

Where the value of addition of new items together with the value of alterations, additions/deletion/substitution lead to execution of the Contract value below 75%, compensation shall be paid on recommendation from EIC for decrease in the value of work as followed:

5% of (75% of the awarded value of contract minus actually executed value of contract, inclusive of extra item, if any)

Contractor shall apply for compensation to respective EIC for due consideration during closing of the contract.

II. FOR LUMPSUM CONTRACTS

CONTRACTOR shall within 7 days of the date of receipt of order to carry out the altered, additional or substituted work, inform the Engineer-In-Charge of the rates which it is his intention to charge for such class of work, supported by analysis of the rate or rates claimed, and the Engineer-In-Charge shall determine the rate or rates on the basis of the prevailing market rates, labour cost at schedule of labour rates plus 15% to cover contractor supervision, overheads and profit and pay the contractor accordingly. The opinion of the Engineer-In-Charge as to current market rates of materials and the quantum of labour involved per unit of measurement will be final and binding of the Contractor.

5.3 WORK ON SUNDAYS AND HOLIDAYS:

For carrying out WORK on Sundays and Holidays, The CONTRACTOR will approach the Engineer-in-Charge or his representative at least two (2) days in advance and obtain permission in writing.

5.4 **GENERAL CONDITIONS FOR CONSTRUCTION AND ERECTION WORK :**

5.4.1 Contractor should appraise himself of all the conditions prevailing in Refinery, Marketing Terminals and other sensitive location and the restrictions placed on movement of personnel and equipment, types of

equipment and tools permitted, working methods allowed etc. in the light of security and safety regulations operative in the area. The safety regulations to be compiled with by the contractor are given in this document. No idle time wages or compensation for temporary stoppage of work or restrictions would be paid and the rate quoted for various items of work should cover the cost of such contingencies and eventualities. Special care shall be taken by contractor in transportation, storage, working on equipments and other construction activities to protect the existing features and prevent damage to any facilities. Necessary protective structures, barricades have to be erected at various places as directed by Engineer-in-Charge. No extra payment for such protective work shall be made unless specially provided in the schedule of rates.

5.4.2 The working time is forty-eight (48) hours per week. Overtime work is permitted in cases of need and the OWNER will not compensate the same. Shift working at two (2) or three (3) shifts per day, if 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.
For carrying out work beyond working hours the contractor will approach the Engineer-In-Charge or his authorized representative and obtain the prior written permission.

5.4.3 The CONTRACTOR must arrange for the placement of workers in such a way that the delayed completion of the WORK or any part thereof for any reason whatsoever will not affect their proper employment. The OWNER will not entertain any claim for idle payment whatsoever.

5.4.4 The CONTRACTOR shall submit to the OWNER reports at regular intervals regarding the state and progress of WORK. The details and proforma of the report will mutually be agreed after the award of CONTRACT.

The contractor shall provide display boards showing progress and labour strength at work site, as directed by the Engineer-In-Charge.

5.5 DRAWINGS TO BE SUPPLIED BY OWNER:

5.5.1 The drawings accompanying the tender document are indicative of nature of work and issued for-tendering purpose only. Purpose of this drawing is to enable the tenderer to make an offer in line with requirements

of the owner. However no extra claim whatsoever shall be entertained for any variation in the "Approved for Construction" and "Tender Drawings" regarding any change /units. Construction shall be as per drawings /specifications issued/approved by the Engineer-In-Charge during the course of execution of work. Detailed construction Drawings on the basis of which actual execution of work is to proceed will be furnished *to* the contractor progressively based on the detailed construction program evolved after the award of work and also based on construction progressed achieved.

5.5.2 Detailed working Drawings on the basis of which actual execution of WORK is to proceed, will be furnished from time to time during the progress of WORK. CONTRACTOR shall be deemed to have gone through the Drawings supplied to him thoroughly and carefully and in conjunction with all other connected Drawings and bring to the notice of the Engineer-in-Charge discrepancies if any, therein before actually carrying out the WORK.

5.5.3 Copies of all detailed working Drawings relating to WORK shall be kept at the CONTRACTOR's office of the SITE and shall be made available to the Engineer-in-Charge at any time during the CONTRACT. The Drawings and other Documents issued by the OWNER shall be returned to the OWNER on completion of the WORK.

5.6 DRAWING TO BE SUPPLIED BY THE CONTRACTOR:

5.6.1 Where Drawings/Data are to be furnished by the CONTRACTOR, they shall be as enumerated in the special conditions of the CONTRACT, and shall be furnished within the specified time.

5.6.2 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 got approved before proceeding with Manufacture/ Construction/Fabrication as the case may be. Any changes that may have become necessary in these Drawings during the execution of WORK shall have to be carried out by the CONTRACTOR to the satisfaction of Engineer-in-Charge at no extra cost. All final Drawings shall bear certification stamp as indicated below duly signed by both the CONTRACTOR and the Engineer-in-Charge.

Certified true for

……Project

Agreement No ……..

Signed …….. ……..

(CONTRACTOR) (Engineer-in-Charge)

5.6.3 A period of three (3) weeks from the date of receipt shall be required for approval of Drawings by the Engineer-in-Charge or Consultant as the case may be.

The drawings submitted by the contractor shall be reviewed by the Engineer- In-Charge as far as practicable within 3(three) weeks and shall be modified by the contractor if any modifications and/or corrections are required by the Engineer-In-Charge. The contractor shall incorporate such modifications and/or corrections and submit the final drawings for approval. Any delays arising out of failure by the contractor rectify the drawing in good time shall not alter the contract completion time.

5.6.4 It shall be the responsibility of the contractor to furnish the manufacturer's drawings wherever supply of equipment is in the scope of contractor in order to facilitate the inspection or erection of equipment supplied by them.

5.6.5 "As-built" drawings showing all corrections, adjustments etc. shall be furnished by the Contractor six copies (either hard or soft as directed by EIC) and one transparency for record purpose of the Owner.

5.6.6 The Contractor will furnish drawings, manufacturers catalogue, operating manual for items manufactured or procured by the contractor in properly bound form/ soft copy. In case the contractor fails to submit these document in time a suitable amount at the discretion of the owner would be retained or recovered from the bills.

5.7 SETTING OUT WORK:

5.7.1 The Engineer-in-Charge shall furnish the CONTRACTOR with only the four (4) corners of the SITE and a level Bench Mark and the CONTRACTOR shall set out the WORK and shall provide an efficient staff for the purpose and shall be responsible for the accuracy of such setting out.

5.7.2 The CONTRACTOR shall provide, fix and be responsible for the maintenance of all Stakes, Template, Level Marks, Profiles, and other similar things and shall take all necessary precautions to prevent their removal or disturbance and shall be responsible for the consequence of such removal or disturbance should the same takes place and for their efficient and timely reinstatement. The CONTRACTOR shall also be responsible for the maintenance of all existing Survey Marks, Boundary Marks, Distance Marks and 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 thereof or joining with the CONTRACTOR by the Engineer-in-Charge in setting out the WORK shall not relieve the CONTRACTOR of any of his responsibilities.

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

5.7.4 Pillars bearing geodetic marks located at the SITE of work under construction should be protected and fenced by the CONTRACTOR.

5.7.5 On completion of WORK, the CONTRACTOR must submit the geodetic documents according to which the WORK was carried out.

5.8 RESPONSIBILITY FOR LEVEL AND ALIGNMENT:

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

5.9 MATERIAL TO BE SUPPLIED BY CONTRACTOR:

5.9.1 The contractor shall procure and provide the whole of the materials required for construction including Steel, Cement, electrodes, consumables and other building and construction materials**,** tools, tackles, construction plant and equipment for the completion and maintenance of the work except the materials which will be issued by 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 authority if so desired by the contractor but assumes no further responsibility of any nature. The owner will insist on the procurement of materials which bear ISI stamp and /or which are supplied by reputed suppliers borne on DGS&D list.

All materials procured should meet the specification given in the tender document. The Engineer- In-Charge may, at his discretion, ask for samples and test certificates for any batch of any material procured. Before procuring, the contractor should get the approval of Engineer- In- Charge for any material to be used for the works. If name of manufacturers or make for materials is specified in the Contract, Contractor shall procure materials from the same manufactures.

Manufacture certificate shall be submitted for all materials supplied by the contractor. If, however, in the opinion of the Engineer- In- Charge any tests are required to be conducted on the materials supplied by the contractor, these will be arranged by the contractor, promptly at his own cost.

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

5.9.3 No material /shall be dispatched from the contractor's stores before obtaining the approval, in writing, of Engineer-In-Charge.

5.10 **STORES SUPPLIED BY THE OWNER / SECURITY OF MATERIALS / EQUIPMENTS:**

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

5.10.2 The value of the stores materials as may be supplied to CONTRACTOR by OWNER will be debited to 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 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 OWNER'S stores. All materials so supplied to CONTRACTOR shall remain the absolute property of OWNER and shall not be removed on any account from SITE, 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 CONTRACT shall be returned to OWNER's stores or at a place as directed by the Engineer-in-Charge in perfectly good condition at CONTRACTOR's cost.

5.11 CONDITIONS FOR ISSUE OF MATERIALS:

i) Materials specified as to be issued by OWNER will be supplied to CONTRACTOR by OWNER from his stores. It shall be the responsibility of CONTRACTOR to take delivery of the materials and arrange for its loading, transport and unloading at SITE at his own cost. The materials shall be issued between the working hours and as per the rules of OWNER as framed from time to time.

ii) The CONTRACTOR shall bear all incidental charges for the storage and safe custody of materials at SITE after these have been issued to him.

iii) Materials specified as to be issued by OWNER shall be issued in standard sizes as obtained from the Manufacturers.

iv) The CONTRACTOR shall construct suitable godowns at SITE for storing the materials safe against damage by rain, dampness, fire, theft etc. He shall also employ necessary watch and ward establishment for the purpose.

v) It shall be the duty of 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 OWNER, it shall be the responsibility of 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) OWNER shall not be liable for delay in supply or non-supply of any materials which 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 OWNER. In no case, CONTRACTOR shall be entitled to claim any compensation or loss suffered by him on this account.

vii) It shall be the responsibility of CONTRACTOR to arrange in time all materials required for WORK other than those to be supplied by OWNER. If, however, in the opinion of the Engineer-in-Charge, the execution of WORK is likely to be delayed due to 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 OWNER or procure the materials from the market or elsewhere and CONTRACTOR will be bound to take such materials at the rates decided by the Engineer-in-Charge. This however does not in any way absolve CONTRACTOR from responsibility of making arrangements for the supply of such materials in part or in full, should such a situation occur nor shall this constitute a reason for the delay in the execution of WORK.

viii) None of the materials supplied to CONTRACTOR will be utilised by CONTRACTOR for manufacturing item which can be obtained as supplied from standard manufacturer in finished form.

ix) The CONTRACTOR shall, if desired by the Engineer-in-Charge, be required to execute an indemnity bond in the prescribed form, for safe custody and accounting of all materials issued by OWNER.

x) The CONTRACTOR shall furnish to the Engineer-in-Charge sufficiently in advance a statement showing his requirement of the quantities of the materials to be supplied by OWNER and the time when the same will be required by him for WORK, so as to enable the Engineer-in-Charge to make necessary arrangements for procurement and supply of the materials.

xi) A day-to-day account of the materials issued by OWNER shall be maintained by CONTRACTOR indicating the daily receipt, consumption and balance in hand. This account shall be maintained in a manner prescribed by the Engineer-in-Charge along with all connected papers viz., requisitions, issues etc. and shall be always available for inspection in the CONTRACTOR'S office at SITE.

xii) CONTRACTOR should see that only the required quantities of materials are got issued. CONTRACTOR shall not be entitled to cartage (CARRIAGE CHARGES) and incidental charges for returning the surplus materials, if any, to the stores where from they were issued or to the place as directed by the Engineer-in-Charge.

xiii) Materials/Equipment supplied by OWNER shall not be utilised for other purpose (s) than issued for.

5.12 MATERIAL PROCURED WITH ASSISTANCE OF OWNER, 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 CONTRACT are procured with the assistance of OWNER either by issue from OWNER'S stock or purchases made under orders or permits or licences issued by Government, CONTRACTOR shall hold the said materials as trustee for OWNER and use such materials economically and solely for the purpose of CONTRACT and not dispose them of without the permission of OWNER and return, if required by the Engineer-in-Charge, all surplus or unserviceable materials that may be left with him after the completion of CONTRACT or at its termination for any reason, whatsoever on his being paid or credited such price as the Engineer-in-Charge shall determine having due regard to the condition of the materials. The price allowed to CONTRACTOR, however, shall not exceed the amount charged to him excluding the storage charges, if any. The decision of the Engineer-in-Charge shall be final and conclusive in such matters. In the event of breach of the aforesaid condition, CONTRACTOR shall, in terms of licences or permits and/or for criminal breach of trust, be liable to compensate OWNER at double rate or any higher rate. In the event of those materials at that time having higher rate or not being available in the market, then any other rate to be determined by the Engineer-in-Charge at his discretion shall be final and conclusive.

5.13 MATERIALS OBTAINED FROM DISMANTLING:

If CONTRACTOR in the course of execution of WORK is called upon to dismantle any part for reasons other than those stipulated in clauses 5.19 and 5.24 hereunder, the materials obtained in the work of dismantling etc., will be considered as OWNER'S property and will be disposed of to the best advantage of OWNER.

5.14 ARTICLES OF VALUE FOUND:

All gold, silver and other minerals of any description and all precious stones, coin, treasure, relics, antiquities, natural wealth and other similar things which shall be found in under or upon Site, shall be the property of OWNER and CONTRACTOR shall duly preserve the same to the satisfaction of the Engineer-in-Charge and shall from time to time deliver the same to such person or persons indicated by OWNER.

5.15 DISCREPANCIES BETWEEN INSTRUCTIONS:

Should any discrepancy occur between the various instructions furnished to CONTRACTOR, his agents or staff or any doubt arise as to the meaning of any such instructions or should there be any misunderstanding between CONTRACTOR'S staff and the Engineer-in-Charge's staff, CONTRACTOR shall refer the matter immediately in writing to the Engineer-in-Charge whose decision thereon shall be final and conclusive and no claim for losses alleged to have been caused by such discrepancies between instructions, doubts, or misunderstanding shall in any event be admissible.

5.16 **WORK IN MONSOON AND DEWATERING:**

5.16.1 The execution of the work may entail working in the monsoon also. The Contractor must maintain a minimum labor force as may be required for the job and plan and execute the construction and erection according to the prescribe schedule. No extra rate will be considered for such work in monsoon.

5.16.2 During the 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.

5.17 **ACTION WHERE NO SPECIFICATION IS ISSUED:**

In case of any class of Work for which there is no such Specification supplied by OWNER as is mentioned in the Tender Document such Work shall be carried out in accordance with Indian Standard Specifications and if the Indian Standard Specifications do not cover the same the Work should be carried out as per Standard Engineering Practice, subject to the approval of the Engineer-in-Charge.

5.18 INSPECTION OF WORK:

5.18.1 The Engineer-in-Charge will have full power and authority to inspect the WORK at any time wherever in progress either on the SITE or at the CONTRACTOR's Premises / Workshops wherever situated, Premises/Workshops of any person, firm or corporation where work in connection with the CONTRACT may be in hand or where materials are being or are to be supplied, and CONTRACTOR shall afford or procure for the Engineer-in-Charge, every facility and assistance to carry out such inspection. CONTRACTOR shall, at all time during the usual working hours and all other times at which reasonable responsible notice of the intention of the Engineer-in-Charge or his representative to visit the WORK shall have been given to CONTRACTOR, either himself be present to receive orders and instructions, or have a

responsible agent duly accredited in writing present for the purpose. Orders given to the CONTRACTOR's agent shall be considered to have the same force as if' they had been given to CONTRACTOR himself. The CONTRACTOR shall give not less than (7) days notice in writing to the Engineer-in-Charge before covering up or otherwise placing beyond reach of inspection and measurement of any Work in order that the same may be inspected and measured. In the event of breach of above the same shall be uncovered at CONTRACTOR's expense for carrying out such measurement or inspections.

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

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

5.19 ASSISTANCE TO ENGINEER-IN-CHARGE:

The CONTRACTOR shall make available to the Engineer-in-Charge free of cost all necessary Instruments and assistance in checking of setting out for WORK and in the checking of any WORK made by CONTRACTOR for the purpose of setting out and taking measurement of WORK.

5.20 TESTS FOR QUALITY OF WORK/QUALITY ASSURANCE:

5.20.1 All workmanship shall be of the respective kinds described in the Contract Document and in accordance with the instructions of the Engineer-in-Charge and shall be subjected from time to time to such test at CONTRACTOR's cost as the Engineer-in-Charge may direct at the place of manufacture or fabrication or on the SITE or at all or any such places. CONTRACTOR shall provide assistance instrument, labour and materials as are normally required for examining, measuring and testing any workmanship as may be selected and required by the Engineer-in-Charge .

5.20.2 All the tests that will be necessary in connection with the execution of WORK as decided by the Engineer-in-Charge shall be carried out at the field testing laboratory of OWNER by paying the charges as decided by OWNER from time to time. In case of non-availability of testing facility with OWNER the required test shall be carried out at the cost of CONTRACTOR at government or any other testing laboratory as directed by Engineer-in-Charge.

5.20.3 If any tests are required to be carried out in connection with the Work or materials or workmanship not supplied by CONTRACTOR, such tests shall be carried out by CONTRACTOR as per the instructions of Engineer-in-Charge and cost of such tests shall be reimbursed by OWNER.

5.20.4 Bidder shall include in his offer the quality Assurance program containing the over all quality management and procedures which is required to be adhered on during the execution of contract or after the award of the contract detailed quality assurance program to be followed for the execution of the contract under various divisions of work will be mutually discussed and agreed to.

The Contractor shall establish document and maintain an effective quality assurance system as outlined in recognized codes. Quality assurance System Plans/Procedure of the contractor shall be furnished in the form of a QA manual. This document should cover details of the personnel responsible for the quality assurance, plans or procedures to be followed for quality control in respect of design, Engineering, Procurement, supply, installation, testing and commissioning. The quality assurance system should indicate organizational approach for quality control and quality assurance of the construction activities, at all stages of workout at site as well as at manufacturer's works and dispatch of materials. The Owner/EIL or their representative reserve the right to inspect/witness, review any or all stages of work at shop/site as deemed necessary for quality assurance.

5.21 SAMPLES:

The CONTRACTOR shall furnish to the Engineer-in-Charge for approval when requested or if required by the Specifications, adequate samples of all materials and finishes to be used in WORK. Such samples shall be submitted before WORK is commenced and in ample time to permit tests and examinations thereof. All materials furnished and finishing applied in WORK shall be fully equal to the approved samples.

5.22 ACTION AND COMPENSATION IN CASE OF BAD WORK:

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 CONTRACTOR for the execution of WORK are unsound, or of a quality inferior to that contracted for, or otherwise not in accordance with CONTRACT, 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 shall rectify or remove and reconstruct the 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, CONTRACTOR shall be liable to pay compensation at the rate of one percent (1.0%) of the estimated cost of the WORK, for every week limited to a maximum of ten percent (10.0%) of the value of the WORK, while his failure to do so shall continue and in the case of any such failure, the Engineer-in-Charge may on expiry of notice period rectify or remove and re-execute the Work or remove and replace with others, the materials or Articles complained of as the case may be at the risk and expense in all respects of CONTRACTOR. The decision of the Engineer-in-Charge as to any question arising under this clause shall be final and conclusive.

5.23 **SUSPENSION OF WORK:**

i) Subject to the provisions of the sub-para (ii) of this clause, CONTRACTOR shall if ordered in writing by the Engineer-in-Charge, or his representative, temporarily suspend the WORK or any part thereof for such period and such time as so ordered and shall not, after receiving such written order proceed with 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 WORK aforesaid. An extension of time for completion, corresponding with the delay caused by any such suspension of WORK as aforesaid will be granted to CONTRACTOR should he apply for the same provided that the suspension was not consequent to any default or failure on the part of CONTRACTOR.

ii) In case of suspension of WORK ordered in writing by Engineer-in-Charge, for a period of more than three (3) months, CONTRACTOR shall have the option to terminate the CONTRACT, provided that the contractor shall exercise such option forthwith. The contractor shall not be entitled to claim any damages or compensation on this account.

5.24 **OWNER MAY DO PART OF WORK:**

Upon failure of CONTRACTOR to comply with any instructions given in accordance with the provisions of this CONTRACT, OWNER has the alternative right, instead of assuming charge of WORK to place additional labour force, tools, Equipment and materials on such parts of WORK, as OWNER may designate or also engage another Contractor to carry out WORK. In such cases, the OWNER shall deduct from the amount which otherwise might become due to CONTRACTOR, the cost of such WORK and materials with fifteen percent (15%) added to cover all departmental charges and should the total amount there of exceed the amount due to CONTRACTOR, CONTRACTOR shall pay the difference to OWNER.

5.25 **POSSESSION PRIOR TO COMPLETION:**

The Engineer-in-Charge shall have the right to take possession of or use any completed or partially completed WORK or part of WORK. Such possession or use shall not be deemed to be an acceptance of any Work completed in accordance with CONTRACT. If such prior possession or use by the Engineer-in-Charge delays the progress of Work, equitable adjustment in the time of completion will be made and the CONTRACT shall be deemed to be modified accordingly to that extent provided that the contractor shall not be entitled to claim any compensation for the same.

5.26 **PERIOD OF LIABILITY FROM THE DATE OF ISSUE OF COMPLETION CERTIFICATE:**

The contractor shall guarantee the installation/site work for a period of 12 (twelve) Months from the date of completion of work, unless otherwise specified. Any damage that may lie undiscovered at the time of issue of completion certificate, connected in any way with the equipment or materials supplied by him or in the workmanship shall be rectified or replaced by the contractor at his own expense as deemed necessary by the Engineer-in-Charge or in default, the Engineer-in-Charge may cause the same made good by other workmen and deduct expenses (for which the certificate of 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.

5.27 **FAILURE TO RECTIFY DEFECTS DURING LIABILITY PERIOD**

If the CONTRACTOR fails to make good the defect noticed during the liability period, the Owner shall carry out such works and recover the actual cost incurred towards labour, supervision, materials, and consumables or otherwise plus 100%(hundred percent) towards overhead from any pending bill/security deposit of the contractor.

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

5.28 **EXTENDED LIABILITY ON CONTRACT PERFORMANCE GUARANTEE:**

If during the period of liability any portion of the work/equipment, is found defective and is rectified/replaced, the period of liability or such equipment/portion of work shall be operative from the date of such rectification/ replacement are carried out and contract performance guarantee shall be furnished separately for the extended period of liability for the portion of work/equipment only. Notwithstanding the above provisions, the supplier's, guarantees/warrantees for the replaced equipment shall also be passed on to the Owner.

5.29 **CARE OF WORKS** :

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

5.30 **DEFECTS PRIOR TO TAKING OVER** :

It at any time, before WORK is taken over, the Engineer-in-Charge shall:-

a) Decide that any work done or materials used by CONTRACTOR or any Sub-Contractor is defective or not in accordance with CONTRACT, or that WORK or any portion thereof are defective, or do not fulfil the requirements of CONTRACT (All such materials being hereinafter, called; 'Defects' in this clause), and

(b) As soon as reasonably practicable notice given to CONTRACTOR in writing of the said decision, specifying particulars of the defects alleged to exist or to have occurred, then CONTRACTOR shall at his own expense and with all speed make good the defects so specified.

In case the CONTRACTOR shall fail to do so, 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 OWNER will be recovered from the amount due to CONTRACTOR. The decision of the Engineer-in-Charge with regard to the amount to be recovered from CONTRACTOR will be final and binding on CONTRACTOR. As soon as WORK have been completed in accordance with CONTRACT (except in minor respects that do not effect their use for the purpose for which they are intended and except for maintenance thereof provided in clause 5.27 of General Conditions of the Contract) and have passed the tests on completion, the Engineer-in-Charge shall issue certificate (hereinafter called Completion Certificate) in which he shall certify the date on which WORK have been so completed and have passed the said tests and OWNER shall be deemed to have taken over WORK on the date so certified. If WORK have been divided into various groups in CONTRACT, OWNER shall be entitled to take over any group or groups before the other or others and thereupon the Engineer-in-Charge shall issue a Completion Certificate which will, however, be for such group or groups so taken over only. In such an event if the group /section /part. so taken over is related to the integrated system of the work , not withstanding date of grant of completion certificate for group/section/part. The period of liability in respect of such group/section/part shall extend 12 (twelve) month from the date of completion of work.

5.31 **DEFECTS AFTER TAKING OVER** : In order that CONTRACTOR could obtain a Completion Certificate he shall make good, with all possible speed any defect arising from the defective materials supplied by CONTRACTOR or workmanship or any act or omission of CONTRACT that may have been noticed or developed, after the WORK or group of Works has been taken over, the period allowed for carrying out such Work will be normally one (1) month. If any defect is not remedied within a reasonable time, OWNER may proceed to do WORK at CONTRACTOR's risk and expense and deduct from the Final Bill such amounts as may be decided by OWNER.

If by reason of any default on the part of CONTRACTOR a Completion Certificate has not been issued in respect of every portion of WORK within one (1) month after the date fixed by CONTRACT for the completion of WORK, OWNER shall be at liberty to use WORK or any portion thereof in respect of which a Completion Certificate has been issued, provided that WORK of the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completing these Work for the issue of Completion Certificate.

5.32 The Retention Money / Bank Guarantee deducted/furnished as per clause 3.14 of NRL GCC shall be retained for the period of liability i.e. for twelve (12) months from the date of issue of completion certificate, as given in clause 84.0 above. This Retention amount or Bank Guarantee furnished against security deposit shall be released only on expiry of the period of liability and also based on the certification of the Engineer-in-charge that no defect/damage has been reported / observed during the stipulated period of liability for the contract.

5.33 **WRONGFUL APPROPRIATION OF MATERIALS**

Wrongful appropriation, or proven attempt of wrongful appropriation of materials belonging to the COMPANY or any other Contractor working within the Company premises or commission of any other criminal act by the CONTRACTOR, or his agents, or employees or workers shall be deemed to be a breach of contract on the part of the CONTRACTOR, and the COMPANY shall, in addition to the remedies available under this contract, be entitled to terminate the contract forthwith at the risk and cost of the CONTRACTOR. The decision of the OWNER in any of the above aspects shall be final and *conclusive.*

5.34 **GUARANTEE / TRANSFER OF GUARANTEE**:

For work like water-proofing, acid and alkali resisting materials, pre-construction soil treatment against termite or any other specialized works etc. the CONTACTOR 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.

5.35 **PERFORMANCE OF CONTRACTOR:**

Performance of contractor shall be evaluated on each job by Engineer-in-Charge and recorded in the Standard format adopted by NRL.

Review of performance shall be carried out at appropriate intervals by concerned department of the owner.

SECTION VI

MEASUREMENTS, BILLING AND PAYMENTS

6.0 SCHEDULE OF RATES AND PAYMENTS:

(I) CONTRACTOR's REMUNERATION:

The price to be paid by OWNER to CONTRACTOR for the WORK to be done and for the performance of all the obligations undertaken by CONTRACTOR under CONTRACT shall be ascertained by the application of the respective Schedule of Rates (the inclusive nature of which is more particularly defined by way of application but not of limitation, with the succeeding sub clause of this clause) and payment to be made accordingly for the Work actually executed and approved by the Engineer-in-Charge. The sum so ascertained shall (excepting only as and to the extent expressly provided herein) constitute the sole and inclusive remuneration of CONTRACTOR under CONTRACT and no further or other payment whatsoever shall be or become due or payable to CONTRACTOR under CONTRACT.

(II) SCHEDULE OF RATES TO BE INCLUSIVE:

The prices/rates quoted by CONTRACTOR shall remain firm till the issue of final certificate and shall not be subject to escalation. Schedule of Rates shall be deemed to include and cover all costs, expenses and liabilities of every description and all risks of every kind to be taken in executing, completing and handing over WORK to OWNER by CONTRACTOR. CONTRACTOR shall be deemed to have known the nature, scope, magnitude and the extent of WORK and materials required though 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 WORK. The opinion of the Engineer-in-Charge as to the item of work which are necessary and reasonable for completion of WORK shall be final and binding on CONTRACTOR, although the same may not be shown on or described specifically in Contract Document.

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

(III) **SCHEDULE OF RATES TO COVER CONSTRUCTIONAL EQUIPMENTS, MATERIALS, LABOUR ETC.:**

Without in any way limiting the provisions of the preceding sub-clause, the Schedule of Rates shall be deemed to include and cover the cost of all Constructional Plant and Equipment, Temporary Work (except as provided for herein), Pumps, Materials, Labour, Insurance, Fuel, Stores and Appliances to be supplied by CONTRACTOR and all other matters in connection with each item in the Schedule of Rates and the execution of Work or any portion thereof finished, complete in every respect and maintained as shown described in the Contract Document or as may be ordered in writing during the continuance of CONTRACT.

(IV) **SCHEDULE OF RATES TO COVER ROYALITIES, RENTS AND CLAIMS:**

The Schedule of Rates shall be deemed to include and cover the cost of all royalties and fee for the articles, and processes, protected by letters, patent or otherwise incorporated in or used in connection with WORK, also all royalties, rents and other payments in connection with obtaining materials or whatsoever kind for WORK and shall include an indemnity to OWNER which CONTRACTOR hereby gives against all actions, proceedings, claims, damages, costs and expenses arising from the incorporation in or use on WORK of any such articles, processes or materials, Octroi or other Municipal or Local Board Charges if levied on materials, Equipment or machineries to be brought to SITE for use on WORK shall be borne by CONTRACTOR.

(V) **SCHEDULE OF RATES TO COVER TAXES AND DUTIES:**

No claim or exemption or reduction of customs duties, excise duties, sales tax, quay or any port dues, transport charges, stamp duties or Central or States Government or Local Body or Municipal Taxes or duties, taxes or charges (from or of any other body), whatsoever, will be granted or obtained, all of which expenses shall be deemed to be included in and covered by the Schedule of Rates. CONTRACTOR shall also obtain and pay for all permits, or other privileges necessary to complete WORK.

(VI) **SCHEDULE OF RATES TO COVER RISKS OF DELAY:**

The Schedule of Rates shall be deemed to include and cover risk of all possibilities of delay and interference with CONTRACTOR'S conduct of WORK which occur from any cause including orders of

OWNER in the exercise of his powers and no account of extension of time granted due to various reasons and for all other possible or probable causes of delay.

(VII) **SCHEDULE OF RATES CANNOT BE ALTERED:**

For Work under Unit Rate basis, no alteration will be allowed in the Schedule of Rates by reason of WORK or any part of them being modified, altered, extended, diminished or omitted. The Schedule of Rates are fully inclusive rates which have been fixed by CONTRACTOR and agreed to by OWNER and cannot be altered.

For Lumpsum Contract, the payment will be made according to the Work actually carried out, for which purpose an item-wise, or work-wise, Schedule of Rates shall be furnished, suitable for evaluating thevalue of Work done and preparing running account Bills.

6.1 **MEASUREMENTS**

All measurement shall ordinarily be in metric system. All the Work in progress will be jointly measured by the representative of the Engineer-in-Charge and CONTRACTOR'S authorised agent progressively. Such measurement will be recorded in the Measurement Book by the Engineer-in-Charge or his authorised representative and signed in token of acceptance by CONTRACTOR or his authorised representative.

For the purpose of taking joint measurement, 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 OWNER'S Engineer or his representative and this will be deemed to be correct and binding on CONTRACTOR irrespective of it not being signed by the CONTRACTOR or his authorised representative.

6.2 **BILLING:**

CONTRACTOR will submit a Bill in approved proforma in quadruplicate to the Engineer-in-Charge of Work giving abstract and detailed measurements 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 Ten (10) days from presentation of the bill.

6.3 **SECURED ADVANCE ON MATERIALS:**

In case of Tenders for completed item of Work, CONTRACTOR may be allowed 'Secured Advance' on the security of materials brought to SITE for execution of the Contracted item of Work, to the extent of Seventy five percent (75%) of the value of materials as assessed by the Engineer-in-Charge provided that the materials are of an imperishable nature and that a formal agreement is drawn up with CONTRACTOR under which OWNER secures a lien on the materials and is safeguarded against losses due to CONTRACTOR postponing the execution of the WORK or to the storage or misuse of the materials and against the expense entitled for their proper watch and safe custody. Recoveries of advances so made, would not be postponed until WORK entrusted to CONTRACTOR is completed. They should be adjusted from his WORK done as the materials are used, the necessary deductions being made whenever the items of Work in which they are used, are billed for.

6.4 **DISPUTE IN MODE OF MEASUREMENTS:**

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

6.5 **LUMPSUMS IN TENDER:**

For the item in Tender where it includes lump-sum in respect of parts of Work, CONTRACTOR shall be entitled to payment in respect of the items at the same rates 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. OWNER may at his discretion pay the lump-sum 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 CONTRACTOR with regards to any sum or sums payable to him, under the provisions of this clause.

6.6 **RUNNING ACCOUNT PAYMENTS TO BE REGARDED AS ADVANCES:**

All running account payments 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 CONTRACT, or any part thereof, in this respect, or of the accruing of any claim by CONTRACTOR, nor shall it conclude, determine or affect in any way the powers of 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 CONTRACT. The Final Bill shall be

submitted by CONTRACTOR within one (1) month of the date of physical completion of WORK, otherwise, the Engineer-in-Charge's certificate of the measurement and of total amount payable for WORK accordingly shall be final and binding on all parties.

6.7 NOTICE OF CLAIM FOR ADDITIONAL PAYMENT :

6.7.1 Should CONTRACTOR consider that he is entitled to any extra payment or compensation or to make any claims whatsoever in respect of WORK he shall forthwith give notice in writing to the Engineer-in-Charge that he claims extra payment and/or compensation. Such notice shall be given to the Engineer-in-Charge within (10) days from the ordering of any Work or happening of any event upon which CONTRACTOR bases such claims and such notice shall contain full particulars of the nature of such claim with full details and amount claimed. Failure on the part of CONTRACTOR to put forward any claim with necessary particulars as above within the time above specified shall be an absolute waiver thereof. No omission by OWNER to reject any such claim and no delay in dealing therewith shall be waiver by OWNER of any rights in respect thereof.

6.7.2 Owner shall review such claims within a reasonable period of time and cause to discharge these in a manner considered appropriate after due deliberations thereon. However, Contractor shall be obliged to carry on with the work during the period in which his claims are under consideration by the Owner, irrespective of the outcome of such claims.

Where additional payments for works considered extra are justifiable in accordance with the Contract provisions, Owner shall arrange to release the same in the same manner as for normal work payments. Such of extra works so admitted by Owner shall be governed by all the terms, conditions, stipulations and specifications as are applicable for the contract. The rates for extra work shall generally be the unit rates provided for in the Contract. In the event unit rates for extra works so executed are not available as per Contract, payments may either be released on day work basis for which

daily/hourly rates for workmen and hourly rates for equipment rental shall apply, or on the unit rate for work executed shall be derived by interpolation of unit rates already existing in the Contract. In all the matters pertaining to applicability rate and admittance or otherwise of an extra work claim of Contractor the decision of Engineer-In-Charge shall be final and binding.

6.8 PAYMENT OF CONTRACTOR'S BILL:

No payment shall be made for work till the whole of the work shall have been completed and a certificate of completion given unless otherwise specified in the Special Conditions of Contracts. OWNER at his discretion may include the payment terms such as monthly payment in the Special Contract Conditions.

CONTRACTOR shall on submitting the Bill thereof, be entitled to receive Payment as per the payment terms after the approval of by Engineer-in-Charge, whose certificate of such approval and passing of the sum so payable shall be final and conclusive against Payment due to CONTRACTOR. This payment will be made after making necessary deductions as stipulated elsewhere in the contract document for materials, retention money or any moneys due to the Owner etc.

Payment to all the contractors having bank account where Electronic Fund Transfer facility (EFT) is available shall be made through EFT. CONTRACTOR must furnish his Bank Account Details when demanded by OWNER for the purpose of EFT payment. The final Bill shall be presented by the CONTRACTOR along with 'NO CLAIM CERTIFICATE' in a format acceptable to the OWNER or such other documents as directed by the OWNER. All payments shall be made in Indian Currency. The contractor shall not be entitled to claim any interest for any amount due or claimed to be due from the owner as per this contract.

6.9 COMPLETION CERTIFICATE:

6.9.1 APPLICATION FOR COMPLETION CERTIFICATE:

When CONTRACTOR fulfils his obligation under clauses 5.3, he shall be eligible to apply for Completion Certificate. CONTRACTOR may apply for separate Completion Certificate in respect of each such portion of Work by submitting the completion Documents along with such application for Completion Certificate.

The Engineer-in-Charge shall normally issue to CONTRACTOR the Completion Certificate within one (1) month after receiving an application therefore from CONTRACTOR after verifying from the completion Documents and satisfying himself that WORK has been completed in accordance with and as set out in the construction and erection Drawings, and the Contract Document.

CONTRACTOR, after obtaining the Completion Certificate, is eligible to present the Final Bill for WORK executed by him under the terms of CONTRACT.

6.9.2 COMPLETION CERTIFICATE:

Within one (1) month of completion of WORK in all respects, CONTRACTOR shall be furnished with a certificate by the Engineer-in-Charge, of such completion, but no certificate shall be given nor shall WORK be deemed to have been executed until all scaffolding, surplus materials and rubbish is cleared off from SITE completely nor until WORK shall have been measured by the Engineer-in-Charge whose measurement shall be binding and conclusive. WORK will not be considered as complete and taken over by OWNER, until all the temporary works, labour and staff colonies etc. constructed, are removed and the worksite cleaned to the satisfaction of the Engineer-in-Charge.

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

6.9.3 COMPLETION CERTIFICATE DOCUMENTS:

For the purpose of clause 6.9, the following Documents as applicable will be deemed to form the completion Documents:

(i) The technical documents according to which Work was carried out.

(ii) Six (6) sets of Construction Drawings showing therein the modification and corrections made during the course of execution signed by the Engineer-in-Charge.

(iii) Completion Certificate for 'embedded' and 'covered' up Work.

(iv) Certificates of final levels as set out for various work.

(v) Certificate of tests performed to various works.

(vi) Material appropriation Statement for the materials issued by OWNER for WORK and list of surplus materials returned to OWNER'S store duly supported by necessary Documents.

6.10 FINAL DECISION AND FINAL CERTIFICATE:

Upon expiry of the period of liability and subject to the Engineer-in-Charge being satisfied that WORK have been duly maintained by CONTRACTOR, during monsoon or such period as herein before provided in clause 5.27 and CONTRACTOR has in all respect duly made up any subsidence and performed all his obligations under CONTRACT, the Engineer-in-Charge shall (without prejudice to the rights of OWNER to retain the provisions of relevant clause hereof) otherwise give a certificate herein referred to as the final

certificate to that effect and CONTRACTOR shall not be considered to have fulfilled the whole of his obligations until Final Certificate have been given by the Engineer-in-Charge notwithstanding any previous entry upon WORK and taking possession, working or using of the same or any part thereof by OWNER.

6.11 CERTIFICATE AND PAYMENTS ON EVIDENCE OF COMPLETION:

Except the final certificates no other certificate or payments against a certificate or on general account shall be taken to be an admission by OWNER of the due performance of CONTRACT or any part thereof or occupancy or validity of any claim by CONTRACTOR.

SECTION VII

TAXES AND DUTIES

7.0 TAXES, DUTIES, OCTROI ETC.:

7.1 CONTRACTOR agrees to and does hereby accept full and exclusive liability for the payment of any and all taxes, duties, octroi etc. now or hereafter imposed, increased, or modified, and all the sales taxes, Value Added Tax (VAT), Service Tax, duties, octroi etc. now in force and hereafter increased imposed or modified from time to time in respect of WORK and materials and all contributions and taxes for unemployment compensation insurance and old age pensions or annuities now or hereafter imposed by any Central or State Governmental authorities which are imposed with respect to or covered by the wages, salaries, or other compensations paid to the persons employed by CONTRACTOR and CONTRACTOR shall be responsible for compliance with all obligations and restrictions imposed by the Labour Law or any other law affecting employer-employee relationship and CONTRACTOR further agrees to comply and to secure the compliance of all Sub-Contractors, with applicable Central, State, Municipal and local laws and regulations and requirements of any Central, State or Local Government agency or authority. CONTRACTOR further agrees to defend, indemnify and hold harmless from any liability or penalty which may be imposed by the Central, State or Local authorities by reason of any violation by CONTRACTOR or Sub-Contractor of such laws, regulations or requirements and also from all claims, suits or proceedings that may be brought against OWNER arising under, growing out of, or by reason of WORK provided for by this CONTRACT, by third parties, or by Central or State Government authority or any administrative Sub-division thereof.

7.2 INSURANCE:

7.2.1: GENERAL

CONTRACTOR shall at his own expense carry and maintain insurance with reputable Insurance Companies to the satisfaction of OWNER as follows :-

Contractor at his cost shall arrange secure and maintain insurance as may be necessary and to its full value for all such amount to protect the works in progress from time to time and the interest of owner against all as detailed progress from time to time with the under works thereof in each case should be as acceptable to the Owner. However, irrespective of work acceptance the responsibility to maintain adequate insurance coverage at all times during the period, of contract shall be that of Contractor alone. Contractor failure in this regard shall not relieve him of any of his responsibilities and obligations under contract.

Any loss or damage to the equipment, during ocean transportation, port /custom clearance, in land and port handling, inland transportation, storage, erection and commissioning till such time the work is taken over by OWNER, shall be to the account of CONTRACTOR.

Statutory clearances, if any, in respect of foreign supply required for the purpose of replacement of equipment lost in transit and /or during erection, shall be made available by the Owner.

CONTRACTOR as far as possible shall cover insurance with Indian Insurance Companies, including marine Insurance during ocean transportation.

(i) EMPLOYEES' STATE INSURANCE ACT

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 CONTRACTOR further agrees to defend, indemnify and hold OWNER harmless from any liability or penalty which may be imposed by the Central, State or Local authority by reason of any asserted violation by CONTRACTOR or Sub-Contractor of the Employees' State Insurance Act, 1948, and also from all claims, suits or proceeding that may be brought against OWNER arising under, growing out of or by reasons of the WORK provided for by this CONTRACT whether brought by employees of CONTRACTOR, by third parties or by Central or State Government authority or any political sub-division thereof.

CONTRACTOR agrees to fill in with the Employees' State Insurance Corporation, the Declaration Form, and all forms which may be required in respect of CONTRACTOR'S or Sub-Contractor's employees, required to be covered under the Employees' State Insurance Act. CONTRACTOR shall deduct and secure the agreement of the Sub-Contractor to deduct the employees' contribution as per the rates applicable under the ESI act from time to time and arrange to remit the same to the OWNER or such other agency as may be directed by the OWNER at regular monthly intervals along with the employees' contribution stipulated in the Act as applicable. CONTRACTOR agrees to maintain all records as required under the Act in respect of employees and payments and 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 CONTRACTOR'S or Sub-contractor's account.

OWNER shall retain such sums may be necessary from the Contract Value until CONTRACTOR shall furnish satisfactory proof that all contributions as required by the Employees' State Insurance Act, 1948, have been paid.

(ii) WORKMAN'S COMPENSATIONS AND EMPLOYER'S LIABILITY INSURANCE

Insurance shall be effected for all CONTRACTOR employees engaged in the performance of this CONTRACT if they are not covered under the Employees' State Insurance act. If any part of WORK is sublet, CONTRACTOR shall require the Sub-Contractor to provide Workman's Compensation and Employers' Liability Insurance for the latter's employees if such employees are not covered under the Employers State Insurance Act.

(iii) ANY OTHER INSURANCE REQUIRED UNDER LAW OR REGULATIONS OR BY OWNER:

Contractor shall also carry or maintain any and all other insurance (s), which he may be required under any law or regulation from time to time without any extra cost to OWNER. He shall also carry and maintain any other which may be required by the OWNER.

(iv) ACCIDENT OR INJURY TO WORKMEN:

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 in 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 and aforesaid) and against all claims, demands, proceeding, costs, charges and expenses, whatsoever in respect or in relation thereto.

(v) AUTOMOBILE LIABILITY INSURANCE:

CONTRACTOR shall take out an Automobile Liability Insurance to cover all risk to Owner for each of his vehicles plying on works of this contract and this insurance shall be valid for the total contract period. No extra payment will be made for this insurance. Owner shall not be liable for any damage or loss not made good by the insurance company, should such damage or loss result from unauthorized use by the Owner.

7.2.2 The contractor shall take adequate insurance cover at his cost for his properties, persons etc. used in the work or proposed for using, against all risks and the owner shall not in any way be liable for the damages or loss caused to such properties, person etc. due to whatever cause.

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

(i) CONTRACTOR shall be responsible for making good to the satisfaction of OWNER any loss of and any damage to all structures and properties belonging to OWNER or being executed or procured or

being procured by OWNER or of other Agencies within the premises of all WORK of OWNER if such loss or damage is due to fault and/or the negligence or willful acts or omission of CONTRACTOR, his employees, agents, representatives or Sub-Contractors.

(ii) The CONTRACTOR shall take sufficient care in moving his plants, equipments and materials from one place to another so that they do not cause any damage to any person or to the property of the Owner or any third party including overhead and underground cables and in the event of any damage resulting to the property of the Owner or of a third party during the movement of the aforesaid plant, equipment or materials the cost of such damages including eventual loss of production, operation or services in any plant or establishment as estimated by the Owner or ascertained or demanded by the third party shall be borne by the CONTRACTOR under third party liability risk limited to Rupees Ten lakhs.

(iii) CONTRACTOR shall indemnify and keep OWNER harmless of all claims for damage to property other than OWNER'S property arising under or by reason of this agreement if such claims result from the fault and/or negligence of willful acts or omissions of CONTRACTOR, his employees, agents, representative or Sub-Contractors.

(iv) The agency should consider within his quoted rates, the third party liability insurance.

SECTION VIII

LABOUR LAWS , OTHER REGULATIONS AND ARBITRATION

8.0 LABOUR LAWS:

(i) No labour below the age of eighteen (18) years shall be employed on WORK.

(ii) CONTRACTOR shall not pay less than what is provided as per NRL declared rate for un-skilled, semi skilled and skilled manpower for workers engaged by him on WORK.

(iii) CONTRACTOR shall at his expense comply with all labour laws and keep OWNER indemnified in respect thereof.

(iv) The Contractor shall pay equal wages for men and women in accordance with applicable labour laws.

(v) In addition to above, rules and regulations as contained in Contract Labour (Regulation and Abolition) Act, 1970 will also be applicable for the CONTRACT. He shall pay the required deposit under the Act appropriate to the number of workmen to be employed by him or through sub-contractor and get himself registered under the Act. He shall produce the certificate or registration granted by the Govt. authority under the Act to the company before commencement of work. The company recognizes only the contractor and not his sub-contractors under the provisions of the Act. The contractor will have to submit daily a list of his employees, who will be entering the Company's premises for the work awarded. He will also keep his wage register available at all times as close to the work site as possible and produce the same for inspection whenever required by designated company officials. If the company so desires, a deposit may be taken from the contractor to be refunded only after the company is satisfied that all the workmen employed by the contractor have been fully paid for the period of work in company's premises.

If the Contractor is covered under the Contractor labour (Regulation and Abolition)Act, he shall obtain a license from a licensing authority (i.e. office of the labour commissioner) by the payment of necessary prescribed fee and the deposit, if any, before starting the work under the Contract. Such fee deposit shall be borne by the Contractor.

(vi) Contractors labour shall no privity with owner nor any Employer Employee relationship with the OWNER nor shall Owner be constructed as principal employer vis-à-vis such Contractor’s Labour for whom the principal Employer for purpose of contract Labour (Abolition & Regulation) Act be the contractor.

(vii) The contractor shall employ labour in sufficient numbers directly or through Sub-Contractors to maintain the required rate for progress and of quality to ensure Contract and to the satisfaction of the Engineer-In-Charge workmanship of the degree specified in the 1st half of the current month (1) the accident that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused by them and (2) the number of female workers who have been allowed Maternity Benefit as provided in the Maternity Benefit Act 1961 or rules made there under and the amount paid to them.

(viii) The Contractor shall comply with the provisions of the payment of Wages Act1936, Minimum Wages Act 1948, Employers Liability Act 1938, Workmen's compensation Act 1923, Industrial Disputes Act 1947, the Maternity Benefit Act 1961 and Contract Labour regulation and abolition Act 1970, Employment of children Act1938 or any modifications thereof or any other law relating thereto and rules made there under from time to time.

(ix) The Engineer-In-Charge shall on a report having been made by an Inspecting officer as defined in Contract Labour (Regulation and Abolition)Act 1970 have the power to deduct from the money due to 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 the Contract for benefit of workers nonpayment of wages or of deductions made from his or their wages which are no 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 1938, Workmen's compensation Act 1923, Industrial Disputes Act 1947, the Maternity Benefit Act 1961 and Contract Labour regulation and abolition Act 1970, Employment of children Act1938 or any modifications thereof or any other law relating thereto and rules made there under from time to time.

(xi) The Engineer-In-Charge shall on a report having been made by an Inspecting officer as defined in Contract Labour (Regulation and Abolition)Act 1970 have the power to deduct from the money due to 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 the Contract for benefit of workers nonpayment of wages or of deductions made from his or their wages which are no justified by the terms of the Contract or non observance of the said regulations.

8.1 IMPLEMENTATION OF APPRENTICES ACT 1964/ PROVIDENT FUND ACT:

8.1.1 CONTRACTOR shall comply with the provisions of the Apprentices Act, 1964 and the Rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of CONTRACT and the Engineer-in-Charge may, at his discretion, cancel CONTRACT. CONTRACTOR shall also be liable for any pecuniary liability arising on account of any violation by him of the provision of the Act.

8.1.2 The Contractor should strictly comply with the provisions of the Employees provident Fund Act.

It is to be noted that the subject contract would be awarded only to those agencies who have fulfilled the following requirements:

a) Obtained License under Labour (Abolition and Regulation) Act 1970and submitted to NRL.

b) P.F. Registration number allotted to them by RPFC and submitted to NRL.

c) The agencies should promptly deposit PF. Deduction of the eligible contract employees plus the employers' contribution to the R.P.F.C. For this purpose agency must submit a certificate in their bill that PF amount has been deducted from the eligible employees and alongwith employers' contribution has been deposited with R.P.F.C. In support of this, the agency must furnish the challan/receipt for the payment to R.P.F.C for the earlier months.

d) If the certificate and the challan/receipt referred to in clause 9.2 (c) above are not furnished, the Finance and Accounts deptt of NRL will deduct 16% (sixteen percent) of the amount of the Contractor's bill and retain it as deposits may only be refunded to the Contractor on production of the Chalan/Receipt.

8.2 EMPLOYEES PROVIDENT FUND ACT, 1952 AND SCHEME:

(i) CONTRACTOR agree to cover all the employees engaged by him or through Sub-Contractor under the employees provident fund scheme and shall submit necessary records to the OWNER in proof of compliance.

(ii) CONTRACTOR further agrees to defend, indemnify and hold OWNER harmless from any liability or penalty which may be imposed by the Central, State, Local or other statutory authorities by reason of any asserted violation by CONTRACTOR or his Sub-Contractor of the provisions of the Employees Provident Fund. Act, 1952 and the schemes thereunder.

8.3 CONTRACTOR TO INDEMNIFY OWNER:

(i) CONTRACTOR shall indemnify OWNER and every member, officer and employees of 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 matters referred to in clause 7.3 and elsewhere and all actions, proceedings, claims, demands, costs and expenses which may be made against OWNER for or in respect of or arising out of any failure by CONTRACTOR in the performance of his obligations under the Contract Document. OWNER shall not be liable for or in respect of any demand or compensation payable by law in respect of or in consequence of any accident, death, or injury to any workmen or other person in the employment of CONTRACTOR or his Sub-Contractor and CONTRACTOR shall indemnify and keep indemnified OWNER against all such damages and compensations and against all claims, damages, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

(ii) PAYMENT OF CLAIMS AND DAMAGES:

Should OWNER have to pay any money in respect of such claims or demands as aforesaid and amount so paid and the costs incurred by OWNER shall be charged to and paid by CONTRACTOR and CONTRACTOR shall not be at liberty to dispute or question the right of 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.

(iii) In every case in which by virtue of the provisions of section 12, sub-section (1) of Workmen's Compensation Act, 1923 or other applicable provision of Workmen's Compensation Act or any other Act, OWNER is obliged to pay compensation to workman employed by CONTRACTOR in execution of WORK, OWNER will recover from CONTRACTOR the amount of 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 Retention money or from any sum due to CONTRACTOR whether under this CONTRACT or otherwise. OWNER shall not be bound to contest any claim made under section 12, sub-section (1) of the said Act, except on written request of CONTRACTOR and upon his giving to OWNER full security for all costs for which OWNER might become liable in consequence of contesting such claim.

(iv) EMPLOYMENT LIABILITY

The Contractor shall be solely and exclusively responsible for employing persons for the execution of work. All employees engaged by the contractor shall be on his/their payroll and paid by him / them. All disputes or differences between the contractor and his/their employees shall be settled by him/them. Owner has absolutely no liability whatsoever concerning the employees of the contractor. The contractor shall

indemnify owner against all loss or damage or liability arising out of or in the course of his/their employees. The contractor shall make regular and full payment of wages without giving any complaint by any employee of the contractor or his sub-Contractor regarding non-payment of wages /salaries or other dues. Owner reserves the rights to make such payments directly, to such employees or sub contractor of the contractor and recover the amount in full from the bills of the contractor, and contractor shall not claim any compensation or reimbursement thereof. The contractor shall comply with the minimum wages Act applicable to the area with regard to payment of wages of his employees and also of employees of his sub-contractor.

The contractor shall advise in writing to all his employees and the employees of sub-contractor as follows:
It is fully understood that your appointment and /or deployment is only in connection with the owner and it does not give you any right of claim for employment by the owner.

8.4 HEALTH AND SANITARY ARRANGEMENTS FOR WORKERS:

In respect of all labour directly or indirectly employed in WORK for the performance CONTRACTOR's part of this CONTRACT, CONTRACTOR shall comply with or cause to be complied with all the rules and regulations of the local Sanitary and other Authorities and or as framed by OWNER from time to time for the protection of health and sanitary arrangements for all Workers and or as required under various welfare statutes.
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.

8.5 CONTRACTOR TO PAY WAGES DIRECT TO HIS LABOURERS:

The CONTRACTOR shall effect the payment of wages to his labourers directly without the intervention of any intermediary and no amount by way of commission or otherwise shall be deducted or recovered from the wages of the workmen. In this regard the CONTRACTOR has to comply the minimum wage category wise as per the prevailing rate at NRL.

8.6 MEDICAL FITNESS:

The contractor shall employ only medically fit Personnel of Age limit upto 65 years. Contractor shall ensure that workers including supervisors before deployment on the job are medically examined.

8.7 SETTLEMENT OF DISPUTES

8.7.1 FOR THE SETTLEMENT OF DISPUTES WITH THE PRIVATE PARTIES:

All disputes of difference whatsoever which shall at any time arise between the parties hereto touching or concerning the works or supply or the execution or maintenance thereof of this contract/supply or the rights touching or concerning the works or the execution effect thereof or to the rights or liabilities 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/supply or whether before or after determination, foreclosure or breach of the contract/supply (other than those in respect of which the decision of any person is by the contract/supply expressed to be final and binding) shall be endeavored to be amicably settled by the parties in the following manner:

a) At the first instance by the Engineer-In-Charge/ Purchase Officer

b) At the second instance by the Chief Executive of NRL (Presently Managing Director) or authorized representatives of Chief Executive of NRL.

c) Parties may opt for conciliation under Arbitration and Conciliation Act 1996 as amended by the Arbitration and Conciliation (Amendment) Act, 2015 or any statutory modification or re-enactment thereof.

d) In case party is not satisfied with the above, the matter will be referred to Arbitration.

e) The option of amicably settling the dispute will be open at any time during and post arbitration or court litigation or Tribunal or in any other jurisdictional forum and/or before or after award, order, judgement etc. passed by arbitrator(s), court(s), tribunal(s) or any other jurisdictional forum(s).

8.7.2 **Arbitration Clause:**

(a) Any dispute or difference of any nature whatsoever, any claim, cross-claim, counter-claim or set off of NRL (hereinafter Company) against the Contractor/Vendors or of the Contractor/Vendors against company or regarding any right, liability, act, omission on account of any of the parties hereto arising out of or in relation to this agreement shall be resolved through Arbitration under Arbitration and Conciliation Act 1996 as amended by the Arbitration and Conciliation (Amendment) Act, 2015 or any statutory modification or re-enactment thereof.

(b) Reference to Arbitration shall be made by writing a letter to the Managing Director of the Company, with copy to the Contractor/Vendor or Company, as the case may be.

(c) Managing Director, on receipt of the letter referring the dispute to Arbitration, shall, within 30 days from the receipt of the said letter, appoint a sole Arbitrator, who is not disqualified to act as such Arbitrator under the Arbitration and Conciliation Act 1996, as amended by the Arbitration and Conciliation (Amendment) Act, 2015 or any statutory modification or re-enactment thereof to adjudicate the dispute(s) between the parties.

(d) In the event the parties desire that the Arbitration will be by a Tribunal consisting of three Arbitrators, then each party will nominate one person to act as Arbitrator and the two Arbitrators so nominated will select the third and Presiding Arbitrator to adjudicate the dispute. The arbitrators so nominated / selected shall not be disqualified to act as such Arbitrators under the Arbitration and Conciliation Act 1996, as amended by the Arbitration and Conciliation (Amendment) Act, 2015 or any statutory modification or re-enactment thereof.

(e) Subject to the provisions of the Arbitration and Conciliation Act, 1996, as amended by the Arbitration and Conciliation (Amendment) Act, 2015 or any statutory modification or re-enactment thereof, the award of the Arbitrator or the Arbitrators, as the case may be, shall be final, conclusive and binding on both parties to the Agreement.

(f) The party(ies) against whom the Arbitration proceedings have been initiated, that is to say, the Respondents in the proceedings, shall be entitled to prefer a Cross-Claim, Counter-Claim or set off before the Arbitrator(s) in respect of any matter or issue arising out of or in relation to the Agreement without seeking a formal reference to arbitration for such Counter-Claim, Cross Claim or set off and the Arbitrator(s) shall be entitled to consider and deal with the same as if the matters arising there from has/have been referred to him/them originally and deemed to form part of the reference made to Arbitration.

(g) Place of arbitration shall be in Numaligarh only unless otherwise fixed by the parties.

(h) The parties hereby agree that, unless the Arbitration and Conciliation Act,1996, as amended by the Arbitration and Conciliation (Amendment) Act, 2015 or any statutory modification or re-enactment thereof prohibits, the courts in the city of Golaghat alone shall have jurisdiction to entertain any application or other proceedings in respect of anything arising under this agreement and any award or awards made by the Sole Arbitrator / Arbitral tribunal shall be filed in the concerned courts in the city of Golaghat only.

8.7.3 **FOR THE SETTLEMENT OF DISPUTES WITH PSEs / Government (except a dispute or difference concerning the Railways, Income Tax, Customs and Excise Duties):**

As per Government guidelines / circulars, etc prevailing at the time of reference of the disputes.

8.7.4 **JURIDICTION**

All disputes, actions and proceedings arising out of this contract shall be under the jurisdictions of the courts in the city of Golaghat only.

SECTION IX

SAFETY CODE

NOTE : Details related to Safety Rules and Regulations is enclosed along with the GCC as GCC_ Annexure 8. CONTRACTORS may go through the CONTRACTORS SAFETY REGULATION along with the GCC before commencement of their work.

SECTION X
SECURITY REGULATIONS FOR REFINERY

10.0 INTRODUCTION

10.1 Contractor shall adhere to safe construction practice and guard against hazardous and unsafe working conditions. All Security Rules shall also be observed by all personnel of Contractor to maintain orderly conditions. Security Regulations as laid down hereunder shall be strictly adhered to.

10.2 The term CONTRACTOR as used in this section shall be understood to include any and all sub contractors performing work on behalf of the CONTRACTOR, who shall be responsible for communicating the information contained herein to the respective sub-contractor and for directing and supervising their work.

10.3 PROCEDORE GOVERNING ENTRY / EXIT OF CONTRACTOR'S PERSONNEL INTO AND FROM REFINERY PREMISES

In order to prevent accidents/explosions that may arise due to highly inflammable vapor present in the surrounding area, following precautions and permissions shall be taken and procedures as laid down below shall be followed :

10.4 PLACES OF ENTRY / EXIT

a) Entry / exit for all will be through the main gate of refinery only and those working in NRMT area will be allowed entry / exit via the NRMT gate

b) Each contractor's supervisor must be present at the gates to direct them to the respective work location. The workers will move in one group.

c) Contractor's supervisors at the time of exit must collect all their men to take the whole lot of them out of the refinery at the same time.

e) Supervisor must submit every morning, the numbers of workers attended duty to the CISF control room on or before 09:00 AM .

10.5 TIMING FOR ENTRY / EXIT AND DAYS OF WORKS

a) Normal entry : 07:45 AM to 8:30 AM
Normal exit : 4:30 PM to 5:30 PM

Lunch Break : 1200 noon to 1:00 PM

b) Contractor employees will not be normally permitted to enter Refinery premises on Sundays and Refinery holidays.

c) Where it is essential for contract work to continue beyond 5.00 pm or for work on Sundays and Holidays, NRL site engineer will arrange for necessary permission etc. by obtaining approval of CISF officer.

d) No contractor's workmen will be allowed to get out at any odd time without written authority from their supervisors and the workmen will have to produce the same at the gate along with the exit pass from NRL site supervisor.

e) Worker going out of the Refinery for lunch will be issued with a lunch pass by their respective authorized supervisor at the exit gate.

10.6 GATE ENTRY / EXIT PROCEDURE & TRAINING

Being a major chemical hazard industry restriction of men and materials to Refinery and Terminal operations are very essential both for safety and security point of view. Therefore on award of a contract and prior to commencement of work the contractor must do all the formalities to get entry pass and must show identity/gate pass at entry point. All the persons must carry gate pass all the time while in Factory premises which may be checked by Owners representatives or CISF at any time.

1. Present Gate Pass System for Contractor / Supervisors / Workmen / Vendors / Visitors has been described in **Annexure** below.
2. **Vehicle Pass for Contractors:** Refer clause 10.8
3. **Special permission for holidays / Sundays / Night:**

Modality: Special permission is required for working on holidays / Sunday / nights. For this, Request letter, routed through NRL EIC is to be initiated by the concerned contractor to CISF.

4. **Material / Equipment Entry and exit:**

Entry / Exit of material or equipment brought by the Contractor will be allowed through the designated Gate as per procedure and policy of the company. In general, for any material / equipment's brought inside the Refinery by the Contractors the challan must be endorsed at the designated Gate by Security Staff (CISF) and then taken to the authorized Representative of the Owner for checking before it is taken to site or put to use. While taking out the materials out of the Refinery, the same has to be certified by the same authorized Representative of Owner and the material gate pass along with stamped challan indicating cross reference to

the gate pass will be handed over to security person at the designated Gate. Security Section will keep a record of Contractor's men who enter the Refinery and keep P&A informed. The Security Staff will check Contractor's vehicles including cars at the Gate.

10.7 BIOMETRIC CARD :

a. Proximity punch card / Biometric photo Punch card will be issued to the contractor / Supervisor / AMC workers having a valid photo gate gate pass for a period not less than 6 months. The cost of each punch card is Rs 200/-. The Contractor should make a DD in favour of NRL immediately after receiving a valid photo gate pass for all the workers working under him.

b. For workers whose gate pass is valid less than six months , a simple biometric punch card will be issued . the cost of the card will be Rs 100/- .

c. If the card is lost , FIR should be lodged immediately by the card holder and a penalty of Rs. 100 per card will be imposed which should be paid by the contractor in the form of DD to NRL.

d. Punch card is not transferable at all. If anyone misuse the punch card, his gate pass will be permanently cancelled .

e. It is the responsibility of the contractor to hand over the punch card to the workers / supervisor after collecting from competent authority .

f. The contractor should also collect the punch card from the worker if the gate pass is expired or if the worker is no more working under him.

g. Final payment to the contractor shall be cleared only after the clearance of security in charge to ensure that all the punch cards issued are received by NRL.

10.8 VEHICLE MOVEMENT

Vehicles are always a probable source of ignition and as such it is considered as a hazard. In petroleum refining installation, presence of hydrocarbon or other inflammable vapour can't be ruled out. A minor source of ignition may cause fire & explosion and as such movement of vehicle inside the Refinery is to be controlled. With this in mind vehicles shall normally be kept outside the Main gate and a limited number of vehicles will be allowed to ply. No petrol engine driven vehicle is allowed to ply inside the Refinery.

Motorcycles & Cycles should also be parked in the designated area outside the Main Gate.

However, some vehicles / mobile equipment, etc required for carrying out operation, maintenance & project activities may be allowed to ply inside the Refinery after certification with suitable justifications by the Engineer In-charge. Vehicle Owner & Driver of the vehicles, which are allowed to ply inside the Refinery

Premises, must ensure to comply the following regulations. All relevant documents like RC, Insurance, License, PUC, Road tax clearances etc should be kept in the vehicle.

10.8.1 Permit for Vehicle & Driver

10.8.2 Dress code for Driver & Licensee

10.8.3 Fire & Safety Training

10.8.4 Diesel Vehicle / Spark Arrestor

10.8.5 Designated Parking Place

10.8.6 Speed Limit

10.8.7 Designated Route / No Entry

10.8.8 Precautions / Regulations for Heavy Vehicles

10.8.1 Permit for Vehicle & Driver:

Vehicle Pass for contractors:

a. Modality: Vehicle pass is not issued to personal cars used by contractors for their outside movement. However, if used for site activities (truck, dumper, maintenance van, etc), gate pass is issued for such vehicles on recommendation from NRL EIC. Only Diesel driven vehicles fitted with CCOE approved spark arrestors will be given gate pass.

b. Validity: Initial for a maximum period of 06 month, which may then be extended further on recommendation from NRL Engineer In-Charge.

c. Format: Printed format available with CISF.

d. Gate pass of driver will be as per procedure for contractors' workmen, based on application along with all relevant documents. However few specific requirements are also shown here.

e. Signatories (in sequence): Signatures of Contractor, NRL EIC, CISF.

f. Necessary documents:

- Completely filled up format along with sign and seal of all signatories.
- Copy of RC, Insurance, PUC Certificate, Fitness Certificate.
- Copy of valid Driving License of the driver.
- The owner must apply for entry pass both for vehicle and driver to CISF through P&A in the prescribed format attaching all necessary documents.
- All vehicles used inside the Refinery must be mechanically sound and having a current vehicle registration applicable as per Motor Vehicle Act. No unauthorized person other than the authorized driver of that vehicle is permitted to drive the vehicle. Action may be taken against the owner in case it is violated.

10.8.2 Dress Code for Driver & Licensee:

- The driver must have valid driving license and must wear uniform.

10.8.3 Fire & Safety Training:

Training on Fire & Safety is imparted to all Drivers / Helpers and after the training program, Safety Training Card is issued to the Drivers. The Drivers must keep this Safety training card with them. The Training card will be ceased if any Driver is found violating the safety instructions. Drivers having the formal permit must ensure to comply the following:

- Adherence to speed limit
- Actions in case of emergency siren
- Safety precautions to be exercised while driving the vehicle inside Refinery. Regular Safety briefing is also normally carried out for the Drivers / Helpers by the Company employees.

10.8.4 Diesel Vehicle / Spark Arrestor:

Only diesel engine driven vehicle having CCOE (PESO) approved spark arrester is allowed to ply inside the operational area. The Spark arrestor will be checked at Entry by CISF. Permit of the Vehicle plying without proper spark arrester may be ceased. NRL may provide the spark arrester, if available, on chargeable basis.

10.8.5 Designated Parking Place:

Contractors and their employees should not park motor vehicles or other mobile equipment in any manner that will block Fire Hydrants, Fire Fighting / Protection Equipment & Alarm system and access to Building, Walkway. Etc. Vehicles may not be parked where they are likely to impede the movements of other vehicles in the Refinery and care must be taken when parking near railway tracks to see that sufficient clearance is allowed between vehicles and locomotive / trucks. The driver should be near to the vehicle always when parked inside and in no case
he should take out the key of the vehicle with him so that in case of emergency vehicle can be moved to safe place. Bus should stop only in the designated location / Bus Stop.

10.8.6 Speed Limit:

All vehicles entering or leaving the Refinery must come to complete halt at the Security Gate for checking by the Security Staff. The maximum speed limit of any vehicle inside Refinery is 25 KM /Hr.

10.8.7 Designated Route / No Entry:

Roads close to the Critical Units are not permitted to use by any type of vehicles. Contractor / Driver must make themselves aware of these traffic rules.

10.8.9 Precautions / Regulations for Heavy Vehicles:

While carrying out various operation, maintenance & project related activities inside the Refinery Premises, Contractors are required to use truck, tractor, trailer, damper, etc. In order to prevent any untoward incident out of the operation of these vehicles, Contractor must follow the following guidelines.

- Contractor's trucks and other mobile equipment's should be built / constructed so as to prevent material from falling off the mobile equipment on the Refinery roads. If the material does fall from contractor's equipment, the contractor shall remove material from the road immediately. These equipments like must be maintained in good conditions.
- Hanging load on sides and at rear of vehicle is prohibited. If at all it is unavoidable, permission is to be obtained from EIC.
- Contractors must not refuel gasoline or diesel engine driven vehicles. When refueling is to be done inside the unit during turnaround, a special permission should be obtained from the EIC / F&S Section.
- No vehicle shall be loaded beyond its Safe Working Load (SWL) capacity.
- In case of any fire, all roads should be cleared for the movement of Fire Tenders & Rescue Vehicles. Over taking is strictly prohibited inside the Refinery Premises.
- Incident on violations of traffic rule within the Refinery premises if noticed will be strictly dealt with.

Procedures for Contractor's Gate Pass Issue and Extension. **ANNEXURE A**

Sl No.	Pass holder	Type of Gate Pass and purpose of issue	Maximum validity /	Renewal period	Documents required for new issue	Documents considered for Residential proof	Documents required for extension
1	Contractor, vendor/Supervisor	Biometric	Fire Training Card validity or contractual period whichever is earlier	Next Fire Training Card validity or contractual period whichever is earlier	1. Completely filled up application signed and sealed by EIC. 2. Two copies of recent passport size photos. 3. PF / ESI Code 4. Proof of Fire Training taken in NRL 5. Residential proof	Any of the following : 1. PRC (issued by District / Sub Division authority) 2. Certificate issued by Village Head / Municipality Board Head with photograph verified by Police authority) 3. Passport / Driving license / Voter Identity card / Ration Card. 4. Aadhar card	1. Filled in format signed and sealed by EIC. 2. Photocopy of previous Biometric Card. 3. Valid Fire Card
2	Contract worker.	Biometric Card	If Police Verification is available, Fire Training Card validity or contractual period whichever is earlier. Note : 1. If Police Verification is not available, Initially the card will be activated in system for 90 days. 2. If PV is not received from Police Deptt till 90 days, same will be activated	Next Fire Training Card validity or contractual period whichever is earlier.	1. Above documents along with appropriate format 2. Forwarding letter from the concerned contractor along with list of persons 3. PF/ESI/Bank Account No.	Any of the above documents	Above documents, using appropriate format

			for Fire Training Card validity or contractual period whichever is earlier. 3. In case of adverse PV report, card shall be cancelled.				
3	Very temporary contract workers	Paper Pass (to be issued in the application itself, for workers engaged for short duration jobs like mass concreting etc.	7 days	Nil	1. List of all workers along with their address (permanent and present address) and recent photographs in appropriate format 2. Undertaking from contractor (forwarded by NRL EIC), introducing the workers and taking all responsibility of activities of the workmen inside refinery. 3. Safety briefing record (to be endorsed F&S / Project Safety Official in the list). 4. Govt Photo ID		Issued job based. Not extendable.
4	Outside Executive on temporary assignment	pass shall be issued on the application itself **(Format 5).**	60 days	60 days.	1. Completely filled up application signed and sealed by EIC. 2. F&S briefing by user department (to be recorded in the application)	Extra Residential Proof not required	Extension granted on recommendation of EIC No other document required.

		In case stay beyond 5 days, biometric card may be issued based on the above pass.			3. Photocopy of I Card of concerned organization / Driving License / Passport / Voter ID OR recent passport size photograph plus forwarding letter from concerned organisation.		

Annexure B

Proof of Date of Birth

Any one of the following documents should be submitted as Age Proof:

1. Birth Certificate issued by the Registrar of Births and Deaths or the Municipal Corporation or any other prescribed authority, whosoever has been empowered under the Registration of Birth and Deaths Act, 1969 to register the birth of a child born in India.

2. Transfer/School leaving/Matriculation Certificate issued by the school last attended/recognised educational board having the date of birth of the applicant.

3. PAN Card issued by the Income Tax Department having the date of birth of the applicant.

4. Aadhaar Card/E-Aadhaar having the date of birth of the applicant.

5. Copy of an extract of the service record of the applicant (only in respect of Government servants) or the Pay Pension Order (in respect of retired Government Servants), duly attested/certified by the officer/in-charge of the Administration of the concerned Ministry/Department of the applicant, having his date of birth.

6. Driving licence issued by the Transport Department of the concerned State Government, having the date of birth of the applicant.

7. Election Photo Identity Card/Voter ID issued by the Election Commission of India containing the date of birth of the applicant.

8. Policy Bond issued by Public Life Insurance Corporations/Companies containing the date of birth of the holder of the insurance policy.

PROFORMA FOR BANK GUARANTEE FOR EARNEST MONEY DEPOSIT

(To be stamped in accordance with the stamp Act)

Ref…….. Bank Guarantee No…….

To,

Numaligarh Refinery Ltd.
Tarun Nagar, 4 Th Road,
Guwahati 781005

Dear Sir (s)

In accordance with letter inviting Tender under reference No……M/S…… ……having their Registered / Head office at…….(hereinafter called the Tenderer) wish to participate in the side tender for…….

As an irrevocable bank Guarantee against Earnest Money Deposit for an amount of …….is required to be submitted by the Tenderer as a condition precedent for participation in the said Tender which amount is liable to be forfeited on the happening of any contingencies mentioned in the Tender Document.

We, the……Bank at ……..
Having our Head office……
(Local Address) guarantees and undertakes to pay immediately on demand by Numaligarh Refinery Ltd. The
amount……..Without any reservation, protest, demur and recourse. Any such demand made by Numaligarh Refinery Ltd. shall be conclusive and binding on us irrespective of any dispute or difference raised by the Tendered.

This guarantee shall be irrevocable and shall remain valid up to……
(this date should be 180 days after the date finally set out for closing of tender) If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instructions from M/S……on whose behalf this guarantee is issued.

In witness where of the Bank, through its authorized officer, has set its hand stamp on this……Day of……19……at……

WITNESS:	(SIGNATURE NAME)
(SIGNATURE NAME)	Designation with Bank Stamp Attorney as per
(OFFICIAL ADDRESS)	Power of Attorney No…….. Date……

****

PROFORMA OF BANK GURANTEE FOR SECURITY DEPOSIT

(ON NON – JUDICIAL PAPER OF APPROPRIATE VALUE)

To

Numaligarh Refinery Ltd.
Lotus Tower, GS Road, Ganeshguri
Guwahati –781005

Dear Sirs:

M/s …….. Have taken tender for the work of … …..…….. for Numaligarh Refinery Limited, Lotus Tower, GS Road, Ghy-5.

The tender conditions of contract provide that the Contractor shall pay a sum of Rs……..… (Rupees ……) as initial/full security Deposit in the form there in mentioned. The form of payment of security deposit includes guarantee executed by Nationalized Schedule 'A' Bank, undertaking full responsibility to indemnify Numaligarh Refinery Ltd. in case of default.

The said ……. has approached us and at their request and in consideration of the premises we having our office at ……. have agreed to give such guarantee as hereinafter mentioned.

1. We hereby undertake and agree with you that if default shall be made by M/s…… in performing any of the terms and condition of the tender or in payment of any money payable to Numaligarh Refinery Ltd. We shall on demand pay to you in such manner as you direct the said amount of Rupees …… only or such portion thereof not exceeding the said sum as you from time to time require.

2. You will have the full liberty without reference to us and without affecting this guarantee postpone for any time or from time to time the exercise of any of the powers and rights conferred on you under the contract with the said ……. and to enforce or to forebear from endorsing any powers or rights or by reason of time being given to said …… which under law relating to the sureties would but for provision have the effect of releasing us.

3. Your right to recover the said sum of Rs. …….. (Rupees …….) from us in manner aforesaid will not be affected or suspended by reason of the fact that any dispute or disputes have been raised by the said M/s ……. and /or that any dispute or disputes are pending before any officer, tribunal or court.

4. The guarantee herein contained shall not be determined or affected by the liquidation or winding up dissolution or changes of constitution or insolvency of the said, but shall in all respects and for all purposes be binding and operative until payment of all money due to you in respect of such liabilities is paid.

5. Our liability under this guarantee is restricted to (Rupees. ……). Our guarantee shall remain in force until …….. unless a suit or action to enforce a claim under Guarantee is filled against us within six months from …… (Which is date of expiry of guarantee) all your rights under the said guarantee shall be forfeited and we shall be relived and discharged from all liabilities thereunder.

6. We have power to issue this guarantee in your favour under Memorandum and Articles of Association and the undersigned has full power to do under the power of Attorney dated ……. granted to him by the Bank.

Yours faithfully,

_____ Bank
By its Constituted Attorney

Signature of a person duly
Authorized to sign on behalf
Of the Bank.

GUARANTEE AGAINST ADVANCE PAYMENT

This deed of guarantee made this …… day of …. …….. between …….. and wherever the context so required includes its successors and assignees hereinafter called "**the surety**" and **Numaligarh Refinery Ltd**. an existing company within the companies Act 1956, having its Registered office at Lotus Tower, Ganesguri, Guwahati- 781005 and wherever the context so required includes its successors and assignees, herein after called "**the Owner**".

Whereas M/s ……..a company registered under the companies Act 0f 1956 having its registered office at …… (wherever applicable) and wherever the context so requires includes its successors and assignees, hereinafter called "**The Contractor**" has undertaken to …….. …….. on the terms and conditions mentioned in the

(a) Letter of Intent No ……dated …… ……...

OR/AND

(b) Agreement No …… dated ……. Referred to as "the said contract".

And whereas the Owner has agreed to make an advance of Rs…… (Rupees ……) being ……..% value of the contract on ..... as provided in the contract as the said advance to the contractor carrying no interest.

AND WHEREAS the contractor has agreed with the owner authorizing him to deduct the said advance under the terms of the said contract from the amount that becomes due and payable to contractor as per the terms and conditions described under the clause "Terms and Conditions of payment" of the contract on proper execution of the contract.

Now this deed witness that in consideration of the said advance or any balance thereof made by the owner to the contractor, the surety hereby GUARANIEES the payment of the said advance by the contractor, and undertakes to pay the owner on demand the said sum of RS. …….. subject to the following condition.

(a) "Surety hereby gives an irrevocable guarantee and declares that its liability under this bond shall extend to the payment of the whole of amount viz. RS. …… paid as advance as provided for the contract as the said advance."

(b) This Guarantee shall remain in force and effect so long as the said advance of any part thereof remains outstanding and shall expire and become ineffectual only after the

recovery of the entire sum of Rs. ……. covered by the Guarantee and upon intimation thereof being given by the owner to the surety in which event, the surety shall be discharged by the owner.

(c) The surety shall not be discharged or released from the guarantee by any arrangement made between the owner and the contractor with or without the consent of the surety or by any alternation in the obligation of the parties or by any indulgence, forbearance, whether as to payment, time performance of otherwise.

(d) The Guarantee shall come into force from the date contractor receives from the owner the said advance.

(e) Notwithstanding anything stated above, the liability of the surety under the guarantee is restricted to Rs. …… (Rupees. ……. …….) and this guarantee will remain in force up to in the first instance. Further unless a claim or Demand is made against the Surety within six months from the date of expiry of this guarantee viz. …. …….. all rights of the owner under this guarantee shall be forfeited and the surety shall be released and discharged from all liability hereunder unless this guarantee shall have been previously extended. However if the contract for which this guarantee is given is not completed or fully performed, the surety (Bank) hereby agrees to further extend the Guarantee till such time as is required to fulfil the contract.

INDENTURE FOR SECURED ADVANCES

THIS INDENTURE made the..... day of.....199 between.....(hereinafter called the contractor which expression shall where the context so admits or implies be deemed to include his executors, administrator and the assignees) of one part and Numaligarh Refinery Ltd, (hereinafter called the Numaligarh Refinery Limited which expression shall where the context so admits or implies be deemed to include its successors in office and assignees) of other part.

WHEREAS BY an Agreement No..... dated.....(hereinafter called the said agreement) the contractor has agreed..... and WHEREAS the contractor has applied to the Numaligarh Refinery Limited that he may be allowed advances on the security of materials absolutely belonging to him and brought by him to site of the works, the subject of the said agreement for use in the construction of such of the works as he has undertaken to execute at rates fixed for the finished work (inclusive of the cost of materials and labour and other charges) and whereas the Numaligarh Refinery Limited has agreed to advance to the contractor an amount upto Rs.....(Rupees.....only) on the security of the quantities and other particulars of the materials on the security of which the advance or advances are made as detailed in the secured advance account forming account bill preferred from time to time and signed by the contractor for the said works.

NOW THIS INDENTURE WITNESS that in pursuance of the said agreement and in consideration of amounts aggregating to the sum of Rs.....(Rupees.....only) on or after the execution of these presents paid to the Numaligarh Refinery Limited. (The receipt where of the Contractor hereby acknowledge) contractor both hereby covenent and agreewith the Numaligarh Refinery Limited and declare as follows:

1. That the said sum aggregating.....(Rupees.....only) so advanced by the Numaligarh Refinery Limited to Contractor as aforesaid shall be employed by the Contractor in or towards expediting the execution of the said works and for no other purpose whatsoever.

2. That the materials detailed in the said Running Account Bills which have been offered to and accepted by the Numaligarh Refinery Limited as Security are absolutely the Contractor's own property, and free from encumbrances of any kinds and the contractor hereby agrees to indemnify the Numaligarh Refinery Limited against all claims to any materials in respect of which an advance has been made to him as aforesaid.

3. That the materials detailed in the said Running Account Bills (hereinafter called the said materials) shall be used by the Contractor solely for the execution of the said works in accordance with the directions of the Engineer-in-charge and in terms of the said agreement.

4. That the contractor shall make at his own cost all necessary and adequate arrangements for the proper watch, safe custody and protection against all risk of the said materials and that until used in construction as aforesaid the said materials shall remain at the site of the said works in the Contractors custody and on his own responsibility and shall at all times be open to inspection by the event of the said materials or any part thereof being stolen, destroyed or damaged the contractor will forthwith replace the same with other materials of like quality or repair and make good the same as required by the Engineer- in –charge.

5. That the said materials shall not on any account be removed from the site of the said works except with the written permission of the Engineer- in –charge or an officer authorised by him on that behalf.

6. That the advanced shall be repayable in full when or before the Contractor receives payment from the Numaligarh Refinery Ltd. of the price payable of him or the said works under the terms and the provision of the said agreement provided that if any intermediate payments are made to the contractor on account of work done then the occasion of each such payments the Numaligarh Refinery Ltd. will be at liberty to make recovery from the contractors bill for such payment by deducting there from the value of the said materials then actually used in the conclusion and in respect of which recovery has not been made previously the value for this purpose being determined in respect of each description of materials at the rates at which the amounts of the advances made under these presents were calculated.

7. That if the contractor shall at any time make any default in the performance or observance in any of the terms and provision of the said agreement the total amount of the advance or advances that may still be owing in the Numaligarh Refinery Ltd. together with the interest thereon at eighteen(18) percent per annum from the date or respective dates of such advance or advances to the dates of repayment will with all costs, charges, damages and expenses incurred by the Numaligarh Refinery Ltd. in the recovery thereof the security or otherwise by reason of the default of the contractor hereby convenants and agrees with the Numaligarh Refinery Ltd. to repay and pay the same respectively to him accordingly.

8. That the contractor hereby gives charge of all the said materials for the repayment to the Numaligarh Refinery Ltd. of the said sum aggregating to Rs……(Rupees…….. only) and all costs, charges, damages and expenses payable under these presents PROVIDED ALLWAYS AND it is hereby agreed and declared that notwithstanding anything in the said agreement and without prejudice to the powers contained therein if and when ever the money owing shall not be paid in accordance herewith, the Numaligarh Refinery Ltd. may at any time thereafter adopt all or any of the following courses as it may deem best.

    a) Seize and utilise the said materials or any part thereof in the completion of the said works on behalf of the contractor is accordance with the provision in that behalf contained in the said agreement debiting the contractor with the actual

cost of effecting such completion and the amount due in respect of advances under these presents and crediting the contractor with the value of work done as if he had carried it out in accordance with the said agreement and the rates thereby provided. If the balance is against the Contractor he is to pay the same to Numaligarh Refinery Ltd. on demand.

b) Remove and sell by the public auction the seized materials or any part thereof and out of the money arising from the sales retain all the sums aforesaid repayble to the Numaligarh Refinery Ltd. under these presents and pay over the surplus (if any) to the contractor.

c) Deduct all or any part of the money owing out of the security deposits or any due sum to the Contractor under the said agreement.

9. That in event of any conflict between the provisions of these presents and the said agreement the provisions of the said agreement shall prevail and in the event of any dispute or difference arising over the construction or effect of these presents the settlement of which has not been herein before expressly provided for, the same shall be referred to arbitration as provided in the said agreement.

IN WITNESS WHEREOF .....……. and Numaligarh Refinery Ltd by the order and under the directions of the Numaligarh Refinery Ltd have herein to set their respective hands the day and year first above written.

Signed, scaled and delivered
By the said Contractor in the
Presence of

Signature :

Name :

Address :

Witness:

Signed by the order and direction
Of the Numaligarh Refinery Ltd
In the presence of

Signature :

Name :

Address :

Witeness:

TO,

M/s Numaligarh Refinery Limited,
4th Road, Tarun Nagar,
Guwahati- 781005.

Sub : COMPOSITE BANK GUARANTEE FOR
ADVANCE AND SECURITY DEPOSIT.

THIS UNDERTAKING made this …… day of ……. by ……. (herein after called the "Bank" which expression shall include its successors and assigns) in favour in NUMALIGARH REFINERY LTD. 4 th ROAD, TARUN NAGAR, GUWAHATI – 781005, ASSAM (herein after called the "OWNER" which expression shall include its successors and assigns).

WHEREAS NUMALIGARH REFINERY LIMITED a Govt. of India Enterprise, …… , 4 th Road, Tarun Nagar, Guwahati – 781005,Assam (hereinafter called the "OWNER" which expression shall include its/ his/ their successors and assigns / executors, administrators, representatives and assigns) has been awarded in contract in terms, inter-alia, of the Owner's letter of Work order Number ……. Dtd ……..for executing the (job) …… for …….. at a total value of Rs ……. To M/S …… (herein after called the "Said Contract" which expression shall include any formal contract entered into subsequence thereto or in suppression thereof and all modifications to an amendments in the said contract):

AND WHEREAS the Owner agreed to advanced the Contractor a ……(Rupees ……. only) for utilization for the performance of the work covered by the said contract (Hereinafter referred to as the "said advance" which expression shall include any and all further advance made by the Owner to the Contractor with reference to the said contract) on production of an undertaking from a Bank in respect of the said advance shall without prejudice to any other mode of recovery available to the Corporation be recoverable by deduction from the gross accepted value of the Running Account Bills and Final Bill of the Contractor Commencing with the First Running Account Bill.

AND WHEREAS the Contractor is also required to furnish an undertaking from a Bank in lieu of deposit of 10 % of the value of the Contract towards security deposit (hereinafter referred to as the "Security Deposit") valid till the end of the defect liability period as specified in the said contract.

AND WHEREAS the Owner has agreed to accept the single undertaking from a Bank to cover both the said advance and the Security Deposit in the name & style of "Composite Bank guarantee".

NOW, THEREFORE, in consideration of premises a foregoing and at the request of the Contractor, the Bank hereby irrevocably and unconditionally undertakes to pay to the owner at Guwahati forthwith on first demand without protest or demur or proof or condition any and all amounts demanded by the owner in writing from the Bank with reference to this undertaking up to an aggregate limit of Rs…… (Rupees …….. only).

And the bank doth hereby further agree as follows :-

I. The owner shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this undertaking, at any time and / or from time to time to anywise vary the said contract and / or any of the terms and conditions thereof the said advance and / or to extend time for performance of the said contract and /or payment of the said advance in whole or part or to postpone for any time and /or from time to time any of the said obligations of the contractor and either to enforce or for bear from enforcing any of the terms and conditions of or governing the said contract and / or the said Advance, or the securities, if any, or any of them available to the Owner and the bank shall not be released from its liability under this presents and the liability of the Bank shall remain in full force and effect with notwithstanding any exercise by the Owner of the liberty with reference to any or all the matters aforesaid or by reason of time being given to the contractor or any other forbearance or omission on the part of the owner or any indulgence, by the owner to the contractor or of any other act , matter or thing whatsoever which under any law could (but for this provision) have the effect of releasing the Bank from its liability hereunder or any part thereof.

II. It shall not be necessary for the Owner to proceed against the Contractor before proceeding against the Bank and the undertaking herein contain shall be enforceable against the bank as Principal debtor notwithstanding the existence of any security for any indebtedness of the Contractor to the Owner (including relative to the said advance or for the Security Deposit) and not with standing that any such security shall at the time when claims is made against the Bank or Proceedings taken against the Bank hereunder, be outstanding or unrealised.

III. As between the Bank and the Owner for the purpose of this undertaking the amount claimed or demanded by the Owner from the Bank with reference to this undertaking shall be final and binding upon the bank as to the amount payable by the Bank to the Owner hereunder.

IV. The liability of the Bank to the Owner under this undertaking shall remain in full force and effect notwithstanding the existence of difference or dispute between the Contractor and the Owner, The Contractor and the Bank and / or the Bank and the Owner or otherwise howsoever touching or affecting these presents or the liability of the Contractor to the Owner, and notwithstanding the existence of any instructions or purported instructions by the contractor or any other person to the Bank not to pay or for any cause with hold or defer payment to the Corporation under these presents, with the intent that notwithstanding the existence of such difference, dispute or instruction, the Bank shall be and remain liable to make payment to the Owner in terms hereof.

V. This undertaking shall not be affected by any change in our constitution or that of the Contractor or the Owner or any irregularity in the exercise of borrowing powers by or on behalf of the Contractor.

VI. This undertaking shall be valid for all claims / demands made by the Owner to or upon us upto …….. provided that the Bank shall upon the written request of the Contractor extended this guarantee by a further period.

VII. The bank doth hereby declare that Shri …….. who is the …… (designation) of the Bank is authorised to sign this undertaking on behalf of the Bank and to bind the Bank thereby.

VIII. The Bank hereby agrees not to revoke the Bank guarantee during its currency except with the previous consent of the Owner, in writing.

IX. The Bank Guarantee is enforceable in the courts having jurisdiction over Guwahati, (Assam) only.

X. Not withstanding anything contained herein above our liability under this Guarantee is restricted to Rs…….. (Rupees …… ……) only and it shall remain inforce upto & including …….. (date) unless a claim under this guarantee is made on or before ……. (date). All your rights under the said guarantee shall be forfeited and we shall be released & discharged from all liability there under, our undertaking shall commence from the date of execution.

Yours faithfully,
For and on behalf of the Bank

Name ……
Designation ……..
Seal

SPECIAL CONDITIONS OF CONTRACT

(SCC)

ANNEXURES TO SCC:

ANNEXURE-XVII	:	CALIBRATION REQUIREMENTS OF MONITORING AND MEASURING DEVICES AT CONSTRUCTION SITES
ANNEXURE-XVIII	:	GENERAL REQUIREMENT OF RADIOGRAPHY & NDT
ANNNEXURE-XIX	:	PERMISSIONS / APPROVALS

SPECIAL CONDITIONS OF CONTRACT

1.0 GENERAL

1.1 Special Conditions of Contract shall be read in Conjunction with the General conditions of Contract, Schedule of Rates, specification of work, Drawings and any other document forming part of this Contract wherever the context so require.

1.2 Notwithstanding the sub-division of the document into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.

1.3 Where any portion of the General Conditions of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, then unless a different intention appears, the provision(s) of the special Conditions of Contract shall be deemed to over-ride the provision(s) of the General Conditions of Contract only to the extent that such repugnancies, of variations, prevail.

1.4 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 own cost and the value of contract shall be deemed to have included cost of such performances and provisions, so mentioned.

1.5 The materials, design, and workmanship shall satisfy the applicable relevant Indian Standards, the Job Specifications contained herein and codes referred to. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.

1.6 In case of an irreconcilable conflict between Indian or other applicable standards, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings or Schedule of Rates and any other portion of Bidding Document the following shall prevail to the extent of such irreconcilable conflict in order of precedence.

i) Formal Contract.
ii) Detailed Letter of Acceptance
iii) Fax /Letter of Intent/Acceptance.
iii) Schedule of Rates as enclosures to Letter of Acceptance.
iv) Scope of work/Supply/ Job / Particular Specifications.
v) Drawings
vi) Technical / Material Specifications.
vii) Special Conditions of Contract
viii) Instructions to Bidders
xi) General Conditions of Contract.
x) Standard Specifications
xi) Indian Standards
xii) Other applicable Standards

1.7 It will be Contractor's responsibility to bring to the notice of Engineer-In-Charge any irreconcilable conflict in the contract documents before starting the work (s) or making the supply with reference to, which the conflict exists.

1.8 In the absence of any Specifications covering any material, design or work(s) the same shall be performed/supplied/executed in accordance with standard engineering practice as per the instructions/directions of the Engineer-In-Charge, which will be binding on the Contractor.

2.0 SCOPE OF WORK

The Scope of Work covered in this tender shall be as described in the Technical Specifications and under **Annexure-I of SCC**.

3.0 SCOPE OF SUPPLY

3.1 The Scope of Supply covered in this tender shall be as described in the Technical Specifications of the Bidding Document.

4.0 TIME SCHEDULE

4.1 The work shall be executed strictly as per time Schedule mentioned in **Annexure-II** to SCC. The period of completion given includes the time required for mobilization as well as testing, rectifications, if any, retesting and completion in all respects to the entire satisfaction of the Engineer-in-Charge and handing over to OWNER / NRL / EIL.

4.2 The Engineer-in Charge and CONTRACTOR will prepare a joint programme of execution of work. This programme will take into account the time of completion mentioned above.

4.3 Monthly / weekly construction programme will be drawn up by Engineer-in-charge jointly with the CONTRACTOR based on availability of work fronts and the joint construction programme as 5.2. The Contractor shall strictly adhere to this targets / Programme.

4.4 Prior to taking up fabrication / installation of any major component of work at site, the CONTRACTOR shall submit to EIL his proposed construction sequence and procedures and obtain EIL's approval in writing. This approval in no way absolve the responsibility of CONTRACTOR in accordance with the provisions of Contract.

4.5 If the CONTRACTOR's work plan necessitates a disruption / shutdown in OWNER / NRL's operation, the plan shall be mutually discussed between EIL and CONTRACTOR and developed so as to keep such disruption / shutdown to the barest unavoidable minimum. Any time and cost arising due to failure of the Bidder to develop / adhere such a work plan shall be to his account.

4.6 CONTRACTOR shall give every day report on category wise labour and equipment deployed along with the progress of work done on previous day in the proforma prescribed by the Engineer in Charge.

4.7 Fronts (i.e., Drawing front / Physical front (Corresponding to drawing)) shall be released to the CONTRACTOR as per ANNEXURE – II TO SCC. Extension in time of completion due to delay in release of work fronts to the CONTRACTOR shall be evaluated as per ANNEXURE – II TO SCC.

5.0 PROJECT SCHEDULING & MONITORING

5.1 The following Schedules/documents/reports shall be prepared and submitted by the Contractor for review/approval at various stages of the Contracts.

5.2 Overall Project Schedule

The Contractor shall submit a sufficiently detailed overall project schedule in the activity network form, clearly indicating the major milestones, inter-relationship/interdependence between various activity together with analysis of critical path and floats.

The network will be reviewed and approved by Engineer-in-Charge and the comments if any, shall be incorporated in the network before issuing the same for implementation. The network thus finalized shall form part of the contract document and the same shall not be revised

without the prior permission from Engineer-in- Charge during the entire period of contract.

5.3 Progress Measurement Methodology

The Contractor is required to submit the methodology of progress measurement of sub-ordering, manufacturing/delivery, sub- contracting, construction and commissioning works and the basis of computation of overall services/physical progress informed. OWNER / NRL reserves the right to modify the methodology in part or in full.

5.4 Functional Schedules

The Contractor should prepare detailed functional schedules in line with network for functional monitoring and control and submit scheduled progress curves for each function viz. ordering, delivery and construction.

5.5 Project Review Meetings

The Contractor shall present the programme and status at various review meetings as required.

Weekly Review Meeting

Level of Participation: Contractor's/Consultant'sRCM /Site In charge & Job Engineers.

Agenda:
a) Weekly programme v/s actual achieved in the past week & Programme for next week.
b) Remedial Actions and hold up analysis.
c) Client query/approval.

Venue: As decided by Engineer-In-Charge.

Monthly Review Meeting

Level of Participation: Senior officers of OWNER / NRL, Consultant and Contractors

Agenda:
a) Progress Status/Statistics.
b) Completion Outlook.
c) Major hold ups/slippages
d) Assistance required
e) Critical issues
f) Client query/approval

5.6 Progress Reports

Monthly Progress Report

The report shall be submitted on a monthly basis within ten calendar days from cut- off date as agreed upon, covering overall scenario of the work. The report shall include but not be limited, to the following:

a) Brief introduction of the work.
b) Activities executed/achievements during the month.
c) Scheduled v/s actual percentage progress and progress curves for sub- ordering, manufacturing/delivery, sub-contracting, construction, overall and quantum – wise status of purchase orders against scheduled.
d) Areas of concern/problem/hold ups, impact and action plans. e)

Resources deployment status.

f) Annexure giving status summary for Material Requisitions & deliveries, sub-contracting and construction.

Distribution: OWNER / NRL - Two copies

Weekly Report

This report (5 copies) will be prepared and submitted by the Contractor on weekly basis and will cover following items:

a) Activities programmed and completed during the week.

b) Resources deployed man and machine.

c) Qty. Achieved against target in construction.

d) Record of Man-days lost.

e) Construction percentage progress, scheduled and actual.

Daily Report

This report (5 copies) will be prepared and submitted by the Contractor on daily basis and will cover following items:

a) Resources deployed man and machine.

b) Qty. Achieved against target in construction.

c) Record of Man-days lost.

d) Construction percentage progress, scheduled and actual

6.0 MODE OF MEASUREMENT OF WORK

The Measurement of work shall be done as defined in **Annexure-III to SCC**

7.0 TERMS OF PAYMENT

7.1 Payments shall be made to the contractor as per the “Terms of Payment” as defined in **Annexure-IV to SCC.**

7.2 100% payment of the running account (RA) bill shall be released within 30 calendar days of receipt of RA bill duly certified by Engineer in-charge.

7.3 Invoice Instructions

CONTRACTOR from India shall submit the following documents along with the monthly invoices: However for contractor from Bangladesh shall submit the similar documents as per the applicable rules of Bangladesh

A) Along with first invoice:

Following documents / details should be invariably furnished along with first invoice:

i) Copy of valid registration certificate under the GST Law if applicable
ii) Particulars required for making payment through ‘Electronic Payment Mechanism’
iii) Mobile No. (optional)
iv) Email id.

B) Periodical / Monthly payment:

i) Invoice (i.e., Tax invoice as per relevant GST rules, indicating GST registration number and HSN and / or SAC No., Rate and amount of GST shown separately.

ii) Insurance policies and proof of payment of premium (for applicable insurance under CONTRACTOR's scope)

iii) Copies of challans / receipt of payments of contributions for their employees to the Authorities Employees' Provident Fund and Miscellaneous Provisions Act, 1952 and the Employees' State Insurance Act, 1948 prescribed under the said Acts such payments along with the list showing persons employed together with emoluments paid for the purpose of provident fund deductions shall be submitted to EIL/OWNER / NRL before the end of every calendar months.
This clause should be read in conjunction with Clause 20 of SCC.

iv) Undertaking by the CONTRACTOR regarding compliance of all statutes.

v) Certificate by the CONTRACTOR stating labor have been paid not less than minimum wages (as applicable).

vi) An undertaking that all materials, equipment and components used in execution of the works under this contract are new and unused (not reconditioned) and of recent manufacture and in no case is of date of manufacture older than one year from the date of delivery at the site. However, structural steel shall in no case be of date of manufacture older than 2 years from the date of delivery at site.

vii) Any other document specifically mentioned in the Contract, or supporting documents in respect of other claims (if any), permissible under the contract.

7.4 In the event of EIL/ OWNER / NRL objecting to any portion of work covered by the said invoice, such objection shall be communicated to the CONTRACTOR. CONTRACTOR shall have the right to claim the payment of such amounts objected by EIL/ OWNER / NRL in subsequent invoice after removal of cause of such objection.

7.5 In the event of EIL / OWNER / NRL noticing at any time that any amount has been disbursed wrongly to the CONTRACTOR or any other amount is due from the CONTRACTOR to EIL/ OWNER / NRL, EIL/ OWNER / NRL may without prejudice to its rights recover such amounts by other means after notifying the CONTRACTOR or deduct such amount from any payment failing due to the CONTRACTOR. The details of such recovery, if any, will be intimated to the CONTRACTOR.

7.6 DIGITAL PAYMENTS

In order to encourage and facilitate digital payments, CONTRACTOR has to ensure that all payments to Workmen, further Sub-Contractors / Suppliers of Materials & Services are made in form of e-payment only, as per due dates, wherever applicable.

The CONTRACTOR has to ensure timely payment of wages through e-payment only.

CONTRACTOR shall ensure that all its personnel deployed under this contract have obtained additional insurance coverage through the participating banks and submit the proof of such insurance coverage to the satisfaction of EIL/ OWNER / NRL. The Cost of the insurance premium amount for both the above schemes shall be borne by the CONTRACTOR giving evidence/ proof to EIL/ OWNER / NRL in this respect and CONTRACTOR shall suitably consider the same in their bid.

Details of these schemes are to be regulated continuously on yearly basis and the same should be renewed on each successive relevant date in the subsequent years.

8.0 SECURITY DEPOSIT (CPBG)

8.1 The CONTRACTOR shall submit Security deposit as per General Condition of Contract (GCC). However, in case of non-submission of security deposit within period stipulated, required security deposit amount shall be recovered from first RA bill / first milestone payment, onwards, on propionate basis, till full recovery.

8.2 No interest shall be payable by the OWNER / NRL for sum deposited as Performance Bank Guarantee.

8.3 Successful MSE CONTRACTOR has to submit EMD equivalent amount as security deposit in case of award.

8.4 The Contract Performance Security Deposit submitted in the form of Bank Guarantee will be returned to the Contractor after the end of "**Defect Liability Period**".

9.0 UNDERGROUND AND OVERHEAD STRUCTURES

The Contractor will familiarize himself with and obtain information and details from the EIC / OWNER / NRL in respect of all existing structures, overhead lines, existing pipelines and utilities existing at the job site before commencing work. The Contractor shall execute the work in such a manner that the said structures, utilities, pipelines etc. are not disturbed or damaged, and shall indemnify and keep indemnified the OWNER / NRL, from and against any destruction thereof or damages thereto. In case the existing facilities both above and underground needs to be disturbed/ modified/ rerouted to create new facilities, the contractor/ bidder shall carry out such modification without any cost to the OWNER / NRL.

10.0 CO-ORDINATION WITH OTHER AGENCIES

The work shall be carried out in such manner that the work of other agencies operating at the site is not hampered due to any action of the Contractor. The Contractor will be responsible for ensuring proper coordination with other agencies. In the event of any dispute between the Contractor and any other agency employed at the job site arising out of or related to the performance of the work, the decision of the Engineer-In-Charge shall be final and binding on the Contractor.

11.0 CONSTRUCTION EQUIPMENT AND ORGANIZATION

11.1 **CONSTRUCTION EQUIPMENT**

The Contractor shall without prejudice to his overall responsibility to execute and complete the work as per specifications and time schedule, progressively deploy construction equipments **as per Annexure-VI to Special Conditions of Contract** and tools & tackles as and when required augment the same as decided by the Engineer-in- Charge depending on the exigencies of the work so as to complete all works within the contracted time schedule and without any additional cost to OWNER / NRL.

No construction equipment shall be supplied by the OWNER / NRL. Contractor to ensure deployment of suitable equipment's either owned or hired as mentioned in Construction equipment schedule and take all safety precautions during execution of work.

Temporary import of materials, machinery, plant or any equipment required for the work to be executed in Bangladesh, shall be exempted from all applicable duties, taxes, levies and royalties etc. during its import, use on the project and re-export. However, if such material, machinery, plant or equipment is not re-exported and is sold by the implementing firm in Bangladesh, all taxes or duties as applicable shall be recovered in accordance with the prevailing laws, rules and procedure.

Project vehicles, plant, equipment and machinery pertaining to the Project shall be allowed to

move freely without payment of duties/levies/taxes of the Local Government in Bangladesh. Should these not be so exempted, BPC shall bear the cost. Project vehicles, plant, equipment and machinery pertaining to the project that require licenses for operation or movement including driving license, shall be issued temporary licenses by Government of Bangladesh (GOB) in accordance with the prevailing laws of Bangladesh. BPC shall facilitate expeditious issuance of such licenses/permits by the competent authorities of Bangladesh.

11.2 **SITE ORGANISATION**

Subject to the provisions in the contract document and without prejudice to Contractor's liabilities and responsibilities to provide adequate qualified skilled, semi-skilled and unskilled personnel on the work, contractor shall deploy supervisory personnel **as per Annexure-V to Special Conditions of Contract** and augment the same as decided by the Engineer-in-Charge (E.I.C) depending upon the site requirement & the exigencies of work so as to complete all works within the contracted time schedule and without any additional cost to OWNER / NRL.

Qualification and experience of Key Supervisory Personnel to be deployed for this work shall be as per given in the annexure to SCC**.**

11.3 Contractor should maintain manpower engagement register (including skilled and unskilled labour) / Hindrance register as per format given by E.I.C. at site and should present the same to OWNER / NRL representatives whenever asked for.

11.4 Bidder shall mobilize minimum manpower within 15 days of notice. In case of delay in mobilization or shortfall in Key personnel manpower **(Annexure-V to SCC)**, penal recovery shall be levied per diem rate from 16th day onwards as per the recovery rates specified in **Annexure-X to SCC**, till the date of mobilization of Key personnel at site.

12.0 PROTECTION OF EXISTING FACILITIES

CONTRACTOR shall obtain all safety clearance (viz. Excavation, Hot/ Cold work permit) from EIL as may be required from time to time, prior to start of work. Work without safety permit shall not be carried out. Safety permit and fire service facility, if available, shall be provided on daily allocation basis upon application.

CONTRACTOR shall obtain plans and full details of all existing and planned underground services from Engineer- in- Charge and shall follow these plans closely at all times during the performance of work. CONTRACTOR shall be responsible for location and protection of all underground lines and structures at his own cost.

Despite all precautions, should any damage to any structure / utility etc. occur, the Contractor shall contact the Engineer- in- Charge and CONTRACTOR shall forthwith carry out repair at his expenses under the direction and to the satisfaction of OWNER / NRL / TPIA /concerned authority.

CONTRACTOR shall take all precautions to ensure that no damage is caused to the existing pipelines, cables etc. during construction.

13.0 ROUNDING OFF

All payments to and recoveries from the Contractor's bills shall be rounded off to the nearest Rupee. Wherever the amount to be paid/recovered consists of a fraction of a Rupee (Paisa), the amount shall be rounded off to the next higher rupee if the fraction consists of 50 (fifty) paisa or more and if the fraction of a Rupee is less than 50 (fifty) paisa, the same shall be ignored.

14.0 COMPLIANCE WITH LAWS

14.1 The Contractor shall abide by all applicable rules, regulations, statutes, laws governing the performance of works Bangladesh as applicable like as below but not limited to the

following:

i. Contract Labour (Regulation & Abolition) Act & the rules framed thereunder
ii. Payment of Wages Act.
iii. Minimum Wages Act.
iv. Employer's Liability Act.
v. Factory Act.
vi. Apprentices Act.
vii. Workman's Compensation Act.
viii. Industrial Dispute Act.
ix. Environment Protection Act.
x. Wild life Act.
xi. Maritime Act.
xii. Any other Statute, Act, Law as may be applicable.

15.0 LABOUR RELATIONS

15.1 In case of labour unrest/ labour dispute arising out of non-implementation of any law, the responsibility shall solely lie with the Contractor and he shall remove/resolve the same satisfactorily at his own cost and risk.

15.2 The Contractor shall deploy only duly qualified and competent personnel for carrying out the various jobs as assigned by the Engineer-In-Charge from time to time. The workmen deployed by the Contractor should also possess the necessary license etc., if required under any law, rules and regulations.

16.0 LABOUR LICENCE

16.1 Before starting of work, Contractor shall obtain a labour license from concerned authorities of Bangladesh and furnish copy of the same to EIC. The labour license for the appropriate labour shall be valid for the total contractual period including extended period, if any.

16.2 Contractor shall submit the payment proof of labour cess against the Contract /Executed value (as applicable as per prevalent labour law) otherwise this amount shall be deducted from RA bills /Final bill of vendor

17.0 UTILISATION OF LOCAL RESOURCES

17.1 The Contractor shall ascertain the availability of local sub-contractors and skilled/unskilled manpower and engage them to the extent possible for performance of works.

17.2 The Contractor shall not recruit personnel of any category from among those who are already employed by the other agencies working at the site but shall make maximum use of local labour available.

17.3 Only nationals of India and Bangladesh shall be recruited as labour, administrative, technical and other personnel for the Project. OWNER / NRL shall facilitate issuance of work permit for the Indian nationals as required under laws of Bangladesh.

18.0 CONTRACTOR'S LABOURERS TO LEAVE SITE ON COMPLETION OF THE WORK

18.1 The Contractor's labourers must leave the location of the project site after the work is tapered/completed to avoid creation of slum in the areas adjoining the project site.

19.0 WORKING HOURS

Contractor shall mobilize sufficient work force, machinery, equipments etc. so as to complete the job by working in normal working hours prevailing at Site of OWNER / NRL.

However, depending upon the requirement, time schedule/ programs and the target set to complete the job in time, the works may have to continue beyond normal working hours to

the extent of round the clock and Holidays also, for which no extra claim shall be entertained.

20.0 ESI / EPF

The Contractor shall cover all employees engaged by him or through sub-contractors under ESI as well as EPF Acts as per provisions of Acts in force in India / Bangladesh as applicable and shall submit necessary records and returns in proof of compliance of these statutory enactments. Contractor shall defend, indemnify and hold the OWNER / NRL harmless from any liability or penalty which may be imposed by the Central, State, Local or other statutory authority for any violation of labour enactments or any other enactments, by the Contractor or his sub-contractor.

21.0 FUEL REQUIREMENT OF WORKERS

The CONTRACTOR shall be responsible to arrange for the fuel requirement of his workers and staff without resorting to cutting of trees and shrubs. Cutting of trees and shrubs is strictly prohibited for this purpose.

22.0 PROVIDENT FUND

The Contractor shall strictly comply with the provisions of Employees Provident Fund Act and register themselves with RPFC India / Bangladesh as applicable before commencing work. The Contractor shall deposit Employees and Employers contributions to the RPFC every month or as directed by EIC in compliance in rules . The Contractor shall furnish along with each running bill, the challan /receipt for the payment made to the RPFC for the preceding months.

23.0 TEMPORARY WORKS

All temporary works, ancillary works, enabling works, including dewatering of surface and subsoil water, preparation and maintenance of temporary drains at the work site, preparation and maintenance of approaches to working areas, wherever required, for execution of the work, shall be the responsibility of the CONTRACTOR and all costs towards the same shall be deemed to have been included in the quoted prices.

24.0 MAKE OF MATERIALS

24.1 All equipment and materials to be supplied under this contract shall be from approved vendors as indicated in the Bidding Document.

24.2 Wherever any make of item is specified by a brand name, manufacturer or vendor, the make mentioned shall be for establishing type, function and quality desired. Other makes may be considered, provided sufficient information are furnished to the OWNER / NRL to assess the makes proposed by the Contractor as equivalent and acceptable.

24.3 Where the makes of materials are not indicated in the Bidding Document, Contractor shall furnish details of proposed makes and supply the same after written approval of OWNER / NRL/Engineer-In-Charge.

25.0 QUALITY ASSURANCE/QUALITY CONTROL PROGRAMME

25.1 The CONTRACTOR shall adhere to the quality management system as per EIL Specification enclosed as per **Annexure-VII to SCC.** After the award of the contract, detailed quality assurance programme to be followed for the execution of contract shall be submitted by CONTRACTOR.

25.2 Contractor shall include in his offer the Quality Assurance Programme containing the overall quality management and procedures which is required to be adhered to during the execution of contract. After the Acceptance/ Award of the tender, detailed quality assurance programme to be followed for the execution of contract under various divisions of works will be mutually discussed and agreed to.

25.3 The Contractor shall establish document and maintain an effective quality assurance system as outlined in recognized codes.

25.4 Quality Assurance System plans/procedures of the Contractor shall be furnished in the form of a QA manual. This document should cover details of the personnel responsible for the quality assurance, plans or procedures to be followed for quality control in respect of Design, Engineering, Procurement, Supply, Installation, Testing and Commissioning. The quality assurance system should indicate organizational approach for quality control and quality assurance of the construction activities, at all stages of work at site as well as at manufacturer's works and despatch of materials.

25.5 OWNER / NRL/EIL or their representative shall reserve the right to inspect/witness, review any or all stages of work at shop/site as deemed necessary for quality assurance.

25.6 The Contractor has to ensure the deployment of quality Assurance and Quality Control Engineer(s) depending upon the quantum of work. This QA/QC group shall be fully responsible to carry out the work as per standards and all code requirements. In case Engineer-In-Charge feels that Contractor's QA/QC Engineer(s) are incompetent or insufficient, Contractor has to deploy other experienced Engineer(s) as per site requirement and to the full satisfaction of Engineer-In-Charge.

25.7 In case Contractor fails to follow the instructions of Engineer-In-Charge with respect to above clauses, next subsequent payment due to him shall not be released unless and until he complies with the instructions to the full satisfaction of Engineer-In-Charge.

25.8 The "Specification for Documentation Requirements from Contractor" are attached as **Annexure-XII to SCC.**

26.0 INCOME TAX & CORPORATE TAX

26.1 The contractor shall be exclusively responsible and liable to pay all income taxes on any payments arising out of the contract.

26.2 Corporate Tax Liability if any shall be to Contractor's account.

27.0 TESTS AND INSPECTION

27.1 TEST CERTIFICATES

The CONTRACTOR shall be required to submit recent test certificates for the material being used in works from the recognised laboratories. These certificates should indicate all properties of the materials as required in relevant IS Standards or International Standards.

The CONTRACTOR shall also submit the test certificate with every batch of material supplied which will be approved by Engineer-in-Charge. No secured advance will be given for the materials not having test certificate. In case any test is to be carried out, the same shall be got done in the approved laboratory at the cost of CONTRACTOR

The CONTRACTOR shall, before supply of material covered within the scope of supply, at his own risks, costs and initiative, undertake or cause to be undertaken all tests, analysis and inspections as shall be required to be undertaken with regard to the materials under the specification and any codes, practices, orders and instructions with respect thereto and shall cause the results thereof to be recorded, reported or certified, as the case may be, and shall not offer for delivery or deliver any material(s) which has / have not passed such tests / analysis or inspection and which are not accompanied by the tests results, reports and / or certificates in this behalf provided in the applicable specifications, code(s) and / or practices.

A certificate of verification and good condition in respect of such material shall be issued by CONTRACTOR and shall accompany the invoice raised for the respective material.

27.2 SAMPLES OF MATERIALS

The CONTRACTOR shall submit to the Engineer-in-Charge samples of all materials/ to be used in the work for approval before bringing bulk supplies and before commencing the work. These approved samples shall be preserved and retained in the custody of the Engineer-in-Charge as standard of materials till the completion of the work. The cost of such samples shall be borne by the CONTRACTOR and nothing shall be payable on this account.

Sub-standard Material/ Work: In case any material/ work is found sub-standard the same shall be rejected by the Engineer-in-Charge and the same shall be removed from the site of work within 48 hours, failing which the same shall be got removed by the Engineer-in-Charge at the risk and cost of the CONTRACTOR without giving any further notice and time.

Testing of Materials: Even ISI marked materials may be subjected to quality test at the discretion of the Engineer-in-Charge besides testing of other materials as per the specifications described for the item/ material. Whenever ISI marked materials are brought to the site of work the CONTRACTOR shall, if required by the Engineer-in-Charge, furnish manufacturer test certificate or test certificate from approved testing laboratory to establish that the material procured by the CONTRACTOR for incorporation in the work satisfy the provisions of IS Codes relevant to the material and/ or the work done.

The CONTRACTOR shall arrange carrying out of all tests required under the agreement through the laboratory as approved by the Engineer-in-Charge. The cost of tests shall be borne by the CONTRACTOR. In addition CONTRACTOR shall establish a laboratory at site of work at his own cost. The laboratory shall be equipped with all necessary equipment as per requirement of specification or as per direction of Engineer-in-Charge. Establishing the laboratory at site shall not absolve the CONTRACTOR from fulfilling the criteria of getting the test done in independent Lab. The decision of the Engineer-in-Charge of allowing any test in the site laboratory or any other laboratory shall be final.

Before execution of finishing items like plaster, flooring & painting etc, the CONTRACTOR shall make samples for finishing items and get the approval well in advance from the Engineer-in-Charge.

Notwithstanding any other provisions in the contract documents for analysis or tests of materials and in addition thereto, the CONTRACTOR shall, if so required by the Engineer-In-Charge or inspection agency in writing at his own risks and costs, analyse, test, prove and weigh all materials (including materials incorporated in the works) required to be analyzed, tested, proved, and / or weighed by the Engineer-In-Charge or inspection agency in this behalf and shall have such analysis or tests conducted by the agency(ies), or authority(ies) if any specified by the Engineer-In –Charge or Inspection agency. The CONTRACTOR shall provide all equipment, labour, materials, and other things whatsoever required for testing, preparation of the samples, measurement of work and / or proof of weighment of the materials as directed by the Engineer-In-Charge or Inspection agency.

If on inspection of proof, analysis or tests as aforesaid the Engineer-In-Charge or Inspection agency is prima facie satisfied that the material received is in conformity with the material requirements of the Bill of materials and description given in the Shipping documents and in the CONTRACTOR's invoices in this behalf and that the test reports / results / certificates given in respect thereof are prima facie in conformity with the relevant result / reports / certificates required in respect thereof in terms of the specifications and / or relevant codes and practices, and that the material appears to be prima facie in good order and condition, the Engineer-In-Charge/TPI agency (in such cases) shall issue to the CONTRACTOR, a certificate of verification and good condition in respect of such material.

Such certificate in such cases is only intended to satisfy the EIL/ OWNER / NRL that prima facie the material supplied by the CONTRACTOR is in order and shall not anywise absolve the

CONTRACTOR of his / its full responsibility under the contract in relation thereto including in relation to specification fulfilment and / or performance or other guarantees.

28.0 INSPECTION OF SUPPLY ITEMS/ MATERIALS

All supply items/ materials shall be subject to pre-despatch inspection from Third Party Inspection agency (TPIA) and shall be arranged by the Contractor at his own Cost (i.e., Bidders to quote prices including inspection charges for Supply items).

Inspections and tests shall be made as per the specifications forming part of the contract. Various stages of inspection and testing shall be identified after receipt of Quality Assurance Programme from the Contractor/Manufacturer.

The material will be procured from EIL approved vendors and will be accepted at site by EIL on the basis of inspection certificate issued by TPIA / Manufacturer's Test Reports.

Inspection and acceptance of bought out items/ materials shall not relieve the Contractor from any of his responsibilities under this Contract.

The CONTRACTOR shall carry out the various tests as enumerated in the technical specifications of this bidding document and the technical documents that will be furnished to him during the performance of the work.

All the tests either on the field or at outside laboratories concerning the execution of the work by the CONTRACTOR shall be carried out by CONTRACTOR at his own cost.

The work is subject to inspection at all times by the Engineer-in-Charge. The CONTRACTOR shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the technical specifications of this bid document, the technical documents and the relevant codes of practice will be furnished to him during the performance of the work.

The CONTRACTOR shall provide for purposes of inspection access ladders, lighting and necessary instruments at his own cost.

Any work not conforming to execution drawings, specifications or codes shall be rejected forthwith and the CONTRACTOR shall carryout the rectifications at his own cost.

All results of inspection and tests will be recorded in the inspection reports, proforma of which will be approved by the Engineer-in-Charge. These reports shall form part of the completion documents.

Statutory fees paid to IBR authorities and for repeat tests and inspection due to failures, repairs etc. such reasons attributable to the CONTRACTOR shall be borne by the CONTRACTOR.

Inspection and acceptance of work shall not relieve the CONTRACTOR from any of his responsibilities under this Contract.

29.0 FINAL INSPECTION

After completion of all tests as per specification the whole work will be subject to a final inspection to ensure that job has been completed as per requirement. If any defects noticed in the work attributable to Contractor, the Contractor at his own cost shall attend these, as and when the OWNER / NRL/EIL brings them to his notice. OWNER / NRL /EIL shall have the right to have these defects rectified at the risk and cost of the contractor if he fails to attend to these defects immediately.

30.0 LIMITATION OF LIABILITY

30.1 The final payment by the NRL in pursuance of the Contract terms shall not mean release of the

Contractor from all of his liabilities under the Contract. The Contractor shall be liable and committed under this contract to fulfil all his liabilities and responsibilities, till the time of release of contract performance guarantee by the NRL

30.2 Notwithstanding anything contrary contained herein, the aggregate total liability of the CONTRACTOR to OWNER / NRL under the Contract shall not exceed the total Contract Price, except that this Clause shall not limit the liability of the CONTRACTOR for following:

(a) In the event of breach of any Applicable Law;

(b) In the event of fraud, willful misconduct or illegal or unlawful acts, or gross negligence of the CONTRACTOR or any person acting on behalf of the CONTRACTOR; or

(c) In the event of acts or omissions of the CONTRACTOR which are contrary to the most elementary rules of diligence which a conscientious CONTRACTOR would have followed in similar circumstances; or

(d) In the event of any claim or loss or damage arising out of infringement of Intellectual Property; or

(e) For any damage to any third party, including death or injury of any third party caused by the CONTRACTOR or any person or firm acting on behalf of the CONTRACTOR in executing the Works

30.3 Neither Party shall be liable to the other Party for any kind of indirect or consequential loss or damage including, loss of use, loss of profit, loss of production or business interruption which is connected with any claim arising under the Contract.

31.0 ADDITIONAL WORKS/EXTRA WORKS

OWNER / NRL reserves the right to execute any additional works/extra works, during the execution of work, either by themselves or by appointing any other agency, even though such works are incidental to and necessary for the completion of works awarded to the CONTRACTOR. In the event of such decisions taken by the OWNER / NRL, Contractor is required to extend necessary co-operation, and act as per the instruction of Engineer-In-Charge.

32.0 SINGLE POINT RESPONSIBILITY

The entire work as per Scope of Work covered under this contract shall be awarded on single point responsibility basis.

33.0 TITLE OF OWNERSHIP

33.1 Ownership of materials shall be transferred to the Company upon the date of issuance of certificate towards part completion or completion and acceptance of Works.

33.2 Ownership of the construction Equipment used by the Contractor and its subcontractors in connection with the Works shall remain with the Contractor and its sub-contractors.

34.0 LEADS

For the various works, in case of contradiction, leads mentioned in the Schedule of Rates shall prevail over those indicated in Technical Specifications.

35.0 INTEGRITY PACT

The proforma of IP attached as Annexure-IX to SCC, shall form part of the tender documents.

a) Proforma of Integrity Pact (IP) attached shall be returned by the Bidder along with the bid documents (technical bid in case of 2 part bids), duly signed by the same signatory who is authorized to sign the bid documents. All the pages of the Integrity Pact shall be duly signed. Bidder's failure to return the IP duly signed along with the bid documents shall result in the bid

not being considered for further evaluation.

b) If the Bidder has been disqualified from the tender process prior to the award of the contract in accordance with the provisions of the Integrity Pact, OWNER / NRL shall be entitled to demand and recover from Bidder Liquidated Damages amount by forfeiting the EMD/Bid Security as per provisions of the Integrity Pact.

c) If the contract has been terminated according to the provisions of the Integrity Pact, or if OWNER / NRL is entitled to terminate the contract according to the provisions of the Integrity Pact, OWNER / NRL shall be entitled to demand and recover from Contractor Liquidated Damages amount by forfeiting the Security Deposit/Performance Bank Guarantee as per provisions of the Integrity Pact.

d) Bidder is required to submit affidavit to Integrity pact for non-Involvement into transgression in terms of Integrity pact.

e) Bidders may raise disputes/complaints, if any, with the nominated Independent External Monitor, mentioned in Integrity Pact:

36.0 REGISTRATION OF THE CONTRACTOR WITH STATUTORY AUTHORITIES

Within 30 days of award of Contract, the CONTRACTOR shall, in so far as necessary, register itself and the Contract at their own cost with the concerned statutory authorities as required under the rules and regulations governing in India / Bangladesh as applicable. The Contract Price shall be deemed to include all costs towards the same. A copy of all documents related to all such registration shall be submitted to OWNER / NRL for record.

37.0 DRAWINGS

The drawings accompanying the Bidding Document are generally indicative of scope of work and are issued for bidding purpose only. Final construction shall be carried out as per the drawings prepared by the CONTRACTOR and reviewed by the OWNER / NRL or the OWNER / NRL's Consultant during the course of execution.

The design criteria, specifications and other engineering requirements and information required for designing the system are included in the Bidding Document. The CONTRACTOR shall prepare basic and detailed engineering drawings and other documents as required for performing or completing the Work. The CONTRACTOR shall also be responsible for generating or acquiring such additional data or information as may be required to perform the engineering, procurements, fabrication, transportation, installation, testing, pre-commissioning or commissioning activities.

All drawings requiring approval shall be transmitted to OWNER / NRL/EIL. The successful CONTRACTOR shall establish a compatible system with that available with the OWNER / NRL/EIL for transmission of drawings which require the OWNER / NRL's approval, and extension of time shall not be permissible on account of any delay in transmission of drawing for approval or for consequent approval of drawings. The drawings/ documents submitted by the CONTRACTOR shall be reviewed by OWNER / NRL/EIL.

During such review, OWNER / NRL/EIL may suggest modifications in the drawings/documents. So long as the modifications suggested are to meet the technical requirements or the specifications or are designed towards the efficient operation of the Plant without altering the basic design parameters given in the Bidding Document, these shall be carried out by the CONTRACTOR within the scope of relative work or supply without extra cost to the OWNER / NRL or extra time irrespective of the fact that these requirements have not been detailed in Bidding Document or in the CONTRACTOR'S bid.

Review of design/drawings is not obligatory on the part of OWNER / NRL/EIL and complete

correctness/soundness of the design/drawings shall be the sole responsibility of the CONTRACTOR irrespective of the fact whether the same has been reviewed by OWNER / NRL/EIL or not.

Notwithstanding review of designs & drawings by OWNER / NRL/EIL, any defect observed during commissioning and/or operating the Plant or otherwise shall be rectified by the CONTRACTOR forthwith by carrying out all necessary modifications, repairs, replacements and/or re-construction, as the case may be, within the scope of Work and scheduled time and without any extra cost to the OWNER / NRL.

The cost of preparing, submitting, correcting, modifying, re-performing and/or re- submitting all documents and drawings furnished shall be included in the scope of Work and the lumpsum price of services/work, and the term “drawing” in the detailed specifications shall, unless excluded by context mean the drawings prepared by the CONTRACTOR and reviewed by OWNER / NRL/EIL.

38.0 COMPLETION DOCUMENT

38.1 AS BUILT DRAWINGS

Notwithstanding the provisions contained in standard specification, upon completion of work, the Contractor shall complete all of the related drawings to the "AS BUILT" stage (including all vendor/sub-vendor drawings for bought out items) and provide the Employer/Consultant, the following:

- One complete set of all original tracings.
- One complete set of full size reproducible.
- One complete set of reduced size (279mm x 432mm) prints.
- One complete set of microfilm of all original drawings.
- Six complete sets of reduced size (279mm x 432mm) prints.
- Six complete bound sets of Contractor’s specification including design calculations.
- Three copies of daily logs of activities.
- Three sets of all raw data collected/generated for and during execution of the entire job.
- Electronic Geometry Pigging results & reports as specified in technical document.
- Edited master videotape plus six copies in VHS/DVD format.

38.2 Completion Document

The following documents shall be submitted in hard binder by the CONTRACTOR in 6 (Six) sets, as a part of completion documents:

- Welding Procedure Qualification Report.
- Welder Qualification Report.
- Radiographic Procedure Qualification.
- Radiographic Report along with radiographs (Radiographs only with the original).
- Batch Test Certificate from manufacturers for electrodes.
- Hydrostatic and other test results & reports.
- Electronic Geometry Pigging results & reports as specified in technical document.
- Pre-commissioning/ Commissioning checklist.
- All other requirements as specified in the respective specifications.
- As built drawings.
- Any other drawing/document/report specified elsewhere in the bidding document

Note : The Contractor shall be eligible to apply for issue of completion certificate after submission of completion documents as mentioned above.

39.0 CONTRACT AGREEMENT

Contract document for agreement shall be prepared after award of works, which is intimated to the successful bidder by a Fax / Detailed letter of Acceptance. Until the final contract document are prepared and executed this bidding document together with the annexed documents, modification, deletion agreed upon by the OWNER / NRL and the Bidders acceptance thereof shall constitute a binding contract between the successful bidder and the OWNER / NRL based on the terms contained in the above said documents and the finally) submitted and accepted price schedule. .

The Contract document shall consist of the following:

I. Contract Agreement on non-judicial stamp paper

II. Detailed letter of Award/Acceptance along with enclosures.

III. Bidding Document.

IV. Amendment/Corrigendum to Bidding Document issued, if any.

V. Fax/Letter of Acceptance.

The statement of agreed deviations shall be prepared based on the final terms and conditions and shall be enclosed alongwith Letter of Acceptance / Award and all correspondence and minutes of meeting held between the OWNER / NRL and the Contractor prior to the issue of Fax of Acceptance shall be treated as NULL AND VOID. Any deviation or stipulation made and accepted by the OWNER / NRL after the award of jobs, shall be treated as amendments to the contract documents.

40.0 A formal agreement shall be signed between OWNER / NRL and Contractor in the format given in GCC, in a non-judicial stamp paper of appropriate value. Payments for such jobs shall be made by OWNER / NRL only after signing this agreement by authorized representatives of OWNER / NRL and the Contractor. Cost of stamp paper shall be borne by the contractor. One original and two copies of contract documents shall be signed by the contractor and other copies shall be stamped. Original agreement on stamped paper shall be retained by OWNER / NRL and one signed copy each shall be given to EIL and the Contractor.

41.0 ENTRY PASSES,GATE PASSES AND SAFETY REGULATIONS:

Entry Passes

The Contractor shall follow regulations of OWNER / NRL and of concerned authorities for arranging entry passes for his workers and staff.

Gate Passes and Shipping Memos

To bring materials/ equipments/ tools/ tackles etc. inside any restricted area / plant, the Contractor has to produce challans/ proper documents to OWNER / NRL's personnel at gates. The materials shall be checked thoroughly by OWNER / NRL's personnel at Gate and recorded in their register before allowing any material to be brought inside the Plant by Contractor. It shall be Contractor's responsibility to ensure that the recorded entry no., date, signature of OWNER / NRL's authorised representative with stamp are recorded on challans/ supporting documents signed by OWNER / NRL's personnel at gate during entry. Shipping Memos issued by OWNER / NRL shall be preserved by Contractor and enclosed while returning the materials to OWNER / NRL.

Vehicle Permits

Permits are to be obtained separately for entry/ use of vehicles/ trailers etc. wherever required. The following requirements are to be met to obtain vehicle permit:

- Vehicle/ Equipment etc. should be brought to site in good condition.
- Valid Road tax certificate, fitness certificate and insurance policy from competent authority.

- Valid operating/ driving licence of driver/operator.
- Trailers used at site shall have valid RTO registration.
- Hydra with operating cabin behind the lifting boom is not allowed.

Regarding use of Vehicles:

Vehicles shall be allowed to run at any restricted area/plant after taking all safety measures with the permission of concerned authority of site. Vehicle must not ply on any road within the plant at speed exceeding 20 KM/hr. Mobile crane/ loaded trucks/ trailers must not exceed speed limit of 15 KM/hr inside the plant. No crane is allowed to move inside the plant with load. No vehicle is allowed to park inside the plant.

42.0 HEALTH, SAFETY AND ENVIRONMENT (HSE), MANAGEMENT

42.1 The Contractor shall adhere to requirement of established norms of health, safety and environment (HSE) management in line with **Annexure-VIII to SCC**. Contractors will be penalized for any violation of the HSE norms while executing the work.

42.2 Safety parameters to be followed by Contractor shall be as per **Annexure-XVI to SCC** and Contractor shall strictly adhere to the same,

42.3 The Contractor shall establish document and maintain an effective Health, Safety and Environment (HSE) management system.

43.0 STATEMENT OF FINAL BILLS – ISSUE OF NO DEMAND CERTIFICATE

The final bill of CONTRACTOR shall be accompanied by no-demand certificate from OWNER / NRL. The Contractor shall obtain such no-demand certificates from the concerned authorities of OWNER / NRL.

44.0 CONSTRUCTION POWER & WATER, LAND FOR CONSTRUCTION OF CONTRACTOR'S FIELD OFFICE, GO-DOWNS, WORKSHOP AND FABRICATION YARD

44.1 GCC clauses are modified to the following extent

I. WATER:

OWNER / NRL is not in a position to supply construction water. In view of this, Contractor shall be responsible for making all arrangements for construction water at his cost. Any statutory requirements/documentation etc. to this effect shall also be met by the Contractor. Non-availability of water due to any reason shall not entitle the Contractor for any claim against OWNER / NRL on account of cost and time implications.

II. POWER:

OWNER / NRL is not able to provide construction power. Contractor shall be responsible for making all arrangements for construction power at his cost. Any statutory requirements/documentation etc. to this effect shall also be met by the Contractor. Non-availability of Power due to any reason shall not entitle the Contractor for any claim against OWNER / NRL on account of cost and time implications.

III. LAND FOR CONSTRUCTION OF CONTRACTOR'S FIELD OFFICE, GO-DOWNS, WORKSHOP AND FABRICATION YARD:

- **For work to be executed in India**

OWNER / NRL may at his own discretion and convenience and for the duration of the execution of the WORK make available near the SITE on chargeable basis as per prevailing rate or free of cost, land for construction of CONTRACTOR' S field office, godowns, workshops and assembly yard required for the execution of the CONTRACT. The CONTRACTOR shall at his own cost construct all temporary buildings and provide suitable water supply and sanitary arrangement approved by the Engineer-in-Charge.

- **For work to be executed in Bangladesh**

  GOB shall assist to arrange office premises/ residential accommodation at or near the site(s) of Project execution. Rent of the said offices or residential accommodation including furnishing and telecommunications shall be borne by the Contractor(s).

  Security required for ensuring an environment conducive for execution of the Project by the Implementing firms and their teams at the project related sites shall be provided by GOB at no additional cost.

On completion of the WORK undertaken by the CONTRACTOR, he shall remove all temporary Works erected by him and have the SITE cleaned as directed by Engineer-in-Charge. If the CONTRACTOR shall fail to comply with these requirements the Engineer-in-Charge may at the expenses of the CONTRACTOR remove such surplus and rubbish materials and dispose of the same as he deems fit and get the SITE cleared as aforesaid and the CONTRACTOR shall forthwith pay the amount of all expenses so incurred and shall have no claims in respect of any such surplus material disposed of as aforesaid. But OWNER / NRL reserves the right to ask the CONTRACTOR any time during the pendency of the CONTRACT to vacate the land by giving seven (7) days notice on security reasons or on national interest or otherwise. If the contractor fails to clear/vacate the site and clean the debris the same shall be done by the Engineer-incharge engaging any agency and the cost incurred for doing so shall be recovered from bill/S.D or any other works.

45.0 INSURANCES

Comprehensive Insurance (Transit/ Marine cum storage, erection, till handing over of equipment) as applicable for permanent incorporation of materials and services shall be arranged by contractors as per clause no. 7.2.1 Section IV of OWNER / NRL's GCC.

46.0 INSURANCE

46.1 The Contractor shall at his own cost arrange, secure and maintain separate insurance cover from the reputable insurance companies, for all such amounts and for such periods as may be necessary to protect the works, Contractor and sub- contractor's personnel and the interests of the OWNER / NRL/EIL as per applicable laws of land.

46.2 The form and the limit of insurance cover taken by Contractor shall be satisfactory to OWNER / NRL/Consultant and one copy of all insurance policies and related documents shall be submitted to OWNER / NRL/Consultant, immediately on execution. Contractor shall inform OWNER / NRL /EIL at least 60 days before any insurance policies expire or are cancelled or changed.

47.0 FIXED AND FIRM PRICE

The contract prices shall remain fixed and firm & no escalation in price on any account shall be admissible to the Contractor until the completion of work except for statutory variation in taxes and duties mentioned in clause no. 49.0 below.

48.0 STATUTORY APPROVALS

48.1 All construction permissions / work permits are to be arranged by contractor by deploying dedicated liasioning team shall be deployed for each spread to obtain construction approval, digging permit & work permit from different jurisdiction bodies of ROW. Contractor shall obtain the necessary permits for all works from the authorities having jurisdiction before the actual execution of various phases of the works and all stipulations/ conditions/ recommendations of the said authorities shall be strictly complied with at no extra cost to OWNER / NRL. OWNER / NRL may, however, assist Contractor for obtaining such permissions, wherever required, by

issuing recommendation letters. Crossing permissions for Roads, Rivers, Railway lines, Canals, Field Channels, Streams, Nalas, Underground Utilities shall be arranged by OWNER/NRL at no extra cost to contractor.

48.2 The contractor shall seek necessary approval from EIC / OWNER / NRLs prior to commencement of excavation works for pipeline laying. The utilities such as OFC, HT & LT cable, water pipeline drainage and sewage lines, other member company's product and gas pipelines. shall necessarily be informed and excavation permit shall be obtained prior to commencement of job. The contractor shall execute job in such a manner that no utilities are damaged in process of pipeline laying, if damaged the contractor shall rectify the same at his own risk & cost. In congested urban/industrial areas where the exact location of the existing services (aboveground as well underground) are not known, the contractor shall contact the concerned authorities to get the permission to cross the existing utility including approval of the final alignment of the pipeline before commencement of work. Contractor shall obtain the Digging Permit from the respective authority.

49.0 TAXES AND DUTIES

49.1 Provisions mentioned in the General Conditions of Contract (GCC) shall stand modified to the following extent:

I. The quoted price shall be deemed to be inclusive of all taxes and duties except "Goods and Services Tax" (hereinafter called GST) and Taxes & duties applicable in Bangladesh except as specifically provided to the contrary in the Special Conditions of Contract.

II. Contractor shall within their quoted price be liable to pay and bear any and all duties, taxes, levies and cesses lawfully payable on any goods, equipment or materials imported into Bangladesh or within any local limits for permanent incorporation in the work(s), and on materials sold and supplied to the OWNER / NRL pursuant to the Contract.

III. The Contractor shall within their quoted price be liable to pay and bear any and all duties, taxes, levies and cesses lawfully payable on any Services for use in the performance of the work(s), and on services performed pursuant to the contract.

IV. In addition, the Contractor shall be responsible for payment of all applicable Indian duties, levies, and taxes assessable against the Contractor or Contractor's employees or Sub-contractor's whether corporate or personal or applicable in respect of property subject waivers, if any as mentioned elsewhere in this tender document.

V. The Contractor shall accept full and exclusive liability at his own cost for the payment of any and all taxes, duties, cesses and levies howsoever designated, as are payable to any government, local or statutory authority in any country other than India as are now in force or as are hereafter imposed, increased or modified and as are payable by the Contractor, his agents, Sub-contractors and Suppliers and its/their respective employees for or in relation to the performance of this Contract. **The Contractor shall be deemed to have been fully informed with respect to all such liabilities and shall further be deemed to have considered and included the same in his bid and the quoted Price shall not be varied in any way on this account**.

VI. Any errors of interpretation of applicability of taxes/ duties by the CONTRACTOR shall be to CONTRACTOR's account.

49.2 **Goods and Services Tax (GST): if applicable**

a) Contractor shall be required to issue tax invoice in accordance with GST Rules. In the event that the Contractor fails to provide the invoice in the form and manner prescribed under the GST Act read with GST Invoicing Rules thereunder, OWNER / NRL shall not be liable to make any payment on account of GST against such invoice.

b) GST shall be paid against receipt of tax invoice and proof of payment of GST to Government (or auto-population of input tax credit on GSTIN portal). In case of non-receipt of tax invoice

and/or non-payment of GST by the contractor/vendor (or non-auto-population of input tax credit on GSTIN portal), OWNER / NRL shall with hold the payment of GST.

c) GST payable under reverse charge for specified services or goods under GST act or rules, if any, shall not be paid to the Contractor but will be directly deposited to the Government by OWNER / NRL.

d) Where OWNER / NRL has the obligation to discharge GST liability under reverse charge mechanism and OWNER / NRL has paid or is liable to pay GST to the Government on which interest/penalty becomes payable as per GST law for any reason which is not attributable to OWNER / NRL or Input Tax Credit w.r.t. such payment is not available to OWNER / NRL for any reason which is not attributable to OWNER / NRL, then OWNER / NRL shall be entitled to deduct/set off /recover such amount against any amounts paid/payable by OWNER / NRL to contractor.

e) The contractor shall always comply with the requirements of applicable laws and provide necessary documents as prescribed under the rules and regulations, as applicable from time to time. In particular, if any tax credit, refund or any other benefit Is denied/delayed to OWNER / NRL due to any non-compliance/ delayed compliance by the contractor under the GST act (including but not limited to failure to upload the details of the sale on GSTN portal, failure to pay GST to the government or due to non-furnishing or furnishing of incorrect or incomplete documents, non-filing of GST return by the supplier), the vendor/ contractor shall be liable to reimburse OWNER / NRL for all such losses and other consequences including but not limited to the tax loss, interest and penalty. OWNER / NRL shall be entitled to recover such amount from the contractor/vendor by way of adjustment from the next invoice, encashment of PBG or by way of any other means.

f) TDS under GST, if applicable shall be deducted from contractors bills at applicable rates and a certificate as per rules for tax so deducted shall be provided to contractor.

g) The contractor will be under obligation for charging correct rate of tax as prescribed under the respective tax laws. Further the contractor shall avail and pass on benefits of all exemptions/concessions available under tax laws.

h) The contractor will be liable to ensure to have registered with the respective tax authorities and to submit self-attested copy of such registration certificates and the contractor will be responsible for procurement of material in its own registration (GSTIN).

i) OWNER / NRL will prefer to deal with registered supplier of goods/services under GST. Therefore, bidders are requested to get themselves registered under GST, If not registered yet. However, in case any unregistered bidder is submitting their bid and Reverse Charge Mechanism is applicable, their prices will be loaded with applicable GST of Bid Evaluation Methodology.

j) Any reduction in rate of tax on any supply of goods or services or the benefit of input tax credit shall be passed on to the recipient (i.e., NRL) by way of commensurate reduction in prices.

k) Bidders will be required to quote applicable tax rate (along with applicable SAC/ HSN Code) as per provisions of GST law for all the line items forming part of the enquiry. Any higher rate of tax actually invoiced in excess of quoted rate of tax (except in compliance with provisions of Statutory Variation clause) shall be adjusted in price.

l) E-way bills shall be issued by Contractor except in cases of direct imports by OWNER / NRL where e-way bill shall be issued by OWNER / NRL.

m) Note: Input credit of output GST shall not be considered for evaluation purposes (i.e., for arriving at L1 Bidder).

49.3 **STATUTORY VARIATIONS:**

No variation on account of taxes and duties, statutory or otherwise, shall be payable to Contractor except for the following:

1. Any statutory variation in GST or introduction of any new taxes/ levies pursuant to this contract till the contractual completion date shall be paid to contractor against submission of copy of relevant Govt. Notification and Tax Invoice. However, in case of delay beyond CCD , for reasons attributable to contractor/ vendor, introduction of any new taxes or levies and any increase in GST shall be borne by the contractor/ vendor, however decrease in GST shall be passed on to OWNER / NRL.

2. Basic Custom Duty & Social welfare surcharge: If after the due date of submission of last price bid and upto the 90% of contractual completion period (including extended contractual completion period for the reasons attributable to OWNER / NRL or due to Force Majeure condition), any increase/decrease occurs in the applicable rate of Basic Customs duty & Social welfare surcharge on materials imported, the variation in such Basic Customs duty & Social welfare surcharge shall be to OWNER / NRL's account and shall be adjusted (increase/decrease) to/from the Contractor's invoices based on the documentary evidence.

   Any increase in Basic Customs duty & Social welfare surcharge on materials imported after the 90% of the contractual time for completion / extended Time for Completion (due to reasons attributable to OWNER / NRL or due to Force Majeure) shall be to Contractor's account. However, any decrease in the rate of Basic Customs Duty & Social welfare surcharge on materials imported shall be passed on to OWNER / NRL.
   For calculating Statutory Variations ceiling amount as declared by the Bidder in price schedule shall only be considered.

   Note: Statutory variations on IGST (included in quoted prices) if applicable in case of imported materials from outside India in Contractor's name shall be to Contractor account.

49.4 **INCOME TAX:**

a. Indian resident supervisors/contractors/vendors

   Prices for site-work, contracts and other services of Indian vendors/contractors shall be inclusive of income tax.

   Tax shall be deducted at source by OWNER / NRL on all sums due in accordance with the provisions of Indian income tax act/rules as in force at the relevant point of time.
   OWNER / NRL shall issue a tax deduction certificate to the bidder evidencing the tax deducted or withheld and deposited by OWNER / NRL on payments made to the bidder to enable the bidder to claim the credit of Tax deducted by OWNER / NRL.

b. Personnel including technician brought in from India for the execution of the Project shall not be subject to local income tax of Bangladesh. The will also be exempt from other taxes and duties as mutually agreed upon, during their entire stay in Bangladesh.

49.5 **INVOICING METHODOLOGY W.R.T. TAXATION**

1. In case of tenders, vendor/ contractor shall bring material at site in their own name and Vendor/ Contractor shall be consignee. Invoice shall be raised by Vendor/ Contractor in the name of OWNER / NRL.

49.6 **APPLICABILITY OF TAX CREDIT**

Being Pipeline job outside factory premises, No Input Tax Credit of GST is available to OWNER / NRL.

49.7 EVALUATION METHODOLOGY W.R.T TAXES

Following shall be loaded for evaluation:

1. GST loading: output GST quoted by vendors/contractors shall be loaded for price bid evaluation.

49.8 TAXATION INPUTS FOR PIPELINE JOB IN BANGLADESH:

- **Service (Including Works Contract Service):**

Services by Indian Contractors: No GST in India shall be applicable in case location of supplier of service is outside India and place of supply is outside India in compliance with GST law in India.

National Board of Revenue (NBR), GOB shall exempt the products, payments and services for all supplies made by Government of India agencies and authorities under this project from all applicable duties (i.e. customs, taxes, levies, royalties, demurrages, VAT, all types of cess and other fiscal levies etc.) which may be imposed in Bangladesh. If not exempted, then shall be reimbursed by OWNER / NRL/ BPC against documentary evidence.

Services by Other than Indian Contractors: National Board of Revenue (NBR), GOB shall exempt the products, payments and services for all supplies made by Government of India agencies and authorities under this project from all applicable duties (i.e. customs, taxes, levies, royalties, demurrages, VAT, all types of cess and other fiscal levies etc.) which may be imposed in Bangladesh. If not exempted, then shall be reimbursed by OWNER / NRL/ BPC against documentary evidence.

Since, no tax is applicable in India in case of such services, no loading on account of GST shall be done.

- **Supplies:**

Supplies by Indian Entities: In this case OWNER / NRL will acts as merchant exporter and accordingly GST shall be applicable @ 0.10% subject to compliance to conditions mentioned in GST notification no. 40/2017- Central Tax (Rate) and 41/2017- Integrated Tax (Rate). The GST so applicable in India shall be loaded for the purpose of Price Bid Evaluation.

National Board of Revenue (NBR), GOB shall exempt the products, payments and services for all supplies made by Government of India agencies and authorities under this project from all applicable duties (i.e. customs, taxes, levies, royalties, demurrages, VAT, all types of cess and other fiscal levies etc.) which may be imposed in Bangladesh. If not exempted, then shall be reimbursed by OWNER / NRL against documentary evidence.

Supplies by other than Indian Entities: No GST shall be applicable in India. National Board of Revenue (NBR), GOB shall exempt the products, payments and services for all supplies made by Government of India agencies and authorities under this project from all applicable duties (i.e. customs, taxes, levies, royalties, demurrages, VAT, all types of cess and other fiscal levies etc.) which may be imposed in Bangladesh. If not exempted, then shall be reimbursed by OWNER / NRL against documentary evidence.

49.9 **BUILDING AND OTHER CONSTRUCTION WORKER'S ACT**

a) In order to govern welfare and working conditions of labourers engaged in construction activities, the Building and other Construction Workers' (Regulation of Employment and Conditions of Service "RE &CS") Act, 1996 came into force. RE&CS Act'1996 is applicable in respect of building and other construction work. Wherever applicable, The CONTRACTOR shall strictly comply with the following provisions pertaining to RE &CS Act'1996

b) The CONTRACTOR must be registered with the concerned authorities under the Building and Other Construction Workers' (RE&CS) Act, 1996 or in case of non-registration; the CONTRACTOR should obtain registration within one month of the award of contract.

c) The CONTRACTOR shall be responsible to comply with all provisions of the Building and Other Construction Workers' (RE&CS) Act, 1996, the Building and Other Construction Workers' Welfare Cess Act, 1996, the Building and other Construction Workers' (RE&CS) Rules, 1998 and the Building and Other Construction Workers Welfare Cess Rules, 1998.

d) Cess as per the prevailing rate, shall be deducted at source from bills of the CONTRACTOR by the engineer-in-Charge of the contract and remitted to the "Secretary, Building and Other Construction Workers Welfare Board" of the concerned State. The SUB-CONTRACTOR shall be responsible to submit final assessment return of the cess amount to the assessing officer after adjusting the cess deducted at source.

e) Notwithstanding the foregoing, OWNER / NRL shall not bear any liability in respect of:

- Personal taxes on the personnel deployed by the CONTRACTOR, his SUB-CONTRACTOR(s) and Agent(s) etc.
- The Corporate Taxes in respect of CONTRACTOR and his Sub-Contractor and other Agents, Indian or foreign based.
- Any other taxes/ duties/ levies.

Above shall be followed as applicable.

50.0 WITHHOLDING, ACCOUNTING AND TAX REQUIREMENTS

The CONTRACTOR shall withhold from wages and salaries of its agents, servants or employees all sums required to be withheld by the laws of India, and to pay the same promptly and directly when due to the proper authority (ies). The CONTRACTOR further agrees to comply with all accounting and reporting requirements under the laws of India, and to pay and bear the cost of such compliance. Upon request by the OWNER / NRL, the CONTRACTOR will furnish OWNER / NRL evidence of payment of applicable withholding taxes in India & Bangladesh.

51.0 CONDITIONS FOR ISSUE AND RECONCILIATION OF MATERIALS

51.1 Free Issue Materials (FIM) if any shall be issued as per terms and conditions set forth in the General Conditions of Contract (GCC) and SCC from OWNER / NRL's stores or other issue points of OWNER / NRL. The contractor shall, if desired by the Engineer-in-Charge, be required to execute an indemnity bond for safe custody and accounting of all materials issued by the OWNER / NRL. Refer **Annexure – XI:** "Conditions for issue and Reconciliation of material".

51.2 Every month, Contractor shall submit an account for all materials issued by OWNER / NRL in the proforma prescribed by the Engineer-in-Charge. On completion of work the Contractor shall submit "Material Appropriation Statement" for all materials issued by the OWNER / NRL.

51.3 Wherever materials are under Contractor's scope of supply whether part or in full for any item of work covered under SOR, no allowances towards wastage/scrap etc. shall be accounted for.

52.0 WORKS CONTRACT

The entire work as per Scope of Work covered under this contract shall be treated as **"Indivisible Works Contract"**.

53.0 SETTING OUT OF WORK

The Engineer-in-Charge shall furnish the relevant existing grid point with Bench Mark, on the land. It shall be CONTRACTOR'S responsibility to set out the necessary control points in and to set out the alignment of the various works. The CONTRACTOR shall employ an efficient survey team for this purpose and the accuracy of such setting out works shall be the CONTRACTOR'S responsibility.

The CONTRACTOR shall give the Engineer-in-Charge not less than 24 (Twenty four) hours notice in writing of his intention to set out or give levels for any part of the work so that arrangements may be made for checking the same.

Work shall be scheduled so as to enable checking lines and levels on any part of the work.

The CONTRACTOR shall entirely responsible for horizontal and vertical alignment, the level and correctness of every part of the work and shall rectify any errors or imperfections therein. The CONTRACTOR at his own cost shall carry out such rectifications, when instructions are issued to this effect by the Engineer-In-Charge or his representative.

The CONTRACTOR shall within the scope of work provide all assistance, tools, gauges and instruments required to enable the Engineer-in-Charge to check the setting out of works.

54.0 SITE CLEANING

54.1 The CONTRACTOR shall clean and keep clean the work site from time to time to the satisfaction of the Engineer- in-Charge for easy access to work site and to ensure safe passage, movement and working.

54.2 If the work involves dismantling of any existing structure in whole or part, care shall be taken to limit the dismantling upto the exact point and/or lines as directed by the Engineer-in-Charge and any damage caused to the existing structure beyond the said line or point shall be repaired and restored to the original condition at the Contractor's cost and risks to the satisfaction of the Engineer-in-Charge, whose decision shall be final and binding upon the CONTRACTOR.

54.3 The CONTRACTOR shall be the custodian of the dismantled materials till the Engineer-in-Charge takes charge thereof.

54.4 The CONTRACTOR shall dispose off the unserviceable materials, debris etc. to area within Project Site/ other areas as directed by the Engineer-in-Charge.

54.5 The CONTRACTOR shall sort out, clear and stack the serviceable materials obtained from the dismantling/ renewal at places as directed by the Engineer-in-Charge.

54.6 No extra payment shall be paid on this account. The rates quoted in SOR are deemed to be inclusive of all the costs towards all the above activities as well.

55.0 ISSUE OF OWNER / NRL SUPPLIED MATERIAL

55.1 All materials, if any, issued by OWNER / NRL shall be issued for incorporation in permanent works only and shall not be used for any temporary or ancillary works. These materials shall be issued to the Contractor from the designated point specified in the Bidding Document. Contractor shall be responsible, at his own cost, for lifting of the materials from OWNER / NRL's issue points and transportation as per scope of Bidding Document.

55.2 The reconciliation of material shall be applicable only for the material issued by OWNER / NRL as free issue to Contractor and monthly reconciliation statement shall be submitted by Contractor along with the RA Bill.

56.0 COMPUTERISED CONTRACTOR'S BILLING SYSTEM

Without prejudice to stipulation in General Conditions of Contract, CONTRACTOR should follow following billing system:

The bills will be prepared by the CONTRACTOR on their own PCs as per the standard formats and codification scheme proposed by OWNER / NRL. The CONTRACTOR will be provided with data entry software to capture the relevant billing data for subsequent processing, if available. CONTRACTOR will submit these data to OWNER / NRL in an electronic media along with the hard copy of the bill, necessary enclosures and documents.

The CONTRACTOR will also ensure the correctness and consistency of data so entered with the hard copy of the bill submitted for payment.

OWNER / NRL will utilize these data for processing and verification of the CONTRACTOR's bill.

57.0 CERTIFICATE OF VERIFICATION & GOOD CONDITION

The CONTRACTOR shall before supply of material covered within the scope of supply at his own risks, cost and initiative undertake or cause to be undertaken all tests, analysis and inspections as shall be required to be undertaken with regard to the materials under the specifications and any codes, practices, orders and instructions with respect thereto and cause the results thereof to be recorded, reported or certified, as the case may be, and shall not offer for delivery or deliver any material which has not passed such tests/analysis or Inspection and which are not accompanied by the test results, reports and/or certificates in this behalf provided in the applicable specifications, code(s) and or practices.

On arrival of the material at site the CONTRACTOR shall give a written notice thereof to the Engineer-in-charge and Site engineer or Inspection Agency notified by the OWNER / NRL in this behalf to inspect the materials, and shall keep in readiness for the inspection the materials and the relevant test results, reports and certificates applicable thereto.

Notwithstanding any other provisions in the Contract documents for analysis or tests of materials and in addition thereto, the CONTRACTOR shall if so required by the Engineer-in-charge or site Engineer/Inspection Agency in writing at its own risks and costs, analysis, test, prove and/or weigh all materials (including incorporated materials) required to be analysed, tested, proved and/or weighed by the Engineer- in-Charge or site Engineer/Inspection Agency and shall have such analysis/test conducted by the Agency(ies) or Authority(ies) if any, specified by the Engineer-in- Charge or site Engineer/Inspection Agency. The CONTRACTOR shall provide all equipment, labour, materials and other things whatsoever required for testing, preparation of the samples, measurement and/or proof of weighment of the material as directed by the Engineer-in-Charge or site Engineer/Inspection Agency.

If on inspection or proof, analysis or tests as aforesaid or otherwise the Engineer-in- Charge or site engineer/Inspection Agency nominated by the OWNER / NRL in this behalf is prima-facie satisfied that the material received is in conformity with the material requirements of the Bill of Materials, the description given in the shipping documents and in the CONTRACTOR'S invoices in this behalf and that the test reports/results/Certificates given in respect thereof are prima-facie in conformity with the relevant result(s), report(s), certificate(s) required in respect thereof in terms of the specifications and/or relevant codes and practices, and that the material appears to be prima-facie in good order and condition, the Engineer-in-charge shall issue to CONTRACTOR a Certificate of Verification and Good Condition in respect of such material, and this shall constitute the Certificate of Verification and Good Condition which is envisaged in the Contract documents.

Such certificate is only intended to satisfy the OWNER / NRL that prima-facie the material

supplied by the CONTRACTOR is in order and shall not otherwise absolve the CONTRACTOR of his/its full responsibility under the contract in relation thereto, including in relation to specification fulfilment and/or performance or other guarantees.

58.0 CONSTRUCTION

The CONTRACTOR shall within the scope of work observe in addition to specifications, all national and local laws, ordinances, rules and regulation and requirements pertaining to the work.

Various procedures and methods to be adopted by CONTRACTOR during the construction as required in the respective specifications shall be submitted to OWNER / NRL in due time and well in advance of the specific work for approval.

The CONTRACTOR shall carry out required supervision as per Quality Assurance Plan and furnish all assistance required by the OWNER / NRL in carrying out inspection work. The OWNER / NRL will have authorised representatives present who shall have free access to the work at all times. If an OWNER / NRL's representative notifies the CONTRACTOR'S representative of any deficiency in any work or in the supervision thereof, the CONTRACTOR shall make every effort to carry out such instructions consistent with best industry practice.

59.0 GENERAL GUIDELINES DURING AND BEFORE ERECTION

The CONTRACTOR shall be responsible for organising the lifting of the equipment in the proper sequence for orderly progress of the work and to ensure that access routes for erecting the other equipments are kept open.

Orientation of all foundations, elevations, lengths and disposition of anchor bolts and diameter of holes in the supports and saddles shall be checked by the CONTRACTOR well in advance of the installation. Rectifications, including chipping of foundations, shall be carried out where necessary in consultation with the Engineer-in-Charge. If a structural member needs to be dismantled to facilitate the equipment erection, this shall be done by the CONTRACTOR after ensuring proper stability of the main structure in consultation with the Engineer-in-Charge. All such dismantled members shall be put back in position to the satisfaction of Engineer-in- Charge after the completion of the equipment erection.

During the performance of the Work the CONTRACTOR shall at his own cost keep structures, materials and equipment adequately braced by guys, struts or other approved means which shall be supplied and installed by the CONTRACTOR as required till the installation 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 the CONTRACTOR or other agencies.

The CONTRACTOR shall duly comply with manufacturer(s) recommendations and detailed specifications for the installation of the various equipment and machines.

Various tolerances required as marked on the drawings and/or in accordance with the specifications and/or instructions of the Engineer-in-charge shall be maintained. Verticality shall be verified with the Theodolite and shall be maintained.

60.0 ERECTION OF EQUIPMENT

All erection shall be carried out by deploying a crane(s) of suitable capacity. Erection by derrick shall not be permissible. The CONTRACTOR shall submit erection schemes for erection of critical equipments to Engineer-in-Charge for his approval. No equipment shall be erected in the absence of an approved erection scheme for such equipment.

Bamboo scaffolding for construction activities are not allowed, Contractor shall use Metallic

Pipes for scaffolding.

The quoted rates of the CONTRACTOR shall be deemed to include load testing of the crane as required to establish the lifting capacity of the crane.

61.0 **SUB-CONTRACTING-**

In case the contractor intends to sub contract a part of work, he shall submit to the OWNER / NRL for approval, the details of Sub-contractor as per Annexure – XV of this SCC. CONTRACTOR shall ensure that very competent and resourceful agencies with proven track record and performance should be proposed for the work to be sub-contracted.

Engagement of subcontractor should comply with laid down provisions of NRL GCC also.

All contractual obligations/financial transaction shall be done with main Contractor only.

62.0 **REQUIREMENT OF EMPLOYEMENT VISA FOR FOREIGN NATIONALS**

All foreign nationals coming to Bangladesh for execution of Projects/Contracts will have to apply for Employment Visa only and that grant of Employment Visa would be subject to strict adherence of following norms:

i) Employment Visa is granted only for the skilled and qualified professionals or to a person who is being engaged or appointed by a Company, Organisation, Industry or Undertaking etc. in Bangladesh on contract or employment basis at a senior level, skilled position such as technical expert, senior executive or in managerial position etc.

ii) Under no circumstances an Employment Visa is granted for routine, ordinary secretarial / clerical jobs.

Bidders are advised in their own interest to check latest Visa rules from Indian Embassy / High Commission in their country in case foreign nationals are required to be deputed to Bangladesh during execution of the Contract.

63.0 **ABNORMALLY HIGH UNIT RATES/ LOW UNIT RATES ITEMS (AHR/ALR ITEMS)**

In item rate contract where quoted rate is above (+)/ below (-) 50% (Fifty percent) of estimated rate, such items quoted by successful bidder will be considered as Abnormally High Rate/ Low rate (AHR/ ALR) Items. OWNER / NRL reserves the right to negotiate rates of AHR items before award of work and accordingly bidder shall provide the analysis of rate quoted for AHR/ALR items to justify the reasonability, if requested by OWNER / NRL. Bidder shall confirm acceptance to the reduced item rate agreed during negotiation. Payment for AHR items shall be based on the agreed rates.

The Contractor shall obtain prior permission from OWNER / NRL/Engineer-In-Charge before executing the excess quantities of these Item(s) of SOR, in case the quantities against such items exceed the specified quantities mentioned in SOR during execution of work.

64.0 **SUPPLY OF STEEL & CEMENT**

The contractor shall purchase Steel and Cement from the approved manufacturer or their stockiest as mentioned in **Annexure-XIV to SCC**.

65.0 **ROYALTY & RENT**

65.1 All royalties etc., as may be required for any Borrow Areas, including right of way etc. to be arranged by CONTRACTOR shall be deemed to have been included in the quoted prices.

Unless otherwise specified, the CONTRACTOR shall pay all tonnage and other royalties, rents and other payments or compensation (if any) for getting stone, sand, gravel, clay, bricks or other materials required for the works or any temporary works.

65.2 CONTRACTOR's quoted prices should include the royalty on different applicable items as per the prevailing State Government rates. Any increase in prevailing rate of royalty shall be borne by the CONTRACTOR at no extra cost to OWNER / NRL.

66.0 **LIABILITY OF GOVERNMENT OF INDIA**

66.1 It is expressly understood that Govt. of India is not a party to this Contract and has no liability, obligations or rights hereunder. It is expressly understood that OWNER / NRL is an independent legal entity with power and authority to enter into the Contract solely on its behalf under the Applicable Laws and general principles of contract law.

66.2 The Contractor expressly agrees and acknowledges and understands that OWNER / NRL is not an agent, representative or delegatee of Government of India.

67.0 **ELECTRICAL WORKS**

67.1 Subject to provisions of the General Conditions of Contract, the inspection and tests as required under Indian Electricity Rules-1956 and prescribed in I.S.732 (Part-III) – 1982 or the latest as applicable shall be conducted.

67.2 All tests clearances and certificates required by the State Government authorities for energising/ commissioning the electrical system laid by the Contractor shall be obtained by the Contractor at his costs and initiative, for which the Contractor shall perform such tests and undertake such rectification and/ or changes as may be required.

67.3 The CONTRACTOR shall have a valid electrical contractor's license for working in the State where the site is located. The Contractor shall furnish a copy of the same to Engineer-in-Charge before commencement of any electrical work or work pertaining to Electrical System. No electrical work or work pertaining to electrical system(s) shall be permitted to be executed without a valid Electrical Contractors License being produced by the CONTRACTOR.

67.4 No electrical work or work pertaining to electrical system(s) shall be permitted to be executed without a valid electrical contractor's license being produced by the Contractor or Sub-Contractor, as the case may be, intending to execute the work.

68.0 **CALIBRATION REQUIREMENTS OF MONITORING AND MEASURING DEVICES AT CONSTRUCTION SITES**

Contractor to follow "Calibration Requirements of Monitoring and Measuring Devices at Construction Sites" as per **Annexure – XVII** enclosed herewith.

69.0 **GENERAL REQUIREMENTS FOR RADIOGRAPHY & OTHER NDT**

69.1 CONTRACTOR shall appoint radiography/ NDT agency (ies) only after acceptance of such agency(ies) by OWNER / NRL/EIL. However, acceptance of radiography/ NDT agency by OWNER / NRL/EIL shall not absolve the CONTRACTOR of his responsibility to execute radiography work as per requirements of the Contract.

69.2 CONTRACTOR shall mobilize Radiography/ NDT agency at site along with adequate number of radiography resources/ NDT equipments & appliances, commensurate with the welding activity and quantum of Radiography/ NDT work load to avoid delays in Radiography/ NDT and consequent generation of back log. In the event of generation of back log leading to Delay/ Holdup of subsequent, activities OWNER / NRL/EIL has right to engage additional agency for carrying out the radiography at the risk and cost of CONTRACTOR including 100% overhead charge.

69.3 Date and extent of mobilization of radiography/ NDT agency/resources shall be agreed by the CONTRACTOR and the Engineer-in-Charge at the start of work.

Radiography Check Shots

a) To verify that radiographs are being taken on the prescribed / selected welds / spots only, 5% of already radiographed spots shall be selected by the Engineer-in-Charge or his designated person for check shots. The check shots shall be taken up before any further radiography work.

b) The CONTRACTOR will be paid for the check shots at the quoted price if no variation is found. If mismatch / variation is found in any of the check shot as per para a) above, CONTRACTOR shall have to take re-radiography of the entire lot represented by mismatched check shot (a days production or more as decided by Engineer In-Charge). In such cases, no payment will be made for the check shots as well as the re-radiography of the entire lot represented by the check shot.

c) In the event of any non-matching / variation is observed in re-radiography of the entire lot as per para b) above with reference to the earlier radiographs taken, the radiography agency shall be forthright debarred from site. CONTRACTOR shall then carryout re-radiography up to maximum of 100% of all the prescribed / selected welds/ spots radiographed by the debarred radiography agency (as per direction of the Engineer In-Charge) at his own cost by engaging a separate Radiography agency acceptable to OWNER / NRL/EIL. The process for verification of radiographs through check shots shall be continued as per clause a) above from the lots selected by the Engineer In- Charge till 2 (two) consecutive lots are found with matching check shot radiographs to the satisfaction of EIL/ OWNER / NRL.

69.4 All details shall be as per Technical Part of bidding document. In case of contradiction, technical part shall prevail.

70.0 WAREHOUSING

In line with requirements specified in GCC and specifications, material shall be properly stored by Contractor in his warehouse to enable easy traceability, handling and preservation with all material having proper identification marks, colour coding etc. In case Contractor fails to follow the specified requirements, next payment due to the Contractor shall not be released till he complies with all the requirements.

71.0 PIPES FOR AUT AND WELDING QUALIFICATION

Contractor for the purpose of qualification of procedures for ultrasonic testing, welding procedures and operators may use pipes issued by Employer/Consultant. However, accounting of such pipes shall be done within the unaccountable wastage and scrap limits provided in standard conditions for issue and reconciliation of material enclosed with the Bidding Document.

The bare pipes for the purpose as above shall be issued to the contactor as per the detailed schedule finalized in Kick-off meeting. The Contractor shall bear all cost towards lifting, carting from issue points to work site/ contractor's store, custody, handling, insurance & levies etc. and return of surplus/ scrap materials to Employer's designated storage points. No separate payment shall be made for such expenditure.

72.0 REPAIR OF PIPE DEFECTS

72.1 Immediately prior to aligning pipe for welding, the bevelled ends of each joint of pipe and the area immediately adjacent thereto (at least 25mm from the edge on the inside and outside of the pipe) shall be thoroughly cleaned of paint, rust, mill scale, dirty or other foreign matter by use of power drive wire buffing wheels, disc sanders, or by other methods approved by Employer/Consultant. This shall be done at no extra cost to Employer/Consultant.

72.2 All damaged ends of pipe that are bent, cut or otherwise mutilated to such an extent that in the opinion of the Employer/Consultant, faulty alignment or unacceptable welding would result, shall be repaired or cut-off and rebevelled to the correct angle with a bevelling machine of a type approved by Employer/Consultant. No compensation shall be allowed by reason of such re-cutting or bevelling, except when required because of the original bevel being damaged before the pipe is "taken over" by Contractor.

72.3 Dents in bevels with a depth of less than 1 mm shall be removed by Contractor during cleaning and grinding, ahead of the welding in the field. Contractor shall rebevel dented bevel ends with a depth between 1 and 3 mm. Dents over 3mm depth shall be repaired by cutting and rebevelling.

72.4 All details shall be as per Technical Part of bidding document. In case of contradiction, technical part shall prevail.

73.0 **STORAGE FACILITIES**

73.1 The Contractor shall maintain wherever required an air-conditioned room for the storage of the instruments as well as for calibration and testing of the instruments at his own cost, if required as per the technical part of the Bidding Document. The Contractor shall provide these facilities within the quoted price.

74.0 **HYDROSTATIC TESTING**

74.1 The bidder as per the Technical specification along with their offer taking into account the completion schedule shall furnish the detailed procedure proposed for the hydrostatic testing of pipeline. The necessary piping, pumps etc. shall be provided by the contractor. The final disposal of water after testing shall be contractor's responsibility and should be in such a way that neither the traffic movement even pedestrians nor the standing crop in nearby fields gets affected. Suitable drains shall be provided for this purpose as directed by the Engineer-in-Charge within the contracted prices.

74.2 The Contractor will carry out the hydrostatic test for the entire section of pipeline including preparation for test and without any time and cost implication on this account to Employer/Consultant.

75.0 **SUBMISSION OF COLOURED PHOTOGRAPHS & VEDIO**

75.1 The contractor shall submit to Engineer in charge, coloured photographs (hard copy as well as digital format) taken through digital camera (have resolution > 1 megapixel) of various construction activities/operations at regular intervals. Size, number and frequency of the photographs shall be mutually agreed upon between the Contractor and Engineer in Charge. The contract shall make video recordings of all operations right from the start of the construction till the completion of the work, covering to the extent as instructed by Engineer in charge and submit to Engineer In Charge. The recordings shall be made progressively as construction advances. Upon completion of the work, the contractor shall submit the recordings in CD/DVD or any other format specified by the Engineer in Charge. The duration of each video recording shall be of ½ hour (unless specified otherwise) and shall cover all major aspects of the job.

76.0 **DISPOSAL OF EMPTY OFC CABLE DRUM**

76.1 Disposal of the empty drum of OFC cable shall be the responsibility of the Contractor. Failure to do so, Employer/ Consultant shall recover Rs 500/- per drum from contractor’s bill.

77.0 **FORCE MAJURE:**

77.1 Clause 4.8 of Section-IV of GCC stands modified as mentioned below:

77.2 Neither Party is responsible for any failure to perform its obligations under the Contract, if it is prevented or delayed in performing those obligations by an event of Force Majeure.

77.3 An event of Force Majeure is an event or circumstance which is beyond the control and without the fault or negligence of the party affected ("Affected Party") and which by the exercise of reasonable diligence the Affected Party was unable to prevent and which is not caused or contributed by the Affected Party, provided that event or circumstance is limited to the following:

(a) act of terrorism;

(b) riot, war, invasion, act of foreign enemies, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection of military or usurped power;

(c) ionising radiation or contamination, radio activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive assembly or nuclear component;

(d) epidemics, earthquakes, flood, fire, hurricanes, typhoons or other physical natural disaster, but excluding weather conditions regardless of severity; and

(e) freight embargoes, strikes at national or state-wide level or industrial disputes at a national or state-wide level in any country where Works are performed, and which affect an essential portion of the Works but excluding any specific to the performance of the Works or the Contract.

For the avoidance of doubt, inclement weather, third party breach, delay in supply of materials (other than due to a nationwide transporters' strike) or commercial hardship shall not constitute a Force Majeure event.

77.4 Where there is an event of Force Majeure, the Affected Party must notify the other Party in writing as soon as possible and in any event within [10(ten)] days of becoming aware of or the date it ought to have become aware of the occurrence of an event of Force Majeure giving full particulars of the event of Force Majeure and the reasons for the event of Force Majeure preventing the Affected Party from, or delaying the Affected Party in performing its obligations under the Contract. The Affected Party must use its reasonable efforts to mitigate the effect of the event of Force Majeure upon its performance of its obligations under the Contract and notify the other party of the measures being taken to mitigate the effect(s) of the event of Force Majeure.

77.5 Upon completion of the event of Force Majeure the Affected Party must as soon as reasonably practicable recommends the performance of its obligations under the Contract. Where the Affected Party is the Contractor, the Contractor must provide an amended Works Programme rescheduling the Works to minimize the effects of the prevention or delay caused by the event of Force Majeure.

77.6 An event of Force Majeure does not relieve a party from liability for an obligation which arose before the occurrence of that event, nor does that event affect the obligation to pay money in a timely manner which matured prior to the occurrence of that event.

77.7 The Contractor has no entitlement and OWNER / NRL has no liability for:

(a) any costs, losses, expenses, damages or the payment of any part of the Contract Price during an event of Force Majeure; and

(b) any delay costs in any way incurred by the Contractor due to an event of Force Majeure.

77.8 If an event of Force Majeure occurs and its effect continues for a period of 178 (one hundred

eighty days or more in a continuous period of 365 (three hundred sixty five) days after notice has been given under this Clause, either Party may terminate the Contract by issuing a written notice of 30 (thirty) days to the other Party.

77.9 In the event that the Parties are unable to agree in good faith about the existence or occurrence of a Force Majeure event, such dispute shall be finally settled in accordance with the dispute resolution mechanism provided herein; provided however that the burden of proof as to the occurrence or existence of such Force Majeure event shall be upon the Party claiming relief on account of such Force Majeure event.

78.0 TERMINATION

78.1 TERMINATION FOR CONVENIENCE

OWNER / NRL shall, in addition to any other right enabling it to terminate the Contract, have the right to terminate the Contract at any time by giving prior written notice of at least 14 (fourteen) days to the Contractor. Such termination shall be without prejudice to the rights of the Parties that have accrued on or before the date of termination of the Contract.

78.2 TERMINATION DUE TO CONTRACTOR'S DEFAULT

The Contract may be terminated by OWNER / NRL, at its sole and absolute discretion, upon the occurrence of any of the following events/acts committed by the Contractor (each a "Contractor's Event of Default") by issuing a notice to the Contractor, stating the intention of OWNER / NRL to terminate the Contract:

a) fails to complete Mobilisation within the Time for Mobilisation;
b) commits a material breach of its obligations under the Contract;
c) abandons or repudiates the Contract or suspends the execution of the Works during the subsistence of any Dispute under the Contract;
d) fails to adhere to the Specifications and/or Variations in terms of the Contract;
e) the Contract Price is reduced to the maximum extent specified in GCC, yet the delay in respect of which the reduction was made continues to subsist;
f) a petition for the winding up of the Contractor has been admitted and a liquidator or provisional liquidator has been appointed or an order of bankruptcy or an order for the winding up or dissolution of the Contractor has been made by a Court of competent jurisdiction, except voluntary change in partnership/ constitution of Contractor's organization (if a partnership/ Company) or liquidation for the purpose of amalgamation or reconstruction subject to OWNER / NRL's acceptance to continue the Contract with the re-constituted firm/ company.
g) Contractor fails to replace or remedy Defective Work pursuant as per GCC;
h) Contractor's liability for compensation reaches 10 % (ten percent) of the Contract Price and the Defect for which the compensation are/were charged continues to exist;
i) gives any warranty or makes any representation under the Contract which is found to be false or misleading;
j) fails to furnish or renew the Contract Performance Bank Guarantee;
k) fails to obtain and maintain insurance in accordance with its obligations under the Contract; or
l) commits any default under any Applicable Law.

78.3 **If** the Contractor fails to remedy or rectify the default stated in the notice issued by OWNER / NRL under Clause 78.2 within 30 (thirty) days of receipt of such notice, OWNER / NRL shall be entitled to terminate the Contract by issuing a termination notice and expel the Contractor

from the Site (but without thereby releasing the Contractor from any of its obligations or liabilities under the Contract, or affecting the rights and powers conferred on OWNER / NRL under the Contract up to the date of termination). However, in case of events specified in Clause 78.2 (c) and (f), OWNER / NRL shall be entitled to immediately terminate the Contract without giving any notice to the Contractor.

78.4 **PROCEDURE ON TERMINATION**

78.4.1 Upon termination of the Contract under Clause 78.3:

a) OWNER / NRL may complete the Works and/or arrange for other entities to do so at the risk and Cost of the Contractor. OWNER / NRL and its entities may then use the access roads, the Contractor's Documents and all other facilities made by or on behalf of the Contractor;

b) Call upon the whole or such portion of the Contract Performance Bank Guarantee amount as OWNER / NRL may consider fit;

c) Recover from the Contractor the cost of carrying out the balance Works in excess of the sum which the Contractor would have been paid according to the Final Bill, if the Works had been carried out and completed by the Contractor under the terms of the Contract. The amount to be recovered may be deducted by OWNER / NRL from any amount due to the Contractor under the Contract. Any amount outstanding to OWNER / NRL under this Clause 78.4.1 (c) shall be recovered from the Contractor as a debt due;

d) Enter upon the Site and expel the Contractor. OWNER / NRL may, to the exclusion of any right of the Contractor, take over and use, without payment to the Contractor, any Contractor’s Equipment, materials, goods, machinery or other items which are on the Site in connection with the Works for any reasonable period as OWNER / NRL considers necessary for the performance and completion of the Works.

78.4.2 Upon termination of the Contract under Clause 78.3, the Contractor must either immediately or upon any date as is specified in the notice of termination:

a) cease all further work, except for any work OWNER / NRL may specify in the notice of termination;

b) terminate all Subcontracts, except those to be assigned or novated to OWNER / NRL in accordance with paragraph (d) below;

c) deliver to OWNER / NRL the parts of the Works performed by the Contractor up to the date of termination;

d) to the extent legally possible assign or novate to OWNER / NRL all right, title and benefit of the Contractor to the Works as at the date of termination, and, as may be required by OWNER / NRL, in any subcontracts between the Contractor and its Subcontractors;

e) subject to Clause 78.4.1(d), remove all Contractor's Equipment, surplus materials, scaffolding from the Site, dismantle and remove its Site offices and quarters and other Temporary Works and structures and repatriate the Contractor's Personnel from the

Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition; and

f) deliver to OWNER / NRL all documents prepared by the Contractor in connection with the Works as at the date of termination.

Should the Contractor fail to comply with the provisions of sub-Clause (e) above, OWNER / NRL shall have the right, at the sole risk and Cost of the Contractor, to clear the Site of all rubbish, scaffolding, surplus materials, Contractor's Equipment, machinery, dismantle and remove the Contractor's Site offices and other Temporary Works and store, sell, dispose of and/or otherwise deal with any of the above and the Contractor shall forthwith on demand pay OWNER / NRL the costs and expense incurred by OWNER / NRL in this regard with an additional amount equivalent to 15% (fifteen percent) of such costs and expenses to cover OWNER / NRL's overheads. OWNER / NRL shall have the right to recover such amounts from: (i) the proceeds of any sale of disposal of the Contractor's Equipment, machinery, surplus materials, Temporary Works or other items removed from the Site; and (ii) any amounts due to the Contractor under the Contract.

Nothing contained in this Clause or otherwise in the Contract shall constitute OWNER / NRL as a trustee or bailee for or in respect of any of the Contractor's Equipment, surplus materials, machinery or other items or things removed, cleared, demolished or dismantled as mentioned above and OWNER / NRL shall not be bound by any duty of care in respect thereof.

78.4.3 Notwithstanding anything contained in Clause 78.4.2 above, upon termination of the Contract, OWNER / NRL may require the Contractor to:

(a) complete or take to an intermediary stage of completion any item of the Works already commenced by the Contractor; and

(b) take such steps as are considered necessary by the Engineer-in-Charge for properly protecting and securing the Works already completed by the Contractor.

78.5 PAYMENT ON TERMINATION

78.5.1 If the Contract is terminated under Clause 77.0 above or 78.1 above, the Contractor is entitled to be paid:

(a) the Contract Price attributable to the Works performed as at the date of termination, or in the case of a termination under 77.0 above, the commencement of the relevant event of Force Majeure; and

(b) the costs, if any, necessarily incurred in performing the work (if any) specified in the notice of termination issued by OWNER / NRL under Clause 30.0 above or as instructed by OWNER / NRL pursuant to Clause 78.4.3 above; and

(c) if the Contract is terminated in accordance with Clause 30 above, additionally (but without duplication):

(i) the costs reasonably incurred by the Contractor in terminating any subcontracts as a result of the termination of the Contract; and

(ii) the costs reasonably incurred by the Contractor in the repatriation of the Contractor's and the Subcontractor's employees,

less the aggregate of all previous payments allocated to the Works. Any sums due to OWNER / NRL from the Contractor accruing prior to the date of termination or the commencement of the relevant event of Force Majeure (as the case may be) will be deducted from the amount to be paid to the Contractor under the Contract. If, as a result of any such deductions, there is a negative amount payable to the Contractor, then the Contractor must pay an amount equal to that negative sum to OWNER / NRL within 15 (fifteen) days of OWNER / NRL raising an invoice for that amount.

The Contractor agrees and acknowledges that payment of termination compensation in terms of this Clause 78.5.1 shall be the sole and exclusive liability of OWNER / NRL and the sole and exclusive remedy of Contractor, with respect to a termination of the Contract under Clause 78.1 above or 77.7 above.

78.5.2 If the Contract is terminated under Clause 78.2, OWNER / NRL will not be bound to make any further payment to the Contractor until the full and final cost of completion of the Works by OWNER / NRL or other contractors and all damage, loss or expense suffered or incurred by OWNER / NRL as a result of the termination of the Contract have been ascertained.

78.5.3 Upon all cost, damages, loss and/or expense being ascertained under Clause 78.5.2, the Engineer-in-Charge must issue a certificate stating the total amount of the cost of completing the Works and any damage, loss or expense suffered or incurred by OWNER / NRL as a result of the termination of the Contract.

78.5.4 If the Contract Price attributable to the Works performed as at the date of termination less the aggregate of: (a) all previous payments allocated to the Works which have been paid to the Contractor; and (b) the amount stated in the certificate under Clause 78.5.3,

(a) is a positive amount payable to the Contractor, then OWNER / NRL must pay such amount to the Contractor within 15(fifteen) Business Days of the issuance of the certificate pursuant to Clause 78.5.3; or

(b) is a negative amount payable to the Contractor, then an amount equal to that negative sum will be a debt due and payable to OWNER / NRL by the Contractor and the Contractor must pay such amount to OWNER / NRL within 15 (fifteen) days of OWNER / NRL raising an invoice for that amount.

78.6 **THE METHODOLOGY FOR PROCESSING TERMINATION FOR DEFAULT SHALL BE AS FOLLOWS**:

a) Any material breach in contractual obligations shall be dealt on mutual discussion basis, so as to correct breach. In case of failure to correct the breach, EIL/ OWNER / NRL shall initiate Termination action as per the contract.

b) In case of non-submission of CPBG within the period stipulated, required CPBG amount along with interest for the delayed period shall be recovered from the first RA bill / first Milestone payment, onwards, on proportionate basis, till full recovery.

However, in case, if the contractor submits CPBG before the first RA bill, then interest shall be recovered from the first RA bill, for the delayed period beyond the period stipulated for CPBG.

c) In case of non-submission of CPBG within one month beyond the period stipulated for it, coupled with non-mobilization / non-performance within the period stipulated for the same, the Termination action along with other contractual penal provisions shall be initiated, as per the contract provisions.

d) Further, in case of submission of CBPG within scheduled period, but Contractor being at default in terms of Contract, a) above shall be applicable.

e) In case of occurrence of any of the above specified events, contractor shall be understood to have defaulted and the EIL/ Owner shall have the right to terminate the contract, at its sole and absolute discretion by issuing a Show Cause notice of 15 calendar days to the Contractor, stating the reason and the intention of EIL/ Owner to terminate the Contract and to take other penal actions in terms of the contract including extant policy for Suspension/ Banning of EIL/ Owner.

f) EIL/ OWNER / NRL based on the contractor's response to the Show Cause Notice, shall decide the action regarding Termination and/ or Suspension / Banning or otherwise.

g) The decision taken as above shall apply to both Termination as well as Suspension / Banning."

Note: In case contract awarded for the tendered work have to be terminated due to contractor's default and a separate tender have to be floated to get the remaining / complete work executed, such defaulting contractor will not be considered for tenders issued for the refloated works of same project.

79.0 **GENERAL CONDITION OF CONTRACT FOR THE WORK TO BE EXCUTED IN BANGLADESH:**

General Conditions of Contract (GCC) of OWNER / NRL shall be applicable for work to be executed in Bangladesh, with following modification:

a) Contractor and persons working for them in the contract shall comply with all obligations and restrictions imposed by Law and regulations of Bangladesh in force from time to time.

b) Contactor shall defend, indemnify and hold owner (BPC/OWNER / NRL/EIL) harmless from any liability or penalty which may be imposed for violation of laws & regulations of Bangladesh by contractor or persons working for them in the contract.

ANNEXURES
TO
SPECIAL CONDITIONS
OF
CONTRACT

SCOPE OF WORK

[ANNEXURE - I TO SPECIAL CONDITIONS OF ONTRACT]

SCOPE OF WORK

1.0 The scope of work in general includes scope of work specified in Technical Section and Schedule of Rates enclosed in Commercial Section of the Bidding Document. Further, it includes any other work not specifically mentioned but required to complete the work as per specifications, drawings and instructions of Engineer-in-Charge, which could be reasonably implied from the contents of the Bidding Document.

2.0 Scope of work shall be read in conjunction with item description of Schedule of Rates and Contractor's scope shall include all activities of work specified in the item description of Schedule of Rates.

Rates shall include all cost for the performance of the item considering all parts of the Bidding Document. In case any activity though specifically not covered in description of item under 'Schedule of Rates' but is required to complete the work which could be reasonably implied/inferred from the content of Bidding Document, the cost for carrying out such activity of work shall be deemed to be included in the item rate.

TIME SCHEDULE

[ANNEXURE - II TO SPECIAL CONDITIONS OF CONTRACT]

TIME SCHEDULE

DESCRIPTION OF WORK	TIME FOR COMPLETION
PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH FOR INDIA BANGLADESH FREINDSHIP PIPELINE (IBFL) PROJECT OF NRL **BIDDING DOC. NO.: SM/B185-000-CE-T-8000/1002**	05 Months from the date of FOI/LOI.

Notes:

a) The time indicated for completing all works in all respects including submission of all reports as per specifications, codes, drawings and instructions of Engineer-in-Charge.

b) It should be noted that the period of work given above includes the time required for Mobilization at site, carrying out the works as per the requirements of Contract documents, demobilization, preparation of all reports in requisite quantities as mentioned in the Bidding Document, rectification's, if any, rework etc., complete in all respects to the entire satisfaction of Owner/ Engineer-in-Charge and direction of Engineer-in-charge.

(STAMP & SIGNATURE OF BIDDER)

MEASUREMENT OF WORK

[ANNEXURE - III TO SPECIAL CONDITIONS OF CONTRACT]

MEASUREMENT OF WORK

1.0 GENERAL

1.1 The mode of measurement shall be as mentioned in relevant standard specification incorporated in the Bidding Document. Any other mode of measurements not covered in above specifications shall be followed in accordance with relevant BIS codes /Schedule of Rates/ Specifications etc. and/or as decided by Engineer-in-Charge. Only the relevant mode(s) of measurement as detailed in this Section shall be applicable for the items covered in the scope of work / Schedule of Rates of the Bidding Document.

1.2 Payment will be made on the basis of joint measurements taken by Contractor and certified by Engineer-In-Charge. Measurement shall be based on "Approved for Construction" drawings, to the extent that the work conforms to the drawings and details are adequate.

1.3 Wherever work is executed based on instructions of Engineer-In-Charge or details are not adequate in the drawings, physical measurements shall be taken by Contractor in the presence of Engineer-In-Charge.

1.4 Measurements of weights shall be in metric tonnes corrected to the nearest Kilogram. Linear measurements shall be in meters corrected to the nearest centimetres.

1.5 The weights mentioned in the drawing or shipping list shall be the basis for payment. If mountings for panels etc. are packed separately, their erection weights shall include all mountings.

1.6 No other payment either for temporary works connected with this Contract or for any other item such as weld, shims, packing plates etc. shall be made. Such items shall be deemed to have been included for in the rates quoted.

1.7 Measurements will be made for various items under schedule of rates on the following basis as indicated in the unit column

i) Weights	MT or Kg
ii) Length	M (Metre)
iii) Number	No.
iv) Volume	Cu.M
v) Area	Sq.M

1.8 Wherever the unit of items has been indicated as lumpsum, the payment shall be made on lumpsum basis on completion & no mode of measurement shall be applicable.

1.9 The measurement for cable laying shall be made on the basis of length actually laid from lug to lug including length of loops provided.

2.0 STRUCTURAL STEEL WORK & MISCELLANEOUS STRUCTURES

2.1 Payment for steel work shall be made on basis of admissible weight of the structure accepted, the weight being determined as described below.

2.2 The weight for payment will be assessed from the approved fabrication drawings and the respective bill of materials prepared by the Contractor and approved by the Engineer-in-Charge. The weight of structural material/Plate shall be calculated wherever necessary on the basis of IS Hand Book. If sections are different from IS Sections, then Manufacturer Hand Book shall be referred to.

2.3 Sections built out of plates/structural shall be paid on the actual weight incorporated except for gussets which will be paid on the weight of the smallest rectangle enclosing the shape.

2.4 Gratings shall be paid on the basis of calculated weights as determined from the dimensions given on the design drawings/bill of materials. Full deduction shall be made for all opening above 300 mm size and skews.

2.5 Welds, bolts, nuts, washers etc. shall not be measured. Rate of structural steel work shall be deemed to include the same.

2.6 No other payment either for temporary works or for any other item such as welds, shims, packing plates etc., shall be made. Such items shall be deemed to have been included in the rate quoted for steel work.

3.0 PIPING

3.1 Mode of Measurement of Piping works is based on Inch. dia of Fabrication and Inch. Meter of Erection of Piping Works

Measurement of above ground and underground piping shall be done in the following manner:

3.1.1 Fabrication of Piping

i) Measurement for fabrication of pipe shall be done on the basis of Inch. dia (the nominal diameter of pipe in 'Inches' multiplied by number of weld joints). All pre-fabrication work (including transportation of materials to site, fit up, shop weld, fabrication of spool pieces for erection) as well as all piping welding in situ are covered in Inch. dia. of fabrication. This shall include all types of BUTT-welding e.g. GTAW, SMAW.

ii) Payment shall be made based on the unit rate against following diameter range of pipes and type of welds, under the headings of pipe metallurgy (CS/AS/SS etc., separately for IBR/NIBR and thickness upto 10 MM/10-20 MM/20-30 MM/30-40MM etc.).

(a) Butt Welds

Upto 1-1/2" NB
2" to 6" NB
8" to 14" NB
16" to 24" NB
26" to 36" NB
38" to 48" NB
50" to 60" NB
Above 60" NB

(b) Fillet Welds

Upto 1-1/2" NB
2" to 6" NB
8" to 14" NB
16" to 24" NB
26" to 36" NB
38" to 48" NB
50" to 60" NB
Above 60" NB

iii) Total welding for slip on flanges shall be accounted as one single joint per flange.

iv) Seal welds, wherever required shall not be counted under weld joints.

v) No separate payment shall be made for welding involved in pipe supports as well as corrosion pads. Payment for corrosion pads shall be made under pipe supports only.

vi) Branch welds shall be considered under butt welds

3.1.2 Erection of Piping

i) Measurement will be done based on Inch. Meter (the nominal diameter of pipe in 'Inches' multiplied by the installed length of piping in 'Meters') as per execution drawing. Inch. Meter shall include all work pertaining to Erection of Fabricated spools/straight lengths, providing vent, drains, instrument tapings, alignment, hydro-testing and all other activities required as per item description, but not covered in scope under Inch. dia.

(ii) Payment shall be made based on the unit rate against following diameter range of pipes:

Upto 1-1/2" NB
2" to 6" NB
8" to 14" NB
16" to 24" NB
26" to 36" NB
38" to 48" NB
50" to 60" NB
Above 60" NB

(iii) All lines shall be measured along the centre lines of pipes, curvilinear centre lines of bends and elbows, centre line of flanges and all other fittings such as tees, reducers, expansion joints etc. all in line instruments, line mounted fittings, ejectors, eductors, mixers, sight glasses, trays, filters, desuperheaters etc. Length of all types of valves except socket weld valves upto 1-1/2" shall be excluded in this measurement. However, no separate payment for socket weld valves upto 1-1/2" size shall be made and the quoted rates for piping shall be deemed to include the same.

REMARKS:

1. Measurement of following items shall be in linear Running meter basis/Lumpsum basis, as applicable:

   i) Cement lined piping
   ii) Rubber lined piping
   iii) Teflon lined piping
   iv) Plastic piping (HDPE etc.)
   v) Galvanised piping
   vi) Jacketed piping
   vii) Steam Tracers
   viii) Tubing

2. Measurement of following items shall be on number basis:
   i) Piping Specials like Mitres & Fabricated Reducers
   ii) Reinforcement pads

3.2 Piping

3.2.1 For measurement and payment of Supply, fabrication and erection of Piping work, only finished item shall be measured. Payment will be based on linear measurements as per execution drawings. No separate measurement shall be made for the activities covered under the description of item for piping work.

i) All lines shall be measured along the centre lines of pipes, curvilinear centre lines of bends and elbows, centre line of flanges and all other fittings such as tees, reducers, expansion joints etc. all in line instruments, line mounted fittings, ejectors, eductors, mixers, sight glasses, tray, filters, desuperheaters etc. All type of valves other than those specifically mentioned in Schedule of Rates shall be excluded from this measurement. However, no separate payment for socket weld valves upto 1½" size shall be made and the quoted rates for piping shall be deemed to include the same.

ii) The socket weld fittings shall be supplied to the Contractor as per the requirements of the drawings. All other hot/cold bends, reducers etc. for size 1-1/2" and below shall be fabricated and erected as per requirements by the Contractor at no additional cost and his rates for piping of size 1-1/2" and below shall be inclusive of this work.

iii) The forged tees shall be supplied to the contractor as per the requirements of the drawings. All other branch connections including reinforcement pads shall be accomplished by pipe to pipe connections. The rates quoted for piping shall be inclusive of making branch connections. The reinforcement pads shall be measured separately.

iv) Vents and drains shall be measured from O.D. of pipe lines and shall be paid for at the corresponding unit rates for similar sizes of pipe. Other piping attachment such as couplings, earthing lugs etc. shall be supplied and erected by the Contractor within his quoted rates for piping. Vents and drains required temporarily for flushing and testing shall be provided by the Contractor at their cost.

v) Fabrication of spool pieces for temporary use to aid Contractor's work such as fabrication, erection, flushing and testing of piping etc. shall be done by Contractor at his cost as part of piping work and no separate payment shall be made for the same.

vi) In case of branch piping, the measurement shall be made from outer surface of the main line except in case of equal size branches, in which case measurement shall be made from centre line of the branching header.

vii) As regards safety valves, size of valves will be identified by inlet pipe size.

viii) Reducers will be paid along with piping of larger diameter except in case of funnels where they are welded only to the smaller diameter pipe, for which payment will be made along with piping of such smaller dia.

ix) All piping attachments such as couplings, orifice plates, steam traps, strainers, earthing lugs etc. shall be erected by the Contractor as part of piping erection work and no separate payment will be made for the same.

3.3 Erection of Valves

Subject to 3.2 above, all types of valves erection of all types of valves such as gate/globe/ check/ plus/needle/ ball/ control/ safety valves/gate valves/butterfly valves etc. will be paid measured and paid on number basis at the rates given separately in the Schedule of Rates. Any dismantling and re-erection of the valves required for the purpose of testing, calibration etc. will be carried out by the Contractor within his quoted rates. The length of such valves along with companion flanges shall be excluded from piping length.

All the safety valves in the pump skid, compressors and other package, skid items which are erected by the contractor for which payment is made in MT, contractor shall dismantle the safety valves, hand it over for calibration and re-erect the same. No separate payment will be made for dismantling, handing over for calibration and re-erection of safety valves. The rate for such works is included in the contractor quoted rate for erection of the equipments.

3.4 Fabrication of Supports

i) If piping supports, corrosion pads are to be measured and paid under a separate item, measurement and payment of supply, fabrication and erection of pipe supports shall be on weight basis. Only the finished item shall be measured.

ii) Bolts, nuts and washers including U-bolt will be supplied by Contractor. Weight of bolts, nuts and clamps etc. shall not be added to the weight of pipe support for payment purpose.

iii) Erection of all types of supports, spring supports and turn buckles, including grouting of supports, if required, shall be carried out by the Contractor as part of piping work and no separate measurement and payment will be made for it.

4.0 VESSELS, EXCHANGERS, ETC.

4.1 Payment will be made on weight basis. Weights as indicated on execution drawings will be considered for payment. Where weight is not indicated on the execution drawings, weights as indicated on packing lists will be considered for payment. In case where weights are neither indicated on execution drawings nor on packing list, weight will be calculated. Weld metal weight will not be considered and no deduction will be made towards opening less than 300 mm diameter. Full deductions shall be made for all openings above 300 mm diameters.

4.2 For erection of mounting and accessories such as safety valves with manifold, distance piece, rupture discs, sight glasses, davits etc., including weight of these will be added to that of respective equipments for the purpose of payment.

4.3 Internals etc. measured as actual quantity that has been erected and consumed shall be taken for payment purpose.

5.0 PUMPS, COMPRESSORS AND MISCELLANEOUS EQUIPMENTS

5.1 Payment will be made on weight basis. Weights as indicated on execution drawings will be considered for payment. Where weights are not indicated on the execution drawings, weights as indicated on packing lists will be considered for payment. In case where weights are neither indicated on execution drawings nor on packing list, weight will be calculated.

5.2 For erection of auxiliaries and accessories, weight of these will be added to that of respective machinery for the purpose of payment.

5.3 If piping for cooling water, lubricating oil, etc. are supplied to the Contractor in prefabricated condition with the machinery, the weights of these will be added to the respective machinery for the purpose of payment. In case these are required to be fabricated and erected by the contractor, these will be paid at the rates applicable for the respective size of piping and in such case the weight of these shall not be added to that of the machinery.

5.4 No separate measurement and payment for supply and application of ordinary/non-shrink grouting shall be made, as the unit rates are inclusive of supply and application of ordinary/non-shrink grouting.

6.0 POST WELD HEAT TREATMENT (IF APPLICABLE)

Payment for post weld heat treatment shall be made on the basis of per circumferential joint for different diameters of pipes as per the rates quoted separately. Repeat post weld heat treatment for repaired joints or otherwise due to Contractor's fault will be carried out at Contractor's cost.

7.0 RADIOGRAPHY / DYE-PENETRANT EXAMINATIONS / MAGNETIC PARTICLE TEST (MPT)

Payment for radiography shall be made on the basis of circumferential joints for different pipe dia. Repeat radiography due to defective films or on repaired joint due to Contractor's fault or for additional radiography necessitated due to poor performance of Contractor's welder will be done at Contractor's cost.

Magnetic particle and dye penetrant test will be paid on the weld length tested/ circumferential weld joints as mentioned in Schedule of Rates.

8.0 PAINTING ON EQUIPMENTS/PIPING/STRUCTURAL STEEL ETC.

a) EQUIPMENTS

i) For columns, vessels, reactors, Exchangers, furnaces, ejectors etc., measurement shall be on square meter basis taken over the painted surface.

ii) For pumps, motors and compressors measurement shall be made on number basis.

b) PAINTING ON PIPING INCLUDING SPECIALS AND FITTINGS

i) Payment will be made on linear measurement in 'Metres' corrected to the nearest centimeter.

ii) Piping shall be measured along the centre line through all types of fittings and flanges.

iii) Rates for painting of pipes shall be inclusive of painting of all types of pipe supports, flanges, guides, shoes, saddles, clamps, corrosion pads etc and also all types of fittings except valves (2" and above) which shall be paid separately on number basis.

iv) There will be no separate measurements of the colour bands/ identification signs (line numbering), flow direction etc. on uninsulated piping, the rates of painting of linear length of piping shall be inclusive of cost of such items.

c) PAINTING ON STEEL STRUCTURE

i) Payment for steel structures shall be made on the basis of admissible weight of structure painted.

ii) Welds, bolts, nuts, washers etc. shall not be measured and rates for painting of structure shall be inclusive of painting such items.

9.0 PAINTING WORK UNDER INSULATION

a) EQUIPMENTS:

i) For Columns, vessels, reactors, Exchangers, furnaces, ejectors etc., measurement shall be on square meter basis taken over the painted surface.

ii) For pumps, motors and compressors measurement shall be made on number basis.

b) PIPING:

i) Payment will be made on linear measurement in 'Metres' corrected to the nearest centimeter.

ii) Piping shall be measured along the centre line through all types of fittings and flanges.

iii) Rates for painting of pipes shall be inclusive of painting of all types of pipe supports, flanges, guides, shoes, saddles, clamps, etc and also all types of fittings except valves (2" and above) which shall be paid separately on number basis.

iv) There will be no separate measurements of the colour bands/ identification signs (line numbering), flow direction etc. on un-insulated piping, the rates of painting of linear length of piping shall be inclusive of cost of such items.

10.0 INSULATION WORK ON PIPING / EQUIPMENT, ETC.

10.1 PIPING

Measurement of piping shall be taken/ considered along Curvilinear center lines of pipe insulated and through all fittings which are insulated but excluding valves (2" and above). Instruments and fittings which are insulated, measurements shall be considered as under:

i) For all types of valves (2" and above), including control valves on which removable box has been provided, payment shall be made per number. This shall be including mating flanges on either side and proper body of valves/ control valves.

ii) For all type of flange assembly including orifice plate, payment shall be made on number basis.

iii) For bends, additional measurement equivalent to single the length of curvilinear center lines of bends shall be added to the respective size of piping.

iv) Reducers will be considered with larger diameter.

v) No extra payment shall be made for tees, branch connections and inspection plugs and the rates quoted shall be inclusive of all these items. Branch connections shall be measured from the outer surface of the header.

vi) No extra payment shall be made for vents, drains and instrument connections having nozzles length upto 12". However, if the length of such connections exceeds 300 mm the same will be paid as per piping measurement in respective sizes.

vii) For all fittings measurement along curvature center line shall be considered.

viii) Steam/Refrigerent traced lines and untraced pipelines shall be normally specified and measured separately. Steam/Refrigerent traced lines shall also be normally specified and measured separately, according to the number of tracers.

ix) For Steam/Refrigerent traced pipelines, which are specified and are measured separately, only the diameter of the main pipelines (s) shall be reckoned for measurement of insulation. No separate measurement shall be made for the insulation of the steam tracer line (s) which shall be deemed to have been covered under the insulation of the main pipeline.

x) No extra payment shall be made for all types of valves of size 1½" and below and these shall be considered as part of the piping Insulation work.

10.2 TANKS, COLUMNS, VESSELS, DRUMS, EXCHANGERS, AND MISC. EQUIPMENTS:

Measurements shall be made over finished area of insulation. No deduction shall be made for any area required to be left un-insulated, the area of which is equivalent to a circle of 300mm in diameter or less.

All insulated nozzles/manholes shall be measured as given below:

i) All Piping Insulation, if the area of such nozzle is equivalent to a circle of 300mm in diameter or less. The area covered by such nozzle shall not be deducted from the over all area of tank/column/vessel/exchanger/ equipment insulation measurements

ii) If any nozzle/manhole, insulated is equivalent to a circle of over 300mm in diameter, the area of such nozzle/manhole to be considered for measurements shall be taken as twice the actual insulated area and paid for as vessel insulation. The areas of tank/column/vessel/exchangers/ equipment, covered by such nozzle/manhole shall be excluded from measurements.

iii) The area of standard dished ends of vessels, exchangers etc. shall be considered as the square of the diameter of the insulated body of shell for purpose of measurement. For flat ends actual area shall be considered for payment. For removable boxes, if any, on exchangers no extra payment will be made

iv) Insulated areas with different specification shall be measured separately, such as:

- Roofs/tops of tanks considering them as flat surfaces.
- Sides of tanks and vessels where corrugated aluminium sheets are to be used measurements being taken over the crest of corrugated sheets
- However, the quoted price shall be deemed to be on the above considerations i.e. Roofs/Tops of tanks by using flat Aluminium sheet. No additional payment shall be made for using corrugated Aluminium sheets as per Technical Specification and the quoted rates shall be deemed to be inclusive of it.
- For boxes or stiffener rings, area over two sides of boxes perpendicular to the axis of the equipment shall be added to the area of equipment.
- For any other connected structure, if insulated, the measurement shall be taken on actual area basis.

11.0 ELECTRICAL WORKS

11.1 The measurement of works as mentioned in the relevant Technical/Standard Specification shall be followed.

12.0 INSTRUMENTATION WORKS

12.1 The measurement of works as mentioned in the relevant Technical/Standard Specification shall be followed.

TERMS OF PAYMENT

[ANNEXURE-IV TO SPECIAL CONDITIONS OF CONTRACT]

PAYMENT TERMS

1.0 MOBILIZATION ADVANCE

1.1 No mobilization advance shall be paid to the CONTRACTOR.

2.0 SECURED ADVANCE ON MATERIALS

2.1 As per clause no. 6.3 of GCC of NRL.

3.0 ON ACCOUNT PAYMENTS

Progress Payments shall be released to Contractor against monthly running account bills duly certified by Engineer-in-charge after affecting the necessary deductions. The basis for payment against various items shall be as below:

S. NO.	NATURE OF WORK	PAYMENT TERMS
1.1	**Piling – Installation**	- **95% on installation of individual Pile for full length.** - **05% on completion of all works in all respects and issuance of completion certificate.**
1.2	**Piling - testing**	- **80% on field testing.** - **15% on submission of test reports along with analysis and acceptance thereof.** - **05% on completion of all works in all respects and issuance of completion certificate.**
1.3	**Other Civil, Structural / Miscellaneous Works**	- **95% on completion of work as certified in progress bill.** - **05% on completion of all works in all respects and issuance of completion certificate.**

NOTE:

1. The above payment terms commensurate with the work executed.

2. The above progress payments are subject to deductions towards income tax and other deductions as applicable as per terms of the Contract.

3. Withholding Tax at the prevailing rate shall be deducted as per the Indian Income Tax Act. TDS certificate shall be issued by the Owner.

4. Wherever milestone payment is linked with sub ordering, Engineer-in-charge shall ensure that the total quantity against which the payment is released towards supply shall not exceed the final installed quantity of the item.

5. Wherever milestone payment has been recommended on receipt and acceptance of material, the same shall be released against “Incoming Material Inspection Report” issued by EIL. Engineer-in-shall release the progressive payment towards supply in such a way ensuring that the total quantity against which the payment is released towards supply shall not exceed the final installed quantity of the item.

MINIMUM KEY CONSTRUCTION MANPOWER

[ANNEXURE - V TO SPECIAL CONDITIONS OF CONTRACT]

KEY CONSTRUCTION MANPOWER TO BE DEPLOYED BY THE CONTRACTOR FOR PILING WORKS FOR IBFPL OF M/S NRL

(BIDDING DOC. NO. B185-000-81-41-CE-T-8000)

SL. NO.	DESCRIPTION	REQUIREMENT DURING CONSTN.
1.	RCM/SITE-IN-CHARGE	1
2.	LEAD DISCIPLINE ENGINEERS - CIVIL / STRUCTURAL	 1
3.	QA/QC ENGINEER	1
4.	PLANNING ENGINEER	1
5.	SAFETY OFFICER & OTHER SAFETY PERSONNEL	AS PER HSE STANDARD SPECIFICATION (6-82-0001)
6.	QUANTITY SURVEYOR	1
7.	DISCIPLINE ENGINEERS + SUPERVISORS - CIVIL / STRUCTURAL	 2+3

NOTES

1) Above key construction manpower is required to be deployed by the contractor to complete the work within schedule. Contractor is required to augment the above list with additional numbers/categories of personnel as required and directed by Engineer-In charge to complete the work within the completion time schedule and quoted price.

2) The Key Construction Personnel identified above shall be well qualified & having adequate relevant experience, as specified in document No. 7-82-0003 enclosed elsewhere in the bidding document. The other manpower shall also be qualified and experienced with their assigned work.

3) Key Construction personnel identified above shall be deployed by contractor as and when relevant activities are required to be carried out for completing the job within completion time schedule and as per direction of Engineer In-charge.

4) CVs of key persons proposed to be deployed shall be submitted to Owner/Engineer-In-charge prior to their mobilization at site. The mobilization of key personnel shall be done at site subject to prior approval of their CVs by Owner/Engineer-In-charge.

(STAMP & SIGNATURE OF BIDDER)

MINIMUM EQUIPMENT, TOOLS & TACKLES

[ANNEXURE - VI TO SPECIAL CONDITIONS OF CONTRACT]

KEY CONSTRUCTION EQUIPMENTS TO BE MOBILIZED BY THE CONTRACTOR FOR PILING WORKS FOR IBFPL OF M/S NRL

(BIDDING DOC. NO. B185-000-81-41-CE-T-8000)

S. NO.	EQUIPMENT DESCRIPTION	CAPACITY	REQUIREMENT DURING CONSTN
1.	HYDRAULIC/ PNEUMATIC RIG & RELEVANT ACCESSORIES AND SUITABLE CRANE FOR RIG ASSEMBLY FOR BORED CAST-IN-SITU RCC STRAIGHT SHAFTED PILES		3
2.	CONVENTIONAL PILING RIG & RELEVANT ACCESSORIES FOR BORED CAST-IN-SITU RCC STRAIGHT SHAFTED PILES		3
3.	HYDRAULIC EXCAVATOR WITH REVERSE HORN AND REAR LIGHT/MIRROR (WITH ROCK BREAKING ATTACHMENT)		2
4.	DUMPER		3
5.	HYDRAULIC CRANE (MODEL NO: TRX Series- K10,F15 TRX 1651, TRXS 2319 , MAC 1214, FX 120, FX150, 15XWE, 15XWF Rhino110 FC,ETC.) WITH AUDIO-VISUAL SIGNALLING DEVICES AND LIMIT SWITHES	10-18 MT	AS REQUIRED
6.	READY MIXED CONCRETE (RMC) PLANT WITH TRANSIT MIXURE/ SUPPLIER	5-10 M3/ HR	1
7.	CONCRETE PUMP WITH ACCESSORIES		3
8.	TOTAL STATION FOR SURVEY/LAYOUT WORKS	1 SEC	1
9.	DUMPY/ AUTO LEVEL		2
10.	WATER TANKER		AS REQUIRED
11.	DG SET	(25-65 KVA)	AS REQUIRED
12.	WELDING MACHINE		3
13.	GRINDING MACHINE		3
14.	GAS CUTTING SET		3
15.	BAR CUTTING / BENDING M/C		1
16.	PLATE COMPACTOR		3
17.	JACK HAMMER		AS REQUIRED
18.	TOOLS AND TACKLES FOR HIGH STRAIN DYNAMIC LOAD INTEGRITY TEST AS PER SOQ		AS REQUIRED

19.	TOOLS AND TACKLES FOR LOW STRAIN INTEGRITY TEST (as per ASTM D5882)		AS REQUIRED
20.	EQUIPMENTS & ACCESSORIES FOR PILE LOAD TESTING (VERTICAL, PULLOUT AND LATERAL) AS PER SOQ		AS REQUIRED
21.	LABORATORY EQPTS FOR ALL LABORATORY TEST REQUIRED DURING PILING/CONCRETING/BACKFILLING AS PER THE SPECIFICATION		AS REQUIRED

NOTES :

1. The details of Key construction equipments in good working condition, required to be mobilized by the Contractor, to complete the work within the schedule. The actual deployment schedule of Construction Equipments shall be approved by Engineer-in-charge. Contractor shall augment the above list with additional numbers/categories of equipments, tools & tackles, as required and directed by Engineer-In charge to complete the work within the completion time schedule and quoted price.
2. Contractor to confirm that the above Key construction equipments are available with him in good working condition and shall be timely mobilized on this project site. Contractor has the option to hire some of these equipments form equipment-hiring agencies also.
3. Owner/EIL reserves the right to physically check & verify the availability of these equipments prior to award of work.
4. Contractor shall replace any defective/damaged equipments promptly to complete the work without any time & cost implication to the Owner/EIL.
5. Construction equipment identified above shall be mobilised by contractor as and when relevant activities are required to be carried out for completing the job within completion time schedule and as per direction of Engineer In-charge.
6. Instruments (as applicable) to be made available with valid calibration certificate, issued by NABL accredited laboratory.

(STAMP & SIGNATURE OF BIDDER)

QUALITY MANAGEMENT SYSTEM REQUIRMENTS

[ANNEXURE – VII TO SPECIAL CONDITIONS OF CONTRACT]

बोलीकर्ता से गुणवत्ता प्रबंधन प्रणाली अपेक्षाओं हेतु विनिर्देश

SPECIFICATION FOR QUALITY MANAGEMENT SYSTEM REQUIREMENTS FROM BIDDERS

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convener	Standards Bureau Chairman
					Approved by	
1	12.03.15	General Revision	QMS Standards Committee	QMS Standards Committee	MPJ	SC
0	04.06.09	Issued as Standard Specification	QMS Standards Committee	QMS Standards Committee	SCT	ND

Abbreviations:

CV	-	Curriculum Vitae
ISO	-	International Organization for Standardization
MR	-	Material Requisition
PO	-	Purchase Order
PR	-	Purchase Requisition
QA	-	Quality Assurance
QMS	-	Quality Management System

QMS Standards Committee

Convener: Mr. M.P. Jain

Members:
Mr. A.K. Chaudhary (Insp.)
Mr. S.K. Kaul (C&P)
Mr. R.K. Trivedi (Engg.)
Mr. Ravindra Kumar (Const.)
Mr. Tilak Raj (Projects)
Mr. Vinod Kumar (CQA)

CONTENTS

1.0 SCOPE

This specification establishes the Quality Management System requirements to be met by BIDDER for following purpose:

- QMS requirements to be met by suppliers/contractors after award of work/ during contract execution.

2.0 DEFINITIONS

2.1 Bidder

For the purpose of this specification, the word "BIDDER" means the person(s), firm, company or organization who is under the process of being contracted by EIL / Owner for delivery of some products (including service). The word is considered synonymous to supplier, contractor or vendor.

2.2 Project Quality Plan

Document tailored from Standard Quality Management System Manual of BIDDER, specifying how the quality requirements of the project will be met.

2.3 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

3.0 REFERENCE DOCUMENTS

6-78-0002	Specification for Documentation Requirements from Contractors
6-78-0003	Specification for Documentation Requirements from Suppliers

4.0 QUALITY MANAGEMENT SYSTEM – GENERAL

Unless otherwise agreed with EIL / Owner, the BIDDER proposed quality system shall fully satisfy all relevant requirements of ISO 9001 "Quality Management Systems – Requirements." Evidence of compliance shall be current certificate of quality system registration to ISO 9001 or a recent compliance audit recommending registration from a certification agency. The quality system shall provide the planned and systematic control of all quality related activities for execution of contract. Implementation of the system shall be in accordance with BIDDER'S Quality Manual and PROJECT specific Quality Plan.

5.0 QUALITY SYSTEM REQUIREMENTS

5.1 BIDDER shall prepare and submit for review / record, Project Quality Plan / Quality Assurance Plan for contracted scope / job. The BIDDER'S Quality Plan shall address all of the applicable elements of ISO 9001, identify responsible parties within BIDDER'S organization, for the implementation / control of each area, reference the applicable procedures used to control / assure each area, and verify the documents produced for each area. The Project Quality Plan shall necessarily define control or make reference to the relevant procedures, for design and engineering, purchase, documentation, record control, bid evaluation, inspection, production/manufacturing, preservation, packaging and storage, quality control at

construction site, pre-commissioning, commissioning and handing over (as applicable) in line with contract requirement and scope of work.

5.2 BIDDER shall identify all specified or implied statutory and regulatory requirements and communicate the same to all concerned in his organization and his sub contractor's organization for compliance.

5.3 BIDDER shall deploy competent and trained personnel for various activities for fulfillment of PO / contract. BIDDER shall arrange adequate infrastructure and work environment to ensure that the specification and quality of the deliverable are maintained.

5.4 BIDDER shall do the quality planning for all activities involved in delivery of order. The quality planning shall cover as minimum the following:

- Resources
- Product / deliverable characteristics to be controlled.
- Process characteristics to ensure the identified product characteristics are realized
- Identification of any measurement requirements, acceptance criteria
- Records to be generated
- Need for any documented procedure

The quality planning shall result into the quality assurance plan, inspection and test plans (ITPs) and job procedures for the project activities in the scope of bidder. These documents shall be submitted to EIL/Owner for review/approval, before commencement of work.

5.5 Requirements for sub-contracting / purchasing of services specified in contract / tender shall be adhered to. In general all outsourced items will be from approved vendors of EIL. Wherever requirements are not specified, or approved sub vendors do not exist, the sub-contractor shall establish and maintain a system for purchasing / sub-contracting to ensure that purchased product / service conforms to specified requirements. Criteria for selection of sub-contractor, evaluation, re-evaluation, maintenance of purchasing data and verification of purchased product (sub-contractor services), constitute important components of this requirement.

5.6 BIDDER shall plan and carry production and service provision under controlled conditions. Controlled conditions shall include, as applicable

a) the availability of information that describes the characteristics of the product
b) the availability of work instructions
c) the use of suitable equipment
d) the availability and use of monitoring and measuring devices
e) the implementation of monitoring and measurement
f) the implementation of release, delivery and post-delivery activities

5.7 BIDDER shall validate any processes for production and service provision where resulting output cannot be verified by subsequent monitoring and measurement. This includes any process where deficiencies become apparent only after the product is in use or service has been delivered.

5.8 BIDDER shall establish a system for identification and traceability of product / deliverable throughout product realization. Product status with respect to inspection and testing requirements shall be identified.

5.9 BIDDER shall identify, verify, protect and safeguard EIL / Owner property (material / document) provided for use or incorporation into the product. If any Owner / EIL property is lost, damaged or otherwise found to be unsuitable for use, this shall be reported to the EIL / Owner.

5.10 BIDDER shall ensure the conformity of product / deliverable during internal processing and delivery to the intended destination. Requirements mentioned in the tender shall be adhered to.

5.11 BIDDER shall establish system to ensure that inspection and testing activities are carried out in line with requirements. Where necessary, measuring equipments shall be calibrated at specified frequency, against national or international measurement standards; where no such standard exists, the basis used for calibration shall be recorded. The measuring equipments shall be protected from damage during handling, maintenance and storage.

5.12 BIDDER shall ensure effective monitoring, using suitable methods, of the processes involved in production and other related processes for delivery of the scope of contract.

5.13 BIDDER shall monitor and measure the characteristics of the product/deliverable to verify that product requirement has been met. The inspection (stage as well as final) by BIDDER and EIL / Owner personnel shall be carried out strictly as per the ITPs forming part of the contract. Product release or service delivery shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by relevant authority and where applicable by Owner / EIL.

5.14 BIDDER shall establish and maintain a documented procedure to ensure that the product which does not conform to requirements is identified and controlled to prevent its unintended use or delivery

5.15 All non-conformities (NCs) / deficiencies found by the BIDDER'S inspection / surveillance staff shall be duly recorded, including their disposal action shall be recorded and resolved suitably. Effective corrective and preventive action shall be implemented by the BIDDER so that similar NCs including deficiencies do not recur.

5.16 All deficiencies noticed and reported by EIL / Owner shall be analyzed by the BIDDER and appropriate corrective and preventive actions shall be implemented. BIDDER shall intimate EIL / Owner of all such corrective and preventive action implemented by him.

5.17 BIDDER should follow the standards, specifications and approved drawings. Concessions/Deviations shall be allowed only in case of unavoidable circumstances. In such situations Concession/deviation request must be made by the BIDDER through online system of EIL eDMS. URL of EIL eDMS is http://edocx.eil.co.in/vportal.

5.18 BIDDER shall have documented procedure for control of documents.

5.19 All project records shall be carefully kept, maintained and protected for any damage or loss until the project completion, then handed over to EIL / Owner as per contract requirement (Refer Specification Nos. 6-78-0002 - Specification for Documentation Requirements from Contractors and 6-78-0003 - Specification for Documentation Requirements from Suppliers), or disposed as per relevant project procedure.

6.0 AUDITS

BIDDER shall plan and carry out the QMS audit for the job. Quality audit programme shall cover design, procurement, construction management and commissioning as applicable including activities carried out by sub-vendors and sub-contractors. This shall be additional to the certification body surveillance audits carried out under BIDDER'S own ISO 9001 certification scheme.

The audit programmes and audit reports shall be available with bidder for scrutiny by EIL / Owner. EIL or Owner's representative reserves the right to attend, as a witness, any audit conducted during the execution of the WORKS.

In addition to above EIL, Owner and third party appointed by EIL/Owner may also perform Quality and Technical compliance audits. BIDDER shall provide assistance and access to their systems and sub-contractor / vendor systems as required for this purpose. Any deficiencies noted shall be immediately rectified by BIDDER.

7.0 DOCUMENTATION REQUIREMENTS

BIDDER shall submit following QMS documents immediately after award of work (Within one week) for record / review by EIL / Owner.

- Organization chart (for complete organization structure and for the project)
- Project Quality Plan/Quality Assurance Plan
- Job specific Inspection Test Plans, if not attached with PR
- Job Procedures
- Inspection/Test Formats

In addition to above QMS documents, following documentation shall be maintained by the BIDDER for submission to EIL / Owner on demand at any point of time during execution of the project.

- Quality Manual
- Certificate of approval for compliance to ISO: 9001 standard
- Procedure for Control of Non-conforming Product
- Procedure for Control of Documents
- Sample audit report of the QMS internal and external audits conducted during last one year
- Customer satisfaction reports from at least 2 customers, during the last one year
- Project QMS audit report
- Technical audit reports for the project
- Corrective action report on the audits

Documents as specified above are minimum requirements. BIDDER shall submit any other document/data required for completion of the job as per EIL/Owner instructions.

CONCESSION/DEVIATION PERMIT

(USE ONLY THIS PAGE FOR COMMUNCIATION WITH VENDOR/CONTRACTOR)

To BE FILLED BY ORIGINATOR

Project_____	Originator Ref._____
Job No._____ Equipment Title_____	Order/Contract No._____ Item No._____

Originator: Vendor/Contractor _____

Caution : Originator to note that any delay in processing of concession/deviation permit shall be to originator's account and shall not be used as a reason for extension in delivery

Requirement as per specification	Description of Concession/Deviation sought

Why the Concession/Deviation is required?
Supporting evidence/calculations enclosed/not enclosed

Contractual implications if Concession/Deviation is granted:

* Time impact	More/Less/No change
* Cost impact	More/Less/No change
* Performance Warranty/Guarantee	Affected/Not affected

Under present constraints requested Concession/deviation is most optimum for the project and does not involve any hazard, and shall meet the stipulated performance requirements.

Date:

Signature
Vendor /Contractor (with seal)

Decision on Concession/Deviation including decision, on time and cost implications

(To be filled by the Inspection engineer [at RPO/HO] or RCM, responsible for conveying the decision to the originator, after resolution)

Date:

Signature_____

Location :

Name_____

Opinion from EIL site supervisor/inspection engineer
(Specify whether post-facto approval required for regularization)

Date :_____

Name :_____
RPO/Site Name_____

Original forward to :_____
(Target division/department/group)

Copy to :_____
(Project Manager)

Date :_____

Name :_____

Disposal by target division/department

Whether any vendor/contractor made 'Technically not Acceptable' during bid evaluation, on the aspect of which this concession/deviation is sought----------YES/NO

Date :_____

Name :_____

Final decision of Project Manager along with overall review
(Client's decision required/not required)

Date :_____

Name :_____

Client's decision, if required

Date :_____

Signature :_____
Name :_____

OSID 192 & 207 AND HEALTH SAFETY & ENVIROMENT MANAGEMNT

[ANNEXURE – VIII TO SPECIAL CONDITIONS OF CONTRACT]

OISD - GDN - 192
July, 2000

FOR RESTRICTED CIRCULATION

SAFETY PRACTICES DURING CONSTRUCTION

OISD-GDN-192

Oil Industry Safety Directorate

Government of India
Ministry of Petroleum & Natural Gas
8th Floor, OIDB Bhavan, Plot No. 2, Sector – 73, Noida – 201301 (U.P.)

Website: www.oisd.gov.in

Tele: 0120-2593800, Fax: 0120-2593802

OISD - GDN - 192
July, 2000

FOR RESTRICTED CIRCULATION

SAFETY PRACTICES DURING CONSTRUCTION

Prepared by

COMMITTEE ON
SAFETY PRACTICES DURING CONSTRUCTION

Oil Industry Safety Directorate

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Preamble

Indian petroleum industry is the energy lifeline of the nation and its continuous performance is essential for sovereignty and prosperity of the country. As the industry essentially deals with inherently inflammable substances throughout its value chain – upstream, midstream and downstream – Safety is of paramount importance to this industry as only safe performance at all times can ensure optimum ROI of these national assets and resources including sustainability.

While statutory organizations were in place all along to oversee safety aspects of Indian petroleum industry, Oil Industry Safety Directorate (OISD) was set up in 1986 Ministry of Petroleum and Natural Gas, Government of India as a knowledge centre for formulation of constantly updated world-scale standards for design, layout and operation of various equipment, facility and activities involved in this industry. Moreover, OISD was also given responsibility of monitoring implementation status of these standards through safety audits.

In more than 25 years of its existence, OISD has developed a rigorous, multi-layer, iterative and participative process of development of standards – starting with research by in-house experts and iterating through seeking & validating inputs from all stake-holders – operators, designers, national level knowledge authorities and public at large – with a feedback loop of constant updation based on ground level experience obtained through audits, incident analysis and environment scanning.

The participative process followed in standard formulation has resulted in excellent level of compliance by the industry culminating in a safer environment in the industry. OISD – except in the Upstream Petroleum Sector – is still a regulatory (and not a statutory) body but that has not affected implementation of the OISD standards. It also goes to prove the old adage that self-regulation is the best regulation. The quality and relevance of OISD standards had been further endorsed by their adoption in various statutory rules of the land.

Petroleum industry in India is significantly globalized at present in terms of technology content requiring its operation to keep pace with the relevant world scale standards & practices. This matches the OISD philosophy of continuous improvement keeping pace with the global developments in its target environment. To this end, OISD keeps track of changes through participation as member in large number of International and national level Knowledge Organizations – both in the field of standard development and implementation & monitoring in addition to updation of internal knowledge base through continuous research and application surveillance, thereby ensuring that this OISD Standard, along with all other extant ones, remains relevant, updated and effective on a real time basis in the applicable areas.

Together we strive to achieve NIL incidents in the entire Hydrocarbon Value Chain. This, besides other issues, calls for total engagement from all levels of the stake holder organizations, which we, at OISD, fervently look forward to.

Jai Hind!!!

Executive Director
Oil Industry Safety Directorate

FOREWORD

The Oil Industry in India is nearly 100 years old. Due to various collaboration agreements a variety of international codes, standards and practices are in vogue. Standardisation in design philosophies, operating and maintenance practices at a national level was hardly in existence. This lack of uniformity coupled with feedback from some serious accidents that occurred in the recent past in India and abroad, emphasised the need for the industry to review the existing state of art in designing, operating and maintaining oil and gas installations.

With this in view, the Ministry of Petroleum and Natural Gas in 1986 constituted a Safety Council assisted by the Oil Industry Safety Directorate (OISD) staffed from within the industry in formulating and implementing a series of self-regulatory measures aimed at removing obsolescence, standardising and upgrading the existing standards to ensure safer operations. Accordingly OISD constituted a number of functional committees comprising of experts nominated from the industry to draw up standards and guidelines on various subjects.

The present document on “Safety Practices during Construction” was prepared by the Functional Committee on “Safety Practices during Construction”. This document is based on the accumulated knowledge and experience of industry members and the various national and international codes and practices.

It is hoped that provisions of this document if implemented objectively, may go a long way to improve the safety to reduce accidents in Oil and Gas Industry. Users are cautioned that no document can be substitute for the judgment of responsible and experienced engineer.

Suggestions are invited from the users after it is put into practice to improve the document further. Suggestions for amendments, if any, to this standard should be addressed to:

The Co-ordinator
Committee on “Safety Practices during Construction”

Oil Industry Safety Directorate

Government of India
Ministry of Petroleum & Natural Gas
8th Floor, OIDB Bhavan, Plot No. 2, Sector – 73, Noida – 201301 (U.P.)

Website: www.oisd.gov.in

Tele: 0120-2593800, Fax: 0120-2593802

This document in no way supersedes the statutory regulations of Chief Controller of Explosives (CCE), Factory Inspectorate or any other statutory body, which must be followed as applicable.

NOTE

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Though every effort has been made to assure the accuracy and reliability of the data contained in these documents. OISD hereby expressly disclaims any liability or responsibility for loss or damage resulting from their use.

These documents are intended to supplement rather than replace the prevailing statutory requirements.

FUNCTIONAL COMMITTEE ON
SAFETY PRACTICES DURING CONSTRUCTION

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MEMBERS	
1. Shri U.M. Rao	GAIL, Noida.
2. Shri K.N. Ravindran	CRL, Cochin
3. Shri P.K. Anand	ONGC, Mumbai.
4. Shri H.N. Das	ONGCL, Nazaria.
5. Shri Jagnandan Tyagi	IOC(PL) Nodia.
6. Shri M.C Lohar	IBP Co. Ltd., Calcutta.
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Member-Coordinator	
Shri A.K. Ranjan	OISD, New Delhi

CONTENTS

SAFETY PRACTICES DURING CONSTRUCTION

1.0 INTRODUCTION

Safety in Construction Management deserves utmost attention especially in the hydrocarbon industry, such as Exploration, Refineries, Pipelines and Marketing installations, Gas Processing units etc. Construction is widely recognised as one of the accident prone activities. Most of the accidents are caused by inadequate planning, failure during the construction process and/or because of design deficiencies. Besides property loss, accidents also result in injuries and fatalities to the personnel; same needs to be prevented.

The reasons for accidents during construction activities are related to unique nature of the industry, human behaviour, difficult work-site conditions, extended odd duty hours, lack of training & awareness and inadequate safety management. Unsafe working methods, equipment failure and improper housekeeping also tend to increase the accident rate in construction.

Ensuring good quality of materials, equipment and competent supervision along with compliance of standard engineering practices shall go a long way to in built safety into the system.

The objective of this standard is to provide practical guidance on technical and educational framework for safety and health in construction with a view to:

(a) prevent accidents and harmful effects on the health of workers arising from employment in construction;
(b) ensure appropriate safety during implementation of construction;
(c) provide safety practice guidelines for appropriate measures of planning, control and enforcement.

2.0 SCOPE

This document specifies broad guidelines on safe practices to be adhered to during construction activities in oil industry. However, before commencing any job, specific hazards and its effects should be assessed and necessary corrective/preventive actions should be taken by all concerned. The document is intended only to supplement and not to replace or supersede the prevailing statutory requirements, which shall also be followed as applicable. For Personal Protective Equipment, OISD-STD-155 (Part I&II) shall be referred to. The scope of this document does not include the design aspects and quality checks during construction.

3.0 DEFINITIONS

Definitions of various terminology are given below:

- *Adequate, appropriate or suitable* are used to describe qualitatively or quantitatively the means or method used to protect the worker.
- *Brace:* A structural member that holds one point in a fixed position with respect to another point; bracing is a system of structural members designed to prevent distortion of a structure.
- *By hand:* The work is done without the help of a mechanised tool.
- *Competent Authority:* A stautory agency having the power to issue regulations, orders or other instructions having the force of law.
- *Competent person:* A person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill for the safe performance of the specific work. The competent authorities may define appropriate criteria for the designation of such persons and may determine the duties to be assigned to them.

- *Execution agency:*

  Any physical or legal person, having contractual obligation with the owner, and who employs one or more workers on a construction site

- *Owner:*

  Any physical or legal person for whom construction job is carried out.

  It shall also include owner's designated representative/consultant/nominee/agent, authorised from time to time to act for and on its behalf, for supervising/ coordinating the activities of the execution agency.

- *Hazard:* Danger or potential danger.

- *Guard-rail:* An adequately secured rail erected along an exposed edge to prevent persons from falling.

- *Hoist:* A machine, which lifts materials or persons by means of a platform, which runs on guides.

- *Lifting gear:* Any gear or tackle by means of which a load can be attached to a lifting appliance but which does not form an integral part of the appliance or load.

- *Lifting appliance:* Any stationary or mobile appliance used for raising or lowering persons or loads.

- *Means of access or egress:* Passageways, corridors, stairs, platforms, ladders and any other means for entering or leaving the workplace or for escaping in case of danger.

- *Scaffold:* Any fixed, suspended or mobile temporary structure supporting workers and material or to gain access to any such structure and which is not a lifting appliance as defined above.

- *Toe-board:* A barrier placed along the edge of a scaffold platform, runway, etc., and secured there to guard against the slipping of persons or the falling of material.

- *Worker:* Any person engaged in construction activity.

- *Workplace:* All places where workers need to be or to go by reason of their work.

4.0 GENERAL DUTIES

4.1 GENERAL DUTIES OF EXECUTION AGENCIES

4.1.1 Execution agency should:

i) provide means and organisation to comply with the safety and health measures required at the workplace.

ii) provide and maintain workplaces, plant, equipment, tools and machinery and organise construction work so that, there is no risk of accident or injury to health of workers. In particular, construction work should be planned, prepared and undertaken so that:

(a) dangers, liable to arise at the workplace, are prevented;
(b) excessively or unnecessarily strenuous work positions and movements are avoided;
(c) organisation of work takes into account the safety and health of workers;
(d) materials and products used are suitable from a safety and health point of view;
(e) working methods are adopted to safeguard workers against the harmful effects of chemical, physical and biological agents.

iii) establish committees with representatives of workers and management or make other arrangement for the participation of workers in ensuring safe working conditions.

iv) arrange for periodic safety inspections by competent persons of all buildings, plant, equipment, tools, machinery, workplaces and review of systems of work, regulations, standards or codes of practice. The competent person should examine and ascertain the safety of construction machinery and equipment.

v) provide such supervision to ensure that workers perform their work with due regard to safety and health of theirs as well as that of others.

vi) Employ only those workers who are qualified, trained and suited by their age, physique, state of health and skill.

vii) satisfy themselves that all workers are informed and instructed in the hazards connected with their work and environment and trained in the precautions necessary to avoid accidents and injury to health.

viii) Ensure that buildings, plant, equipment, tools, machinery or workplaces in which a dangerous defect has been found should not be used until the defect has been rectified.

ix) Organise for and remain always prepared to take immediate steps to stop the operation and evacuate workers as appropriate, where there is an imminent danger to the safety of workers.

x) establish a checking system by which it can be ascertained that all the members of a shift, including operators of mobile equipment, have returned to the camp or base at the close of work on dispersed sites and where small groups of workers operate in isolation.

xi) provide appropriate first aid, training and welfare facilities to workers as per various statutes like the Factories Act, 1948 etc. and, whenever collective measures are not feasible or are insufficient, provide and maintain personal protective equipment and clothing in line with the requirement as per OISD-STD-155 (Vol. I& II) on Personnel Protective Equipment. They should also provide access to workers to occupational health services.

xii) Educate workers about their right and the duty at any workplace to participate in ensuring safe working conditions to the extent of their control over the equipment and methods of work and to express views on working procedures adopted as may affect safety and health.

xiii) Ensure that except in an emergency, workers, unless duly authorised, should not interfere with, remove, alter or displace any safety device or other appliance furnished for their protection or the protection of others, or interfere with any method or process adopted with a view to avoiding accidents and injury to health.

xiv) Ensure that workers do not operate or interfere with plant and equipment that they have not been duly authorised to operate, maintain or use.

xv) Ensure that workers do not sleep, rest or cook etc in dangerous places such as scaffolds, railway tracks, garages, confined spaces or in the vicinity of fires, dangerous or toxic substances, running machines or vehicles and heavy equipment etc.

xvii) Obtain the necessary clearance/permits as required and specified by owner

xviii) As per the Govt. circular as amended from time to time all contractors who employ more than 50 workers or where the contract value exceeds Rs. 50 crores, the following facilities are to be provided by contractor at site :

- Arrangement for drinking water
- Toilet facilities
- A creche where 10 or more women workers are having children below the age of 6 years
- Transport arrangement for attending to emergencies

xix) should deploy a safety officer at site

4.2 GENERAL DUTIES OF OWNERS

4.2.1 Owners should:

i) co-ordinate or nominate a competent person to co-ordinate all activities relating to safety and health on their construction projects;
ii) inform all contractors on the project of special risks to health and safety;
iii) Ensure that executing agency is aware of the owner's requirements and the executing agency's responsibilities with respect to safetry practices before starting the job.

5.0 SAFETY PRACTICES AT WORK PLACES

5.1. GENERAL PROVISIONS

5.1.1 All openings and other areas likely to pose danger to workers should be clearly indicated.

5.1.2 Workers & Supervisors should use the safety helmet and other requisite Personal Protective Equipment according to job & site requirement. They should be trained to use personal protective equipment.

5.1.3 Never use solvents, alkalis and other oils to clean the skin.

5.1.4 Lift the load with back straight and knees bent as far as possible. Seek the help in case of heavy load.

5.1.5 Ensure the usage of correct and tested tools and tackles. Don't allow the make shift tools and tackles.

5.1.6 No loose clothing should be allowed while working near rotating equipment or working at heights.

5.2 MEANS OF ACCESS AND EGRESS

Adequate and safe means of access (atleast two, differently located) to and egress from all workplaces should be provided. Same should be displayed and maintained.

5.3 HOUSEKEEPING

5.3.1 Ensure:

i) proper storage of materials and equipment;
ii) removal of scrap, inflammable material, waste and debris at appropriate intervals.

5.3.2 Removal of loose materials, which are not required for use, to be ensured. Accumulation of these at the site can obstruct means of access to and egress from workplaces and passageways.

5.3.3 Workplaces and passageways, that are slippery owing to oil, grease or other causes, should be cleaned up or strewn with sand, sawdust, ash etc.

5.4 PRECAUTIONS AGAINST THE FALL OF MATERIALS & PERSONS AND COLLAPSE OF STRUCTURES

5.4.1 Precautions should be taken such as the provision of fencing, look-out men or barriers to protect any person against injury by the fall of materials, or tools or equipment being raised or lowered.

5.4.2 Where necessary to prevent danger, guys, stays or supports should be used or other effective precautions should be taken to prevent the collapse of structures or parts of structures that are being erected, maintained, repaired, dismantled or demolished.

5.4.3 All openings through which workers are liable to fall should be kept effectively covered or fenced and displayed prominently.

5.4.4 As far as practicable, guardrails and toe-boards should be provided to protect workers from falling from elevated workplaces.

5.5 PREVENTION OF UNAUTHORISED ENTRY

5.5.1 Construction sites located in built-up areas and alongside vehicular and pedestrian traffic routes should be fenced to prevent the entry of unauthorised persons.

5.5.2 Visitors should not be allowed access to construction sites unless accompanied by or authorised by a competent person and provided with the appropriate protective equipment.

5.6 FIRE PREVENTION AND FIRE FIGHTING

5.6.1 All necessary measures should be taken by the executing agency and owner to:

i) avoid the risk of fire;
ii) control quickly and efficiently any outbreak of fire;
iii) bring out a quick and safe evacuation of persons.
iv) Inform unit/fire station control room, where construction work is carried out within existing operating area.

5.6.2 Combustible materials such us packing materials, sawdust, greasy/oily waste and scrap wood or plastics should not be allowed to accumulate in workplaces but should be kept in closed metal containers in a safe place.

5.6.3 Places where workers are employed should, if necessary to prevent the danger of fire, be provided with:

i) suitable and sufficient fire-extinguishing equipment, which should be easily visible and accessible;
ii) an adequate water supply at sufficient pressure meeting the requirements of various OISD standards.

5.6.4 To guard against danger at places having combustible material, workers should be trained in the action to be taken in the event of fire, including the use of means of escape.

5.6.5 At sites having combustible material, suitable visual signs should be provided to indicate clearly the direction of escape in case of fire.

5.6.6 Means of escape should be kept clear at all times. Escape routes should be frequently inspected particularly in high structures and where access is restricted.

5.7 LIGHTING

5.7.1 Where natural lighting is not adequate, working light fittings or portable hand-lamps should be provided at workplace on the construction site where a worker will do a job.

5.7.2 Emergency lighting should be provided for personnel safety during night time to facilitate standby lighting source, if normal system fails.

5.7.2 Artificial lighting should not produce glare or disturbing shadows.

5.7.3 Lamps should be protected by guards against accidental breakage.

5.7.4 The cables of portable electrical lighting equipment should be of adequate size & characteristics for the power requirements and of adequate mechanical strength to withstand severe conditions in construction operations.

5.8 PLANT, MACHINERY, EQUIPMENT AND HAND TOOLS

5.8.1 General Provisions

i) Plant, machinery and equipment including hand tools, both manual and power driven, should:

a) be of proper design and construction, taking into account health, Safety and ergonomic principles.
b) be maintained in good working order;
c) be used only for work for which they have been designed.
d) be operated only by workers who have been authorised and given appropriate training.
e) be provided with protective guards, shields or other devices as required.

ii) Adequate instructions for safe use should be provided.

iii) Safe operating procedures should be established and used for all plant, machinery and equipment.

iv) Operators of plant, machinery and equipment should not be distracted while work is in progress.

v) Plant, machinery and equipment should be switched off when not in use and isolated before any adjustment, clearing or maintenance is done.

vi) Where trailing cables or hose pipes are used they should be kept as short as practicable and not allowed to create a hazard.

vii) All moving parts of machinery and equipment should be enclosed or adequately guarded.

viii) Every power-driven machine and equipment should be provided with adequate means, immediately accessible and readily identifiable to the operator, of stopping it quickly and preventing it from being started again inadvertently.

ix) Operators of plant, machinery, equipment and tools should be provided with PPEs, including where necessary, suitable ear protection.

5.8.2 Hand tools

i) Hand tools should be repaired by competent persons.

ii) Heads of hammers and other shock tools should be dressed or ground to a suitable radius on the edge as soon as they begin to mushroom or crack.

iii) When not in use and while being carried or transported sharp tools should be kept in sheaths, shields, chests or other suitable containers.

iv) Only insulated or nonconducting tools should be used on or near live electrical installations.

v) Only non-sparking tools should be used near or in the presence of flammable or explosive dusts or vapours.

5.8.3 Pneumatic Tools

i) Operating triggers on portable pneumatic tools should be:
a) so placed as to minimise the risk of accidental starting of the machine.
b) so arranged as to close the air inlet valve automatically when the pressure of the operator's hand is removed.

ii) Hose and hose connections for compressed air supply to portable pneumatic tools should be:

a) designed and tested for the pressure and service for which they are intended;
b) fastened securely on the pipe outlet and equipped with the safety chain, as appropriate.

iii) Pneumatic shock tools should be equipped with safety clips or retainers to prevent dies and tools from being accidentally expelled from the barrel.

iv) Pneumatic tools should be disconnected from power and the pressure in hose lines released before any adjustment or repair is made.

5.8.4 Electrical Tools

i) Low voltage portable electrical tools should generally be used.

ii) All electrical tools should be earthed, unless they are "all insulated" or "double insulated" tools which do not require earthing.

iii) All electrical tools should get inspected and maintained on a regular basis by a competent electrician and complete records kept.

5.8.5 Engines

i) Engines should:

a) be installed so that they can be started safely and the maximum safe speed cannot be exceeded.
b) have controls for limiting speed.
c) have devices to stop them from a safe place in an emergency.

ii) IC engines should not be run in confined spaces unless adequate exhaust ventilation is provided.

iii) When IC engines are being fuelled:

a) the engine should be shut off.
b) care should be taken to avoid spilling fuel;
c) no person should smoke or have an naked light in the vicinity.
d) a fire extinguisher should be kept readily available.

iv) Secondary fuel reservoir should be placed outside the engine room.

6.0 CONSTRUCTION ACTIVITIES

The various common activities in construction are as under:

- Excavation
- Scaffolding, Platforms & Ladders
- Structural Work, Laying of Reinforcement & Concreting
- Road Work (Laying of roads)
- Cutting /Welding
- Working in Confined Space
- Proof/Pressure Testing
- Working at Heights
- Handling & Lifting Equipments
- Vehicle Movement
- Electrical
- Offshore
- Demolition
- Radiography
- Sand/shot blasting/ spray painting
- Work above water

The safe practices to be followed during the implementation of above construction activities are given below:

6.1 EXCAVATION

6.1.1 All excavation work should be planned and the method of excavation and the type of support work required should be decided considering the following:

i) the stability of the ground;
ii) the excavation will not affect adjoining buildings, structures or roadways;
iii) to prevent hazard, the gas, water, electrical and other public utilities should be shut off or disconnected, if necessary;
iv) presence of underground pipes, cable conductors, etc.,
v) the position of culvert/bridges, temporary roads and spoil heaps should be determined;

6.1.2 Before digging begins on site, all excavation work should be planned and the method of excavation and the type of support work required decided.

6.1.3 All excavation work should be supervised.

6.1.4 Sites of excavations should be thoroughly inspected:

i) daily, prior to each shift and after interruption in work of more than one day;
ii) after every blasting operation;
iii) after an unexpected fall of ground;
iv) after substantial damage to supports;
v) after a heavy rain, frost or snow;
vi) when boulder formations are encountered.

6.1.5 Safe angle of repose while excavating trenches exceeding 1.5m depth upto 3.0m should be maintained. Based on site conditions, provide proper slope, usually 45^0,and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock or provide proper shoring and strutting to prevent cave-in or slides.

6.1.6 As far as possible, excavated earth should not be placed within one meter of the edge of the trench or depth of trench whichever is greater.

6.1.7 Don't allow vehicles to operate too close to excavated area. Maintain atleast 2m distance from edge of excavation. No load, plant or equipment should be placed or moved near the edge of any excavation where it is likely to cause its collapse and thereby endanger any person unless precautions such as the provision of shoring or piling are taken to prevent the sides from collapsing.

6.1.8 Adequately anchored stop blocks and barriers should be provided to prevent vehicles being driven into the excavation. Heavy vehicles should not be allowed near the excavation unless the support work has been specially designed to permit it.

6.1.9 If an excavation is likely to affect the security of a structure on which persons are working, precautions should be taken to protect the structure from collapse.

6.1.10 Barricade at 1m height (with red & white band/self glowing caution board) should be provided for excavations beyond 1.5m depth. Provide two entries/exits for such excavation.

6.1.11 Necessary precautions should be taken for underground utility lines like cables, sewers etc. and necessary approvals/clearances from the concerned authorities shall be obtained before commencement of the excavation job.

6.1.12 Water shall be pumped/bailed out, if any accumulates in the trench. Necessary precautions should be taken to prevent entry of surface water in trenches.

6.1.13 During rains, the soil becomes loose. Take additional precaution against collapse of side wall.

6.1.14 In hazardous areas, air should be tested to ascertain its quality. No one should be allowed entry till it is suitable for breathing.

6.1.15 In case of mechanised excavation, precaution shall be taken to not to allow anybody to come within one meter of extreme reach of the mechanical shovel. The mechanised excavator shall be operated by a well-trained experienced operator. When not in operation, the machine shall be kept on firm leveled ground with mechanical shovel resting on ground. Wheel or belt shall be suitably jammed to prevent any accidental movement of the machine. Suitable precautions as per manufacturer guidelines should be taken for dozers, graders and other heavy machines.

6.1.16 In case of blasting, follow strictly IS:4081-1986 & Indian Explosive Act and rules for storage, handling and carrying of explosive materials and execution of blasting operation.

6.2 SCAFFOLDING, PLATFORMS & LADDERS

6.2.1 Metal as material of construction

i) A scaffold should be provided and maintained or other equally safe and suitable provision should be made where work cannot safely be done on or from the ground or from part of a building or other permanent structure.

ii) Scaffolds should be provided with safe means of access, such as stairs, ladders or ramps. Ladders should be secured against inadvertent movement.

iii) Every scaffold should be constructed, erected and maintained so as to prevent collapse or accidental displacement when in use.

iv) Every scaffold and part thereof should be constructed :

(a) in such a way so as not to cause hazards for workers during erection and dismantling;
(b) in such a way so as guard rails and other protective devices, platforms, ladders, stairs or ramps can be easily put together;
(c) with sound material and of requisite size and strength for the purpose for which it is to be used and maintained in a proper condition.

v) Boards and planks used for scaffolds should be protected against splitting.

vi) Materials used in the construction of scaffolds should be stored under good conditions and apart from any material unsuitable for scaffolds.

vii) Couplers should not cause deformation in tubes. Couplers should be made of drop forged steel or equivalent material.

viii) Tubes should be free from cracks, splits and excessive corrosion and be straight to the eye, and tube ends cut cleanly square with the tube axis.

ix) Scaffolds should be designed for their maximum load as per relevant code.

x) Scaffolds should be adequately braced.

xi) Scaffolds which are not designed to be independent should be rigidly connected to the building at designated vertical and horizontal places.

xii) A scaffold should never extend above the highest anchorage to an extent which might endanger its stability and strength.

xiii) Loose bricks, drainpipes, chimney-pots or other unsuitable material should not be used for the construction or support of any part of a scaffold.

xiv) Scaffolds should be inspected and certified:

(a) before being taken into use;
(b) at periodic intervals thereafter as prescribed for different types of scaffolds;
(c) after any alteration, interruption in use, exposure to weather or seismic conditions or any other occurrence likely to have affected their strength or stability.

xv) Inspection should more particularly ascertain that:

(a) the scaffold is of suitable type and adequate for the job;

(b) materials used in its construction are sound and of sufficient strength;
(c) it is of sound construction and stable;
(d) that the required safeguards are in position.

xvi) A scaffold should not be erected, substantially altered or dismantled except by or under the supervision.

xvii) Every scaffold should be maintained in good and proper condition, and every part should be kept fixed or secured so that no part can be displaced in consequence of normal use.

xviii) If out-rigger scaffolding is to be used, it should be specifically designed and inspected before putting in use.

6.2.2 Lifting appliances on scaffolds

i) When a lifting appliance is to be used on a scaffold:

(a) the parts of the scaffold should be carefully inspected to determine the additional strengthening and other safety measures required;
(b) any movement of the scaffold members should be prevented;
(c) if practicable, the uprights should be rigidly connected to a solid part of the building at the place where the lifting appliance is erected.

6.2.3 Prefabricated scaffolds

i) In the case of prefabricated scaffold systems, the instructions provided by the manufacturers or suppliers should be strictly adhered to. Prefabricated scaffolds should have adequate arrangements for fixing bracing.

ii) Frames of different types should not be intermingled in a single scaffold.

iii) Scaffolding shall be erected on firm and level ground.

iv) All members of metal scaffolding shall be checked periodically to screen out defective / rusted members. All joints should be properly lubricated for easy tightening.

v) Entry to scaffolding should be restricted.

vi) Erection, alteration and removal shall be done under supervision of experienced personnel.

vii) Use of barrels, boxes, loose bricks etc., for supporting platform shall not be permitted.

viii) Each supporting member of platform shall be securely fastened and braced

ix) Where planks are butt-joined, two parallel putlogs shall be used, not more than 100mm apart, to give support to each plank.

x) Platform plank shall not project beyond its end support to a distance exceeding 4 times the thickness of plank, unless it is effectively secured to prevent tipping. Cantilever planks should be avoided.

xi) The platform edges shall be provided with 150mm high toe board to eliminate hazards of tools or other objects falling from platform.

xii) Erect ladders in the “four up-one out position”

xiii) Lash ladder securely with the structure.

xiv) Using non-slip devices, such as, rubber shoes or pointed steel ferules at the ladder foot, rubber wheels at ladder top, fixing wooden battens, cleats etc.

xv) When ladder is used for climbing over a platform, the ladder must be of sufficient length, to extend at least one meter above the platform, when erected against the platform in “four up-one out position.”

xvi) Portable ladders shall be used for heights not more than 4mt. Above 4mt flights, fixed ladders shall be provided with at least 600 mm landings at every 6mt or less.

xvii) The width of ladder shall not be less than 300mm and rungs shall be spaced not more than 300mm.

xviii) Every platform and means of access shall be kept free from obstruction.

xix) If grease, mud, gravel, mortar etc., fall on platform or scaffolds, these shall be removed immediately to avoid slippage.

xx) Workers shall not be allowed to work on scaffolds during storms or high wind. After heavy rain or storms, scaffolds shall be inspected before reuse.

xxi) Don't overload the scaffolding. Remove excess material and scrap immediately.

xxii) Dismantling of scaffolds shall be done in a pre-planned sequential manner.

6.2.4 Suspended scaffolds/boatwain's chair

i) In addition to the requirements for scaffolds in general as regards soundness, stability and protection against the risk of falls, suspended scaffolds should meet the following specific requirements.

(a) platforms should be designed and built with dimensions that are compatible with the stability of the structure as a whole, especially the length;
(b) the number or anchorage should be compatible with the dimensions of the platform;
(c) the safety of workers should be safeguarded by an extra rope having a point of attachment independent of the anchorage arrangements of the scaffold;
(d) the anchorage and other elements of support of the scaffold should be designed and built in such a way as to ensure sufficient strength;
(e) the ropes, winches, pulleys or pulley blocks should be designed, assembled, used and maintained according to the requirements established for lifting gear adapted to the lifting of persons according to national laws and regulations;
(f) Before use, the whole structure should be checked by a competent person.

6.2.5 Bamboo Scaffolding

i) In general, it should be avoided as far as possible. It should not be used in the unit/off-site areas and where hot work is to be done.

ii) For construction and maintenance of residential and office buildings, situated outside explosive licensed area, bamboo scaffold, if used, should conform to provisions given in IS-3696 (Part 1)-1987.

6.3 STRUCTURAL WORK, LAYING OF REINFORCEMENT & CONCRETING

6.3.1 General provisions

i) The erection or dismantling of buildings, structures, civil engineering works, formwork, falsework and shoring should be carried out by trained workers only under the supervision of a competent person.

ii) Precautions should be taken to guard against danger to workers arising from any temporary state of weakness or instability of a structure.

iii) Formwork, falsework and shoring should be so designed, constructed and maintained that it will safely support all loads that may be imposed on it.

iv) Formwork should be so designed and erected that working platforms, means of access, bracing and means of handling and stabilising are easily fixed to the formwork structure.

6.3.2. Erection and dismantling of steel and prefabricated structures

i) The safety of workers employed on the erection and dismantling of steel and prefabricated structures should be ensured by appropriate means, such as provision and use of:

(a) ladders, gangways or fixed platforms;
(b) platforms, buckets, boatswain's chairs or other appropriate means suspended from lifting appliances;
(c) safety harnesses and lifelines, catch nets or catch platforms;
(d) Power-operated mobile working platforms.

ii) Steel and prefabricated structures should be so designed and made that they can be safely transported and erected.

iii) In addition to the need for the stability of the part when erected, the design should explicitly take following into account:

(a) the conditions and methods of attachment in the operations of transport, storing and temporary support during erection or dismantling as applicable;
(b) Methods for the provision of safeguards such as railings and working platforms, and, when necessary, for mounting them easily on the structural steel or prefabricated parts.

iv) The hooks and other devices built in or provided on the structural steel or prefabricated parts that are required for lifting and transporting them should be so shaped, dimensioned and positioned as:

(a) to withstand with a sufficient margin the stresses to which they are subjected;
(b) Not to set up stresses in the part that could cause failures, or stresses in the structure itself not provided for in the plans, and be designed to permit easy release from the lifting appliance. Lifting points for floor and staircase units should be located (recessed if necessary) so that they do not protrude above the surface;
(c) To avoid imbalance or distortion of the lifted load.

v) Storeplaces should be so constructed that:

(a) there is no risk of structural steel or prefabricated parts falling or overturning;
(b) storage conditions generally ensure stability and avoid damage having regard to the method of storage and atmospheric conditions;
(c) racks are set on firm ground and designed so that units cannot move accidentally.

vi) While they are being stored, transported, raised or set down, structural steel or prefabricated parts should not be subjected to stresses prejudicial to their stability.

vii) Every lifting appliance should:

(a) be suitable for the operations and not be capable of accidental disconnection;
(b) be approved or tested as per statutory requirement.

viii) Lifting hooks should be of the self-closing type or of a safety type and should have the maximum permissible load marked on them.

ix) Tongs, clamps and other appliances for lifting structural steel and prefabricated parts should:

(a) be of such shape and dimensions as to ensure a secure grip without damaging the part;
(b) be marked with the maximum permissible load in the most unfavourable lifting conditions.

x) Structural steel or prefabricated parts should be lifted by methods or appliances that prevent them from spinning accidentally.

xi) When necessary to prevent danger, before they are raised from the ground, structural steel or prefabricated parts should be provided with safety devices such as railings and working platforms to prevent falls of persons.

xii) While structural steel or prefabricated parts are being erected, the workers should be provided with appliances for guiding them as they are being lifted and set down, so as to avoid crushing of hands and to facilitate the operations. Use of such appliances should be ensured.

xiii) A raised structural steel or prefabricated part should be so secured and wall units so propped that their stability cannot be imperiled, even by external agencies such as wind and passing loads before its release from the lifting appliance.

xiv) At work places, instruction should be given to the workers on the methods, arrangements and means required for the storage, transport, lifting and erection of structural steel or prefabricated parts, and, before erection starts, a meeting of all those responsible should be held to discuss and confirm the requirements for safe erection.

xv) During transportation within the construction area, attachments such as slings and stirrups mounted on structural steel or prefabricated parts should be securely fastened to the parts.

xvi) Structural steel or prefabricated parts should be so transported that the conditions do not affect the stability of the parts or the means of transport result in jolting, vibration or stresses due to blows, or loads of material or persons.

xvii) When the method of erection does not permit the provision of other means of protection against fall of persons, the workplaces should be protected by guardrails, and if appropriate by toe-boards.

xviii) When adverse weather conditions such as snow, ice and wind or reduced visibility entail risks of accidents, the work should be carried on with particular care, or, if necessary, interrupted.

xix) Structures should not be worked on during violent storms or high winds, or when they are covered with ice or snow, or are slippery from other causes.

xx) If necessary, to prevent danger, structural steel parts should be equipped with attachments for suspended scaffolds, lifelines or safety harnesses and other means of protection.

xxi) The risks of falling, to which workers moving on high or sloping girders are exposed, should be limited by all means of adequate collective protection or, where this is impossible, by the use of a safety harness that is well secured to a strong support.

xxii) Structural steel parts that are to be erected at a great height should as far as practicable be assembled on the ground.

xxiii) When structural steel or prefabricated parts are being erected, a sufficiently extended area underneath the workplace should be barricaded or guarded

xxiv) Steel trusses that are being erected should be adequately shored, braced or guyed until they are permanently secured in position.

xxv) Load-bearing structural member should not be dangerously weakened by cutting, holing or other means.

xxvi) Structural members should not be forced into place by the hoisting machine while any worker is in such a position that he could be injured by the operation.

xxvii) Open-web steel joists that are hoisted singly should be directly placed in position and secured against dislodgment.

6.3.3 Reinforcement

i) Ensure that workers use Personnel Protective equipment like safety helmet, safety shoes, gloves etc.

ii) Don't place the hand below the rods for checking clear distance. Use measuring devices.

iii) Don't wear loose clothes while checking the rods.

iv) Don't stand unnecessarily on cantilever rods.

v) To carry out welding/cutting of rods, safety procedures/precautions as mentioned in Item No. 6.5 to be followed.

vi) For supplying of rods at heights, proper staging and/or bundling to be provided.

vii) Ensure barricading and staging for supplying and fixing of rods at height.

viii) For short distance carrying of materials on shoulders, suitable pads to be provided.

ix) While transporting material by trucks/trailers, the rods shall not protrude in front of or by the sides of driver's cabin. In case such protrusion cannot be avoided behind the deck, then it should not extend 1/3rd of deck length or 1.5M which ever is less and tied with red flags/lights.

6.3.4 Concreting

i) Ensure stability of shuttering work before allowing concreting.

ii) Barricade the concreting area while pouring at height/depths.

iii) Keep vibrator hoses, pumping concrete accessories in healthy conditions and mechanically locked.

iv) Pipelines in concrete pumping system shall not be attached to temporary structures such as scaffolds and formwork support as the forces and movements may effect their integrity.

v) Check safety cages & guards around moving motors/parts etc. provided in concreting mixers.

vi) Use Personal Protective Equipment like gloves, safety shoes etc. while dealing with concrete and wear respirators for dealing with cement.

vii) Earthing of electrical mixers, vibrators, etc. should be done and verified.

viii) Cleaning of rotating drums of concrete mixers shall be done from outside. Lockout devices shall be provided where workers need to enter.

ix) Where concrete mixers are driven by internal combustion engine, exhaust points shall be located away from the worker's workstation so as to eliminate their exposure to obnoxious fumes.

x) Don't allow unauthorised person to stand under the concreting area.

xi) Ensure adequate lighting arrangements for carrying out concrete work during night.

xii) Don't allow the same workers to pour concrete round the clock. Insist on shift pattern.

xiii) During pouring, shuttering and its supports should be continuously watched for defects.

6.4 ROAD WORK

6.4.1 Site shall be barricaded and provided with warning signs, including night warning lamps at appropriate locations for traffic diversion.

6.4.2 Filled and empty bitumen drums shall be stacked separately at designated places.

6.4.3 Mixing aggregate with bitumen shall preferably be done with the help of bitumen batch mixing plant, unless operationally non-feasible.

6.4.4 Road rollers, Bitumen sprayers, Pavement finishers shall be driven by experienced drivers with valid driving license.

6.4.5 Workers handling hot bitumen sprayers or spreading bitumen aggregate mix or mixing bitumen with aggregate, shall be provided with PVC hand gloves and rubber shoes with legging up to knee joints.

6.4.6 At the end of day's work, surplus hot bitumen in tar boiler shall be properly covered by a metal sheet, to prevent anything falling in it,

6.4.7 If bitumen accidentally falls on ground, it shall be immediately covered by sprinkling sand, to prevent anybody stepping on it. Then it shall be removed with the help of spade.

6.4.8 For cement concrete roads, besides site barricading and installation of warning signs for traffic diversion, safe practices mentioned in the chapter on "Concreting", shall also be applicable.

6.5 CUTTING/WELDING

6.5.1 Common hazards involved in welding/cutting are sparks, molten metal, flying particles, harmful light rays, electric shocks etc. Following precautions should be taken: -

i) A dry chemical type fire extinguisher shall be made available in the work area.

ii) Adequate ventilation shall be ensured by opening manholes and fixing a shield or forced circulation of air etc, while doing a job in confined space.

iii) Ensure that only approved and well-maintained apparatus, such as torches, manifolds, regulators or pressure reducing valves, and acetylene generators, be used.

iv) All covers and panels shall be kept in place, when operating an electric Arc welding machine.

v) The work piece should be connected directly to Power supply, and not indirectly through pipelines/structures/equipments etc.

vi) The welding receptacles shall be rated for 63 A suitable for 415V, 3-Phase system with a scraping earth. Receptacles shall have necessary mechanical interlocks and earthing facilities.

vii) All cables, including welding and ground cables, shall be checked for any worn out or cracked insulation before starting the job. Ground cable should be separate without any loose joints.

viii) Cable coiling shall be maintained at minimum level, if not avoidable.

ix) An energised electrode shall not be left unattended.

x) The power source shall be turned off at the end of job.

xi) All gas cylinders shall be properly secured in upright position.

xii) Acetylene cylinder shall be turned and kept in such a way that the valve outlet points away from oxygen cylinder.

xiii) Acetylene cylinder key for opening valve shall be kept on valve stem, while cylinder is in use, so that the acetylene cylinder could be quickly turned off in case of emergency. Use flash back arrestors to prevent back-fire in acetylene/oxygen cylinder.

xiv) When not in use, valves of all cylinders shall be kept closed.

xv) All types of cylinders, whether full or empty, shall be stored at cool, dry place under shed.

xvi) Forced opening of any cylinder valve should not be attempted.

xvii) Lighted gas torch shall never be left unattended.

xviii) Store acetylene and oxygen cylinders separately.

xix) Store full and empty cylinders separately.

xx) Avoid cylinders coming into contact with heat.

xxi) Cylinders that are heavy or difficult to carry by hand may be rolled on their bottom edge but never dragged.

xxii) If cylinders have to be moved, be sure that the cylinder valves are shut off.

xxiii) Before changing torches, shut off the gas at the pressure reducing regulators and not by crimping the hose.

xxiv) Do not use matches to light torches, use a friction lighter.

xxv) Move out any leaking cylinder immediately.

xxvi) Use trolleys for oxygen & acetylene cylinder and chain them.

xxvii) Always use Red hose for acetylene and other fuel gases and Black for oxygen, and ensure that both are in equal length.

xxviii) Ensure that hoses are free from burns, cuts and cracks and properly clamped.

xxix) Avoid dragging hoses over sharp edges and objects

xxx) Do not wrap hoses around cylinders when in use or stored.

xxxi) Protect hoses from flying sparks, hot slag, and other hot objects.

xxxii) Lubricants shall not be used on Ox-fuel gas equipment.

xxxiii) During cutting/welding, use proper type goggles/face shields.

6.6 WORKING IN CONFINED SPACES

6.6.1 Following safety practices for working in confined space like towers, columns, tanks and other vessels should be followed in addition to the safety guidelines for specific jobs like scaffolding, cutting/welding etc.

i) Shut down, isolate, depressurise and purge the vessel as per laid down procedures.

ii) Entry inside the vessel and to carry out any job should be done after issuance of valid permit only in line with the requirement of OISD-STD-105.

iii) Ensure proper and accessible means of exit before entry inside a confined space.

iv) The number of persons allowed inside the vessel should be limited to avoid overcrowding.

v) When the work is going on in the confined space, there should always be one man standby at the nearby manway.

vi) Before entering inside the vessels underground or located at lower elevation, probability of dense vapours accumulating nearby should also be considered in addition to inside the vessel.

vii) Ensure requisite O_2 level before entry in the confined space and monitor level periodically or other wise use respiratory devices.

viii) Check for no Hydrocarbon or toxic substances before entry and monitor level periodically or use requisite Personal Protective Equipment.

ix) Ensure adequate ventilation or use respiratory devices.

x) Depending upon need, necessary respirator system, gas masks and suit shall be worn by everyone entering confined space. In case of sewer, OWS or in the confined area where there is a possibility of toxic or inert gas, gas masks shall be used by everyone while entering.

xi) Barricade the confined spaces during hoisting, radiography, blasting, pressure testing etc.

xii) Use 24V flameproof lamp fittings only for illumination.

xiii) Use tools with air motors or electric tools with maximum voltage of 24V.

xiv) House keeping shall be well maintained.

xv) Safety helmet, safety shoes and safety belt shall be worn by everyone entering the confined space.

xvi) Don't wear loose clothing while working in a confined space.

xvii) In case of the vessels which are likely to contain pyropheric substances (like Iron Sulphide), special care need to be taken before opening the vessel. Attempt should be

made to remove the pyropheric substances. Otherwise, these should be always kept wet by suitable means.

xviii) The cutting torches should also be kept outside the vessel immediately after the cutting.

xix) The gas cylinders used for cutting/welding shall be kept outside.

xx) All cables, hoses, welding equipment etc., shall be removed from confined space at end of each work day, even if the work is to be resumed in the same space the next day.

xxi) To the extent possible sludge shall be cleared and removed from outside before entering.

xxii) No naked light or flame or hot work such as welding, cutting and soldering should be permitted inside a confined space or area unless it has been made completely free of the flammable atmosphere, tested and found safe by a competent person. Only non-sparking tools and flameproof hand lamps protected with guard and safety torches should be used inside such confined space or area for initial inspection, cleaning or other work required to be done for making the area safe.

xxiii) Communication should be always maintained between the worker and the attendant.

6.7 PROOF/PRESSURE TESTING

6.7.1 Review test procedure before allowing testing with water or air or any other fluid.

6.7.2 Provide relief valves of adequate size while testing with air or other gases.

6.7.3 Ensure compliance of necessary precautions, step wise loading, tightening of fasteners, grouting etc. before and during testing.

6.7.4 Inform all concerned in advance of the testing.

6.7.5 Keep the vents open before opening any valve for filling/draining of liquid used for hydrotesting. The filling/draining should not exceed the designed rate for pressure testing.

6.7.6 Provide separate gauges of suitable range for pressurising pump and the equipment to be tested.

6.7.7 Provide gauges at designated locations for monitoring of pressures.

6.7.8 Check the calibration of all pressurising equipment and accessories and maintain records.

6.7.9 Take readings at pre-defined intervals.

6.8 WORKING AT HEIGHTS

6.8.1 General Provision

i) While working at a height of more than 3 meters, ISI approved safety belt shall be used.

ii) While working at a height of more than 3 meters, permit should be issued by competent person before commencement of the job.

iii) Worker should be well trained on usage of safety belt including its proper usage at the time of ascending/descending.

iv) All tools should be carried in tool kits to avoid their falling.

v) If the job is on fragile/sloping roof, roof walk ladders shall be used.

vi) Provide lifeline wherever required.

vii) Additional safety measures like providing Fall Arrestor type Safety belt, safety net should be provided depending upon site conditions, job requirements.

viii) Keep working area neat and clean. Remove scrap material immediately.

ix) Don't throw or drop material/equipment from height.

x) Avoid jumping from one member to another. Use proper passageway.

xi) Keep both hands free while climbing. Don't try to bypass the steps of the ladder.

xii) Try to maintain calm at height. Avoid over exertion.

xiii) Avoid movements on beam.

xiv) Elevated workplaces including roofs should be provided with safe means of access and egress such as stairs, ramps or ladders.

6.8.2 Roof Work

i) All roof-work operations should be pre-planned and properly supervised.

ii) Roof work should only be undertaken by workers who are physically and psychologically fit and have the necessary knowledge and experience for such work.

iii) Work on roofs shouldn't be carried on in weather conditions that threaten the safety of workers.

iv) Crawling boards, walkways and roof ladders should be securely fastened to a firm structure.

v) Roofing brackets should fit the slope of the roof and be securely supported.

vi) Where it is necessary for a person to kneel or crouch near the edge of the roof, necessary precautions should be taken.

vii) On a large roof where work have to be carried out at or near the edge, a simple barrier consisting of crossed scaffold tubes supporting a tubing guardrail may be provided.

viii) All covers for openings in roofs should be of substantial construction and be secured in position.

ix) Roofs with a pitch of more than 10 should be treated as sloping.

x) When work is being carried out on sloping roofs, sufficient and suitable crawling boards or roof ladders should be provided and firmly secured in position.

xi) During extensive work on the roof, strong barriers or guardrails and toe-boards should be provided to stop a person from falling off the roof.

xii) Where workers are required to work on or near roofs or other places covered with fragile material, through which they are liable to fall, they should be provided with suitable roof ladders or crawling boards strong enough and when spanning across the supports for the roof covering to support those workers.

xiii) A minimum of two boards should be provided so that it is not necessary for a person to stand on a fragile roof to move a board or a ladder, or for any other reason.

6.8.3 Work on tall chimneys

i) For the erection and repair of tall chimneys, scaffolding should be provided. A safety net should be maintained at a suitable distance below the scaffold.

ii) The scaffold floor should always be at least 65 cm below the top of the chimney.

iii) Under the working floor of the scaffolding the next lower floor should be left in position as a catch platform.

iv) The distance between the inside edge of the scaffold and the wall of the chimney should not exceed 20 cm at any point.

v) Catch platforms should be erected over:

(a) the entrance to the chimney;
(b) Passageways and working places where workers could be endangered by falling objects.

vi) For climbing tall chimneys, access should be provided by:

(a) stairs or ladders;
(b) a column of iron rungs securely embedded in the chimney wall;
(c) Other appropriate means.

vii) When workers use the outside rungs to climb the chimney, a securely fastened steel core rope looped at the free end and hanging down at least 3 m should be provided at the top to help the workers to climb on to the chimney.

viii) While work is being done on independent chimneys the area surrounding the chimney should be enclosed by fencing at a safe distance.

ix) Workers employed on the construction, alteration, maintenance or repair of tall chimneys should not:

a) work on the outside without a safety harness attached by a lifeline to a rung, ring or other secure anchorage;
b) put tools between the safety harness and the body or in pockets not intended for the purpose;
c) haul heavy materials or equipment up and down by hand to or from the workplace on the chimney;
d) fasten pulleys or scaffolding to reinforcing rings without first verifying their stability;
e) work alone;
f) climb a chimney that is not provided with securely anchored ladders or rungs;
g) Work on chimneys in use unless the necessary precautions to avoid danger from smoke and gases have been taken.

x) Work on independent chimneys should not be carried on in high winds, icy conditions, fog or during electrical storms.

6.9 HANDLING AND LIFTING EQUIPMENT:

6.9.1 General Provisions

Following are the general guidelines to be followed with regard to all types of handling and lifting equipment in addition to the guidelines for specific type of equipments dealt later on.

i) There should be a well-planned safety programme to ensure that all the lifting appliances and lifting gear are selected, installed, examined, tested, maintained, operated and dismantled with a view to preventing the occurrence of any accident;

ii) All lifting appliances shall be examined by competent persons at frequencies as specified in "The Factories act".

iii) Check thoroughly quality, size and condition of all lifting tools like chain pulley blocks, slings, U-clamps, D-shackles etc. before putting them in use.

iv) Safe lifting capacity of all lifting & handling equipment, tools and shackles should be got verified and certificates obtained from competent authorities before its use. The safe working load shall be marked on them.

v) Check periodically the oil, brakes, gears, horns and tyre pressure of all moving equipments like cranes, forklifts, trailers etc as per manufacturer's recommendations.

vi) Check the weights to be lifted and accordingly decide about the crane capacity, boom length and angle of erection.

vii) Allow lifting slings as short as possible and check packing at the friction points.

viii) While lifting/placing of the load, no unauthorised person shall remain within the radius of the boom and underneath the load.

ix) While loading, unloading and stacking of pipes, proper wedges shall be placed to prevent rolling down of the pipes.

x) Control longer jobs being lifted up from both ends.

xi) Only trained operators and riggers should carry out the job. While the crane is moving or lifting the load, the trained rigger should be there for keeping a vigil against hitting any other object.

xii) During high wind conditions and nights, lifting of heavy equipments should be avoided. If unavoidable to do erection in night, operator and rigger should be fully trained for night signaling. Also proper illumination should be there.

xiii) Allow crane to move on hard, firm and leveled ground.

xiv) When crane is in idle condition for long periods or unattended, crane boom should either be lowered or locked as per manufacturer's guidelines.

xv) Hook and load being lifted shall remain in full visibility of crane operators, while lifting, to the extent possible.

xvi) Don't allow booms or other parts of crane to come within 3 meters reach of overhead electrical cables.

xvii) No structural alterations or repairs should be made to any part of a lifting appliance, which may affect the safety of the appliance without the permission and supervision of the competent person.

6.9.2 Hoists

i) Hoist shafts should be enclosed with rigid panels or other adequate fencing at:

(a) ground level on all sides;
(b) all other levels at all points at which access is provided;
(c) all points at which persons are liable to be struck by any moving part.

ii) The enclosure of hoist shafts, except at approaches should extend where practicable at least 2mt above the floor, platform or other place to which access is provided except where a lesser height is sufficient to prevent any person falling down the hoistway and there is no risk of any person coming into contact with any moving part of the hoist, but in no case should the enclosure be less than 1mt in height.

iii) The guides of hoist platforms should offer sufficient resistance to bending and, in the case of jamming by a safety catch, to buckling.

iv) Where necessary to prevent danger, adequate covering should be provided above the top of hoist shafts to prevent material falling down them.

v) Outdoor hoist towers should be erected on firm foundations, and securely braced, guyed and anchored.

vi) A ladderway should extend from the bottom to the top of outdoor hoist towers, if no other ladderway exists within easy reach.

vii) Hoisting engines should be of ample capacity to control the heaviest load that they will have to move.

viii) Hoists should be provided with devices that stop the hoisting engine as soon as the platform reaches its highest stopping place.

ix) Winches should be so constructed that the brake is applied when the control handle is not held in the operating position.

x) It should not be possible to set in motion from the platform a hoist, which is not designed for the conveyance of persons.

xi) Winches should not be fitted with pawl and ratchet gears on which the pawl must be disengaged before the platform is lowered.

xii) Hoist platforms should be capable of supporting the maximum load that they will have to carry with a safety factor.

xiii) Hoist platforms should be equipped with safety gear that will hold the platform with the maximum load if the hoisting rope breaks.

xiv) If workers have to enter the cage or go on the platform at landings there should be a locking arrangement preventing the cage or platform from moving while any worker is in or on it.

xv) On sides not used for loading and unloading, hoist platforms should be provided with toe-boards and enclosures of wire mesh or other suitable material to prevent the fall of parts of loads.

xvi) Where necessary to prevent danger from falling objects, hoist platforms should be provided with adequate covering.

xvii) Counterweights consisting of an assemblage of several parts should be made of specially constructed parts rigidly connected together.

xviii) Counterweights should run in guides.

xix) Platforms should be provided at all landings used by workers.

xx) Following notices should be posted up conspicuously and in very legible characters:

(a) on all hoists:

- on the platform: the carrying capacity in kilograms or other appropriate standard unit of weight;
- on the hoisting engine: the lifting capacity in kilograms or other appropriate standard unit of weight;

(b) on hoists authorised or certified for the conveyance of persons:

- on the platform or cage: the maximum number of persons to be carried at one time;

(c) *on* hoists for goods only:

- on every approach to the hoist and on the platform: prohibition of use by persons.

xxi) Hoists intended for the carriage of persons should be provided with a cage so constructed as to prevent any person from falling out or being trapped between the cage and any fixed part of the structure when the cage gate is shut, or from being struck by the counterbalance weight or by articles or materials tailing down the hoistway.

xxii) On each side in which access is provided, the cage should have a gate fitted with devices which ensure that the gate cannot be opened except when the cage is at a landing and that the gate must be closed before the cage can move away from the landing.

xxiii) Every gate in the enclosure of the hoist shaft which gives access from a landing place to the cage should be fitted with devices to ensure that the gate cannot be opened except when the cage is at that landing place, and that the cage cannot be moved away from that landing place until the gate is closed.

6.9.3 Derricks

Stiff-leg derricks

i) Derricks should be erected on a firm base capable of taking the combined weight of the crane structure and maximum rated load.

ii) Devices should be used to prevent masts from lifting out of their seating.

iii) Electrically operated derricks should be effectively earthed from the sole plate or framework.

iv) Counterweights should be so arranged that they do not subject the backstays, sleepers or pivots to excessive strain.

v) When derricks are mounted on wheels:

a) a rigid member should be used to maintain the correct distance between the wheels;
b) they should be equipped with struts to prevent them from dropping if a wheel breaks or the derrick is derailed.

vi) The length of a derrick jib should not be altered without consulting the manufacturer.

vii) The jib of a scotch derrick crane should not be erected within the backstays of the crane.

Guy derricks

i) The restraint of the guy ropes should be ensured by fitting stirrups or anchor plates in concrete foundations.

ii) The mast of guy derricks should be supported by six top guys spaced approximately equally.

iii) The spread of the guys of a guy derrick crane from the mast should not be more than 45^0 from the horizontal.

iv) Guy ropes of derricks should be equipped with a stretching screw or turnbuckle or other device to regulate the tension.

v) Gudgeon pins, sheave pins and fool bearings should be lubricated frequently.

vi) When a derrick is not in use, the boom should be anchored to prevent it from swinging.

6.9.4 Gin poles

i) Gin poles should:

(a) be straight;
(b) consist of steel or other suitable metal;
(c) be adequately guyed and anchored;
(d) be vertical or raked slightly towards the load;
(e) be of adequate strength for the loads that they will be required to lift/move.

ii) Gin poles should not be spliced and if a gin pole is composed of different elements, they should be assembled in conformity with their intrinsic material strength.

iii) Gin poles should be fastened at their feet to prevent displacement in operation.

iv) Gin poles, which are moved from place to place and re-erected, should not be taken into use again before the pole, lifting ropes, guys, blocks and other parts have been inspected, and the whole appliance has been tested under load.

v) When platforms or skips are hoisted by gin poles, precautions should be taken to prevent them from spinning and to provide for proper landing.

6.9.5 Tower cranes

i) Where tower cranes have cabs at high level, persons, capable and trained to work at heights, should only be employed as crane operators.

ii) The characteristics of the various machines available should be considered against the operating requirements and the surroundings in which the crane will operate before a particular type of crane is selected.

iii) Care should be taken in the assessment of wind loads both during operations and out of service. Account should also be taken of the effects of high structures on wind forces in the vicinity of the crane.

iv) The ground on which the tower crane stands should have the requisite bearing capacity. Account should be taken of seasonal variations in ground conditions.

v) Bases for tower cranes and tracks for rail-mounted tower cranes should be firm and level. Tower cranes should only operate on gradients within limits specified by the manufacturer. Tower cranes should only be erected at a safe distance from excavations and ditches.

vi) Tower cranes should be sited where there is clear space available for erection, operation and dismantling. As far as possible, cranes should be sited so that loads do not have to be handled over occupied premises, over public thoroughfares, other construction works and railways or near power cables.

vii) Where two or more tower cranes are sited in positions where their jibs could touch any part of the other crane, there should be direct means of communication between them and a distinct warning system operated from the cab so that one driver may alert the other of impending danger.

viii) The manufacturers' instructions on the methods and sequence of erection and dismantling should be followed. The crane should be tested before being taken into use.

ix) The climbing operation of climbing tower cranes should be carried out in accordance with manufacturers' instructions. The free-standing height of the tower crane should not extend beyond what is safe and permissible in the manufacturers' instructions.

x) When the tower crane is left unattended, loads should be removed from the hook, the hook raised, the power switched off and the boom brought to the horizontal. For longer periods or at times when adverse weather conditions are expected, out of service procedures should be followed. The main jib should be slewed to the side of the tower away from the wind, put into free slew and the crane immobilised.

xi) A windspeed measuring device should be provided at an elevated position on the tower crane with the indicator fitted in the drivers' cab.

xii) Devices should be provided to prevent loads being moved to a point where the corresponding safe working load of the crane would be exceeded. Name boards or other items liable to catch the wind should not be mounted on a tower crane other than in accordance with the manufacturers' instructions.

xiii) Tower cranes should not be used for magnet, or demolition ball service, piling operations or other duties, which could impose excessive loading on the crane structure.

6.9.6 Lifting ropes

i) Only ropes with a known safe working capacity should be used as lifting ropes.

ii) Lifting ropes should be installed, maintained and inspected in accordance with manufacturers' instructions.

iii) Repaired steel ropes should not be used on hoists.

iv) Where multiple independent ropes are used, for the purpose of stability, to lift a work platform, each rope should be capable of carrying the load independently.

6.10 VEHICLE MOVEMENT

6.10.1 Park vehicles only at designated places. Don't block roads to create hindrance for other vehicles.

6.10.2 Don't overload the vehicle.

6.10.3 Obey speed limits and traffic rules.

6.10.4 Always expect the unexpected and be a defensive driver.

6.10.5 Drive carefully during adverse weather and road conditions.

6.10.6 Read the road ahead and ride to the left.

6.10.7 Be extra cautious at nights. Keep wind screens clean and lights in working condition.

6.10.8 All vehicles used for carrying workers and construction materials must undergo predictive/preventive maintenance and daily checks

6.10.9 Driver with proper valid driving license shall only be allowed to drive the vehicle

6.10.10 Routes shall be leveled, marked and planned in such a way so as to avoid potential hazards such as overhead power lines and sloping ground etc.

6.10.11 While reversing the vehicles, help of another worker should be ensured at all times

6.10.12 An unattended vehicle should have the engine switched off

6.10.13 Wherever possible one-way system shall be followed

6.10.14 Barriers/fixed stops should be provided for excavation/openings to prevent fall of vehicle

6.10.15 Load should be properly secured

6.10.16 The body of the tipper lorry should always be lowered before driving the vehicle off.

6.10.17 Signs/signals/caution boards etc. should be provided on routes .

6.11 ELECTRICAL

6.11.1 General Provisions

i) Only persons having valid licenses should be allowed to work on electrical facilities.

ii) No person should be allowed to work on live circuit. The same, if unavoidable, special care and authorisation need to be taken.

iii) Treat all circuits as "LIVE" unless ensured otherwise.

iv) Electrical "Tag Out" procedure "MUST" be followed for carrying out maintenance jobs.

v) Display voltage ratings prominently with "Danger" signs.

vi) Put caution/notice signs before starting the repair works.

vii) All electrical equipment operating above 250V shall have separate and distinct connections to earth grid.

viii) Proper grounding to be ensured for all switch boards and equipment including Portable ones prior to taking into service.

ix) Make sure that electrical switch boards, portable tools, equipments (like grinding machine etc.) don't get wet during their usage. If it happens, stop the main supply, make the tools dry and then only use them. Check proper earthing.

All temporary switch boards/ KIOSKS put up at work site should be suitably protected from rain and the level of same should be high enough to avoid contact with water due to water logging.

x) Don't work wet on electrical system.

xi) Don't overload the electrical system.

xii) Use only proper rated HRC fuses.

xiii) Industrial type extension boards and Plug sockets are only to be used.

xiv) ELCB for all temporary connections must be provided. Use insulated 3-pin plug tops.

xv) All power supply cables should be laid properly and neatly so that they don't cause hindrance to persons working and no physical damage also takes place to the cables during various construction activities.

xvi) All Power cables to be properly terminated using glands and lugs of proper size and adequately crimped.

xvii) Use spark-proof/flame proof type electrical fittings in Fire Hazard zones as per area classification under OISD-STD-113.

xviii) Check installations of steel plates/pipes to protect underground cables at crossings.

xix) Don't lay unarmored cable directly on ground, wall, roof or trees. All temporary cables should be laid at least 750 mm below ground and cable markers should be provided. Proper sleeves should be provided at road crossings. In case temporary cables are to be laid on wooden poles/steel poles, the minimum cable heights should be 4.5 M.

xx) Maintain safe overhead distance of HT cables as per Indian Electricity Rules and relevant acts.

xxi) Don't connect any earthing wire to the pipelines/structures.

xxii) Don't make any unsafe temporary connections, naked joints/wiring etc.

xxiii) Ensure that temporary cables are free from cuts, damaged insulation, kinks or improper insulated joints.

xxiv) Check at periodic intervals that pins of sockets and joints are not loose.

xxv) Protect electrical wires/equipments from water and naked flames.

xxvi) Illuminate suitably all the work areas.

xxvii) All switchboards should be of MS structure only and incoming source should be marked.

xxviii) Hand lamps should not be of more than 24V rating.

xxix) Fire extinguishers (DCP/CO_2/Sand buckets) should be kept near temporary switch boards being used for construction purposes. Don't use water for fighting electrical fires.

xxx) Insulating mats shall be provided in the front and back end of switch boards.

xxxi) All parts of electrical installations should be so constructed, installed and maintained as to prevent danger of electric shock, fire and external explosion.

Periodic checking/certification of electrical safety appliances such as gloves, insulating mats, hoods etc. to be done/witnessed along with maintaining a register at site signed by competent authority.

xxxii) A notice displaying following, should be kept exhibited at suitable places:

a) prohibiting unauthorised persons from entering electrical equipment rooms or from handling or interfering with electrical apparatus;
b) containing directions as to procedures in case of fire, rescue of persons in contact with live conductors and the restoration of persons suffering from electric shock;
c) specifying the person to be notified in case of electrical accident or dangerous occurrence, and indicating how to communicate with him.

xxxiii) No other cables/pipes to be laid in trench used for electrical cables.

xxxiv) Utmost care should be taken while excavating Earth from cable trench to avoid damage or any accident.

xxxv) Sub-station floor cut-outs meant for switch board installations to be covered wherever installation is incomplete.

NOTE: A Residual Current Operated Circuit Breaker (RCCB) or Earth Leakage Circuit Breaker (ELCB), when installed, protects a human being to the widest extent. RCCB or ELCB should be provided as per Indian Electricity Rules.

6.11.2 Inspection and maintenance

i) All electrical equipment should be inspected before taking into use to ensure suitability for its proposed use.

ii) At the beginning of every shift, the person using the electrical equipment should make a careful external examination of the equipment and conductors, especially the flexible cables.

iii) Apart from some exceptional cases, work on or near live parts of electrical equipment should be forbidden.

iv) Before any work is begun on conductors or equipment that do not have to remain live:

a) the current should be switched off by a responsible authorised person;
b) precautions should be taken to prevent the current from being switched on again;
c) the conductors or the equipment should be tested to ascertain that they are dead;
d) the conductors and equipment should be earthed and short-circuited;
e) neighbouring live parts should be adequately protected against accidental contact.

v) After work has been done on conductors and equipment, the current should only be switched on again on the orders of a competent person after the earthing and short-circuiting have been removed and the workplace reported safe.

vi) Electricians should be provided with approved and tested tools, and personal protective equipment such as rubber gloves, mats etc.

vii) All conductors and equipment should be considered to be live unless there is a proof of the contrary.

viii) When work has to be done in dangerous proximity to live parts the current should be cut off. If for operational reasons this is not possible, the live parts should be fenced off or enclosed by qualified staff from the sub-station concerned.

6.11.3. Testing

i) Electrical installations should be inspected and tested and the results recorded.

ii) Periodic testing of the efficiency of the earth leakage protective devices should be carried out.

iii) Particular attention should be paid to the earthing of apparatus, the continuity of protective conductors, polarity and insulation resistance, protection against mechanical damage and condition of connections at points of entry.

6.12 OFFSHORE

6.12.1 General

The isolated nature of offshore installations are hazardous. They call for greater need for safety and survival at offshore. Safety at offshore is safety of installations and safety of personnel. Safety problems and accidents at offshore have high risks due to limited space, helicopter operation, sea transport etc. Following are the general safety guidelines to be followed in addition to the safety guidelines stipulated for specific jobs dealt later on:

i) Workers should be well trained to do their job independently with high degree of self-control and self-discipline.

ii) On arrival at offshore, everyone should be briefed about the safety rules to be followed at offshore, evacuation system etc. All personnel should wear overall (dangri), helmet and shoes for personnel protection.

iii) In case of emergency, workers should follow instruction of Field Production Superintendent (F.P.S.) In certain cases instructions may be given to abandon the offshore installation and evacuate the persons to safe location.

iv) To overcome above problems, offshore personnel must receive training for using life saving appliances and other personal survival techniques.

v) Any person working at offshore should have one person as standby for any eventuality.

6.12.2 Drilling Rigs

i) Location of jack up rigs should not be less than 5 Kms from shipping route. Orientation of the rig, wind direction etc are required for safe landing of helicopter. Information w.r.t. sea currents, wind speed, Hi-lo tide etc are required for mooring of supply vessels.

ii) Sea bed condition at every location should be ensured for safety of rig.

iii) Radio and other communication facilities should be such to maintain contact with base all times.

iv) During toeing of rig, the rig deck should be clear of load, toeing lines should be in good condition and tensions in various toeing lines should be constantly monitored.

v) Few steps during toeing are:

a) crane booms should be secured to their vesta,
b) all hatches and water tight doors should be closed,
c) number of personnel on board should be restricted,
d) evacuate in case of emergency and operation should be completed preferably in day light.

6.12.3 Drilling

i) In view of CO_2 and H_2S gas cut from well, effective ventilation should be provided where drilling is in progress.

ii) Safety alarm shall be checked in advance in view of failure of ventilation system.

iii) Suitable sensors for H_2S and Methane should be function tested time to time and suitable colour code should be given.

iv) Working areas of the crane should be illuminated during night to avoid accident.

v) Clear space should be available for despatch and receipt of load and, in particular, basket transfer of passengers. Persons engaged in loading/unloading of materials should be protected from falling into the sea.

vi) Signal light should be fitted at the top of the jib.

vii) Crane hook should be fitted with safety latches.

viii) Experienced person should be engaged in operation of specific equipment like winches, cranes etc.

ix) At least three cable turns shall always be there on the winch drum.

x) Adequate communication like walkie talkie, round robin phone should be available between the crane operator, supervisor and helper.

xi) Crane operation should be completely stopped during helicopter landing/taking off.

xii) Except for helicopter landing deck, all decks, platforms, bridges, ladders should have rigid and fixed guard rails atleast one meter high and should have one intermediate rail midway between the handrail and 100 mm toe board.

xiii) Wooden ladders shall not be used at offshore.

xiv) Flow sensor in the flow line should be ensured for safe working and to avoid blow out.

xv) Hydrogen sulphuide gas In offshore is of great risk and at 10 ppm (0.001%) concentration in air, a person should not be exposed for more than 8 hours, If concentration is more, then breathing apparatus should be used. Corrosion of equipment is also caused by H_2S.

xvi) Portable H_2S gas detector should be continously used.

6.12.4 Production Platforms

i) In case hydrocarbon Is released due to overpressure, leak, overflow, gas blow etc., shut down process to stop flow *of* hydrocarbon. Prevent ignition of released hydrocarbon and in case of fire shut in the process complex and follow emergency contigency plan.

ii) Sub surface safetv valve (SSSV)) below the well head should be actuated during uncontrolled well -flow and they should be regularly checked.

iii) Surface safety valve or SDV should be checked for no gas leakage from bleed port / flange etc., in the well head area. It should not be in "mechanical override" or bypassed from panel.

iv) High pressure gas lift lines - blowdown system should be O.K.

v) Auto actuation of SDVs in the inlet of pressure vessels should be O.K. and in "normal position" from shutdown panels. A record of status of switches normal/bypassed in auto-con* panels (PSH, PSL, LSL, ILSL) should be maintained.

* Shut Down Panels

vi) Welders rectifier set and electrical connections to it should be checked and approved by electrical-in- charge for proper electrical safely.

vii) “SCADA" telementry system if available should be operational for remote opening and closing of wells at unmanned platforms (through RPMC).

viii) Local ESD/FSD (near the work site) should be provided for jobs of very critical nature, so that the persons working can access it immediately in emergency for safety. Safety officer should judge the requirement & inform FPS for the same.

ix) Railings and Gratings etc. in and around work area should be O.K. and inspected to avoid slippage of man into sea.

x) Emergency shut down (ESD) system is initiated when an abnormal condition is detected. ESD should be checked once in six months.

xi) Platform should be manned round the clock.

xii) Welding and cutting work should be regulated by hot work permit.

xiii) All detectors should be calibrated as per recommendation of the manufacturer.

xiv) No system should be by-passed which affects the system of platform.

xv) In H_2S field platforms, due care shall be taken as per recommendations.

xvi) Follow the instructions of F.P.S. during stay at platform

6.12.5 Fire Prevention And Control

i) Provision be made for safe handling and storage of dirty rags, trash, and waste oil. Flammable liquids and chemicals applied on platform should be immediately cleaned.

ii) Paint containers and hydrocarbon samples, gas cylinders for welding and cutting should be stored properly. Cylinders should be transported in hand-cart.

iii) Smoking should be restricted and no smoking area should be identified.

iv) Special attention should be given to crude oil pump seals, diesel and gas engines which are potential source of ignition in the event of failure.

v) Fire and smoke detectors i.e. ultraviolet heat, thermal and smoke detector should be function tested once in three months.

vi) Fire is controlled in offshore by water spraying, Halon, CO_2 flooding, DCP and sprinkler system.

vii) Foaming agent is applied for controlling fire in liquid hydrocarbon. The system is not effective in gas fire.

viii) Light weight breathing system should be used.

ix) The fire control plan at offshore should reveal control station, fire alarms and fire detectors, deluge valves and sprinkler, fire extinguishing appliances, fireman outfit and ventilation system.

x) Fire fighting equipment should be maintained in ready to use condition.

6.12.6 Life Saving Appliances

i) Life boats with a speed of 6 knots and carrying capacity upto 50 persons are used in offshore.

ii) No. of life boats on one installation should have a capacity to accommodate twice the number of persons onboard installation.

iii) Launching appliances and life boat equipment should be checked every week.

iv) Boat landing areas should be adequately illuminated.

v) Life raft has no power and they rely on drift.

vi) Life jacket lifts the wearer after entering water.

vii) Life buoys are used to rescue persons if any person accidentally falls in the sea.

viii) All life saving appliances should be inspected by the MMD surveyor /sr. officials once a year.

ix) Every life boat shall be inspected once a week.

x) Every life boat and life raft should be serviced once a year by a competent authority,

6.12.7 Safety Precautions during Helicopter Transportation

i) Passenger briefing regarding safety rules while travelling in helicopter should be carried out before boarding the helicopter.

ii) Emergency procedure should be briefed to all the passenger In case helicopter is to ditch into the sea.

iii) Heli-pad should have a non-skid surface. Nylon rope net should be stretched on the deck.

iv) Proper drainage should be available on helideck.

v) There should be no obstruction on the helideck itself and within 3 meters of its parameter. Closest super structure above the helideck should have red obstruction light.

vi) While landing fire crew of two persons should be standby adjacent to helideck.

vii) Heli-deck should be properly illuminated for night landing.

viii) During switching off helicopter, persons should not be allowed to go out/ towards helicopter

6.13 DEMOLITION

6.13.1. General provisions

i) When the demolition of any building or structure might present danger to workers or to the public:

(a) necessary precautions, methods and procedures should be adopted, including those for the disposal of waste or residues;
(b) the work should be planned and undertaken only under the supervision of a competent person.

ii) Before demolition operations begin:

(a) structural details and builders' drawings should be obtained wherever possible;
(b) details of the previous use should be obtained to identify any possible contamination and hazards from chemicals, flammables, etc.;
(c) an initial survey should be carried out to identify any structural problems and risks associated with flammable substances and substances hazardous to health. The survey should note the type of ground on which the structure is erected, the condition of the roof trusses, the type of framing used in framed structures and the load-bearing walls;
(d) a method of demolition should be formulated after the survey and recorded in a method statement having taken all the various considerations into account and identifying the problems and their solutions;

iii) All electric, gas, water and steam service lines should be shut off and, as necessary, capped or otherwise controlled at or outside the construction site before work commences.

iv) If it is necessary to maintain any electric power, water or other services during demolition operations, they should be adequately protected against damage.

v) As far as practicable, the danger zone round the building should be adequately fenced off and sign posted. To protect the public a fence 2m high should be erected enclosing the demolition operations and the access gates should be secured outside working hours.

vi) The fabric of buildings contaminated with substances hazardous to health should be decontaminated. Protective clothing and respiratory devices should be provided and worn.

vii) Where plant has contained flammable materials, special precautions should be taken to avoid fire and explosion.

viii) The plant to be demolished should be isolated from all other plant that may contain flammable materials. Any residual flammable material in the plant should be rendered safe by cleaning, purging or the application of an inert atmosphere as appropriate.

ix) Care should be taken not to demolish any parts, which would destroy the stability of other parts.

x) Demolition activities should not be continued under adverse climatic conditions such as high winds, which could cause the collapse of already weakened structures.

xi) To prevent hazards parts of structures should be adequately shored, braced or otherwise supported.

xii) Structures should not be left in a condition in which they could be brought down by wind pressure or vibration.

xiii) Where a deliberate controlled collapse technique is to be used, expert engineering advice should be obtained, and:

(a) it should only be used where the whole structure is to come down because it relies on the removal of key structural members to effect a total collapse;

(b) it should only be used on sites that are fairly level and where there is enough surrounding space for all operatives and equipment to be withdrawn to a safe distance.

xiv) When equipment such as power shovels and bulldozers are used for demolition, due consideration should be given to the nature of the building or structure, its dimensions, as well as to the power of the equipment being used.

xv) If a swinging weight is used for demolition, a safety zone having a width of at least one-and-a-half times the height of the building or structure should be maintained around the points of impact.

6.13.2. Demolition of structural steelwork

i) All precautions should be taken to prevent danger from any sudden twist, spring or collapse of steelwork, ironwork or reinforced concrete when it is cut or released.

ii) Steel construction should be demolished tier by tier.

iii) Structural steel parts should be lowered and not dropped from a height.

6.14 RADIOGRAPHY

6.14.1 All radiography jobs shall be carried out as per BARC Safety Regulations

6.14.2 During field radiography, nearby area around the radiation source should be cordoned off.

6.14.3 If the field radiography is to be done at the same location repeatedly, it is advisable to provide either a wire fencing around or a temporary brick enclosure.

6.14.4 Special permission/permit should be taken for radiography from area-in-charge.

6.14.5 As far as possible, field radiography should be done only during night time when there is little or no occupancy there.

6.14.6 Radiation warning signals should be pasted all along the cordoned off area.

6.14.7 Entry into the restricted area by unauthorised persons should be strictly prohibited during exposure.

6.14.8 The radiation level alongwith the cordon should be monitored by a suitable and well-calibrated radiation survey meter.

6.14.9 All personnel working with radiography sources should wear appropriate protective equipment and film badges issued by BARC.

6.14.10 Protection facilities such as manipulator rod, remote handling tongs, lead pots, radiation hazard placards and means of cordon off shall be available at each site.

6.14.11 The radiography source shall never be touched or handled directly with hands.

6.14.12 The package containing radiography cameras and sources should never be carried by public transport like bus, train etc.

6.14.13 Radiography sources and cameras, when not in use, should be stored inside a source pit with lock and key arrangement as approved by BARC. The storage room should preferably be located in an isolated area of minimum occupancy and radiation level outside the storage room should not exceed 0.25 mR/hr as per BARC Regulations.

6.14.14 In case of an accident (due to loss or of damage to radiography source), action should be taken in line with BARC Safety Rules/Guidelines.

6.15 SAND/SHOT BLASTING/ SPRAY PAINTING

6.15.1 Sand blasting should be used only after approval from competent person.

6.15.2 Air Compressor used for sand/shot blasting/painting should have guard and positioned away from the work place.

6.15.3 Exhaust of the prime mover, if IC engine is used, should be directed away from the work place.

6.15.4 In case of motor driven compressor, the body of the motor as well as the compressor to be properly earthed.

6.15.5 The hoses used for compressed air should be of proper quality, and health of the same to be ensured through regular check/ test.

6.15.6 The operator of sand/shot blasting/painting should wear suitable PPE's including mask.

6.15.7 Adequate measures to be taken to suppress dust/spray particle.

6.15.8 Sand used for sand blasting should be suitably covered & protected from to rain/moisture.

6.15.9 When these activities are done in confined places, adequate measure to be taken for proper ventilation.

6.16 WORK ABOVE WATER

6.16.1 General Provisions

i) Where work is done over or in close proximity to water & where possibility of drowning exists, provision should be made for:
   a) Preventing workers from falling into water;
   b) The rescue of workers in danger of drowning;
   c) Safe and sufficient transport.

ii) Provisions for the safe performance of work over or in close proximity to water should include, where appropriate, the provision and use of suitable and adequate:

   a) fencing, safety nets and safety harnesses;
   b) lifebuoys, life jackets and manned boats;
   c) protection against such hazards as reptiles and other animals.

iii) Gangways, pontoons, bridges, footbridges and other walkways or work places over water should:
   a) possess adequate strength and stability;
   b) be sufficiently wide to allow safe movement of workers;
   c) have level surfaces free from tripping hazards;
   d) be adequately lit when natural light is insufficient;
   e) where practicable and necessary, to prevent danger, be provided with toe-boards, guard rails, hand ropes etc.
   f) be secured to prevent dislodgment by rising water or high winds;
   g) if necessary, be equipped with ladders which should be sound, of sufficient strength and length and be securely lashed to prevent slipping.

iv) All deck openings including those for buckets should be fenced.

6.16.2 Rescue & Emergency procedures

i) Persons who work over water should be provided with some form of buoyancy aid. Life jackets should provided sufficient freedom of movement, have sufficient buoyancy to bring persons to the surface and keep them afloat face upwards, be easily secured to the body, be readily visible by way of self luminous paint/strip.

ii) Nobody should work alone on or above water.

iii) Each worker should be trained in the procedure to be followed in the event of an emergency.

7.0 ADDITIONAL SAFETY PRECAUTION FOR UNITS WITH HYDROCARBONS

In addition to general safety precautions as outlined above for the activities in Clause 6.0, following additional safety precautions need to be taken for the sites within the operating area or nearby, where presence of Hydrocarbons cannot be ruled out.

i) No job shall be carried out without a valid permit. Permit should be in line with OISD-STD-105 "Work Permit System".

ii) Smoking should be prohibited in all places containing readily combustible or flammable materials and "No Smoking" notices be prominently displayed.

iii) In confined spaces and other places where flammable gases, vapours or dusts can cause danger, following measures should be taken:

(a) only approved type electrical installations and equipment, including portable lamps, should be used;
(b) there should be no naked flames or source of ignition;
(c) oily rags, waste and clothes or other substances liable to spontaneous ignition should be removed without delay to a safe place;
(d) ventilation should be provided.

iv) Regular inspections should be made of places where there are fire risks. These include the vicinity of heating appliances, electrical installations and conductors, stores of flammable and combustible materials, welding and cutting operations.

v) Welding, flame cutting and other hot work should only be done after issuance of work permit in line with the requirement of OISD-STD-105 after appropriate precautions, as required, are taken to reduce the risk of fire. For carrying out other jobs also, OISD-STD-105 should be followed strictly.

vi) Fire-extinguishing equipment should be well maintained and inspected at suitable intervals by a competent person. Access to fire-extinguishing equipment such as hydrants, portable extinguishers and connections for hoses should be kept clear at all times.

vii) All supervisors and a sufficient number of workers should be trained in the use of fire-extinguishing equipment, so that adequate trained personnel are readily available during all working periods.

viii) Audio means to give warning in case of fire should be provided where this is necessary to prevent danger. Such warning should be clearly audible in all parts of the site where persons are liable to work. There should be an effective evacuation plan so that all persons are evacuated speedily without panic and accounted for and all plant and processes shut down.

ix) Notices should be posted at conspicuous places indicating:

(a) the nearest fire alarm;
(b) the telephone number and address of the nearest emergency services.

x) The work site shall be cleared of all combustible materials, as Sparks and molten metal coming from the welding job can easily ignite combustible materials near or below the welding site. If the combustible materials cannot be removed from the area, the same shall be properly shielded.

xi) A dry chemical type fire extinguisher shall be made available in the work area. Also fire protection facilities like running hoses etc. as per permit should be complied with.

xii) Wherever required, welding screens shall be put up to protect other equipment in adjoining areas against flying sparks. Material used should be metal/asbestos/water curtain.

xiii) Welding or cutting of vessels/ equipments used in Hydrocarbon/ hazardous chemicals shall be done after proper gas freeing and verifying the same with the explosive-meter.

xiv) The confined space/equipment shall be gas freed and cleaned.

xv) Absence of any toxic gas and any flammable gas above explosion limit shall be ensured with the help of gas detection instrument and explosive meter respectively.

xvi) Used and hot electrode stubs shall be discarded in a metal bucket.

xvii) Use approved and certified flame arrestors for vehicles.

xviii) Work permit to be obtained, if construction work is carried out within existing operating area.

8.0 FIRST AID

First aid facilities should be provided in line with various statutory regulations like factory act etc. However following care should be taken:

i) First aid, including the provision of trained personnel should be ensured at work sites. Arrangement should be made for ensuring the medical attention of the injured workers. First aid box should be as per the Factory rules.

ii) Suitable rescue equipment, like stretchers should be kept readily available at the construction site.

iii) First-aid kits or boxes, as appropriate and as per statutory requirements, should be provided at workplaces and be protected against contamination by dust, moisture etc.

iv) First-aid kit or boxes should not keep anything besides material for first aid in emergencies.

v) First-aid kits and boxes should contain simple and clear instructions to be followed, be kept under the charge of a responsible person qualified to render the first aid and be regularly inspected and stocked.

vi) Where the work involves risk of drowning, asphyxiation or electric shock, first-aid personnel should be proficient in the use of resuscitation and other life saving techniques and in rescue procedures.

vii) Emergency telephone numbers of nearby Hospitals, Police, Fire Station and Administration should be prominently displayed.

9.0 DOCUMENTATION

The intention of keeping documentation of all types of accident(s) is to prevent recurrence of similar accident(s). All accidents should be reported as per OISD Guidelines (OISD-GDN-107) and Factories act, 1948.

All accidents (major, minor or near miss) should be investigated, analysed and recommendations should be documented along with implementation status.

All related data should be well-documented and further analysis highlighting the major cause(s) of accidents be done. This will help in identifying thrust areas and training needs for prevention of accidents.

10.0 SAFETY AWARENESS & TRAINING

Safety awareness to all section of personnel ranging from site-in-charge to workmen helps not only preventing the risk but also build up the confidence. Time and expenditures also get saved as a result.

Safety awareness basically seeks to persuade/inform people on safety besides supplementing skill also. Awareness programme may include followings:

i) **Poster:** Posters with safety slogan in humorous, gruesome demonstrating manner may be used to discourage bad habits attributable to accidents by appealing to the workers'

pride, self-love, affection curiosity or human aspects. These should be displayed in prominent location(s).

ii) **Safety Sign Boards**: Different type of message of cautioning, attention, notice etc. should be displayed at the appropriate places for learning/ awareness of the workmen while working at site.

iii) **Films & Slides:** Film(s) narrating the accident including the causes and possible remedial ways of preventing the recurrence of a similar accident should be displayed at regular intervals. Slides consisting main points of the film show may also be shown to workers.

iv) **Talks, lectures & conferences:** The success of these events would depend much on audience's understandings of the speaker (s). The speakers are to be knowledgeable and good presenter. Speakers should know to hold the attention and to influence the audiences.

v) **Competitions:** Organise competition(s) between the different deptts/categories of workers. The sense of reward/recognition also will improve safety awareness and result in enhancing safety levels.

vi) **Exhibitions:** Exhibitions also make the workers acquainted with hazards and means of preventive measures.

vii) **Safety Publication:** Safety publications including pocket books dealing with ways of investigation and prevention in the field of safety and so on, may be distributed to workers to promote the safety awareness.

viii) **Safety Drives:** From time to time, an intensive safety drive by organising a safety day or a safety week etc. should be launched.

ix) **Training:** Training for covering the hazards for different trade should be imparted. Training should also include the specific hazards related to a job in addition to the general safety training as has been dealt in various chapters and should include all workers. Reference may be drawn from OISD-STD-154.

11.0 REFERRENCES

i) *Factory Act, 1948*

ii) *Indian Electricity Rules*

iii) *Safety & Health in Construction by ILO*

iv) *The Building & Other Construction Workers (Regulation, Employment and Conditions of Service) Act 1996*

ANNEXURE I

LIST OF SAFETY CODES FOR CIVIL WORKS PUBLISHED BY BUREAU OF INDIAN STANDARDS

Sr.no	Code No.	Title
01.	IS : 818	Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations – First Revision.
02.	IS : 875	Code of practice for Structural safety of buildings: Masonry walls
03.	IS : 933	Specification for Portable Chemical Fire Extinguisher, Foam Type – Second Revision.
04.	IS : 1179	Specification for Equipment for Eye and Face Protection during Welding – First Revision.
05.	IS : 1904	Code of practice for Structural safety of buildings: Shallow foundations
06.	IS : 1905	Code of practice for Structural safety of buildings: Masonry walls
07.	IS : 2171	Specification for Portable Fire Extinguishers, Dry Powder Type – Second Revision.
08.	IS : 2361	Specification for Building Grips – First Revision.
09.	IS : 2750	Specification for Steel Scaffoldings.
10.	IS : 2925	Specification for Industrial Safety Helmets – First Revision.
11.	IS : 3016	Code of Practice for Fires Precautions in Welding and Cutting Operations – First Revision.
12.	IS : 3521	Industrial safety belts and harnesses
13.	IS : 3696 – Part I	Safety Code for Scaffolds and Ladders : Part I – Scaffolds.
14.	IS : 3696 – Part II	Safety Code for Scaffolds and Ladders : Part II – Ladders.
15.	IS : 3764	Safety Code for Excavation Work.
16.	IS : 4014 -Part I & II	Code of practice for Steel tubular scaffolding
17.	IS : 4081	Safety Code for Blasting and Related Drilling Operations.
18.	IS : 4082	Recommendations on staking and storage of construction materials at site
19.	IS : 4130	Safety Code for Demolition of Buildings – First Revision.
20.	IS : 4138	Safety Code Working in Compressed Air-First Revision
21.	IS : 4756	Safety code for Tunneling works
22.	IS : 4912	Safety requirements for Floor and Wall Openings, Railings and toe Boards –First Revision.
23.	IS : 5121	Safety Code for Piling and other Deep Foundations.
24.	IS : 5916	Safety Code for Construction involving use of Hot Bituminous Materials.
25.	IS : 5983	Specification for Eye Protectors – First Revision.
26.	IS : 6922	Structures subject to underground blasts, criteria for safety and design of

27.	IS : 7155	Code of recommended practices for conveyor safety
28.	IS : 7205	Safety Code for Erection on Structural Steel Works.

Sr.no	Code No.	Title
29.	IS : 7069	Safety Code for Handling and Storage of Building Materials.
30.	IS : 7293	Safety Code for Working with Construction Machinery.
31.	IS : 7323	Guidelines for operation of Reservoirs
32.	IS : 7969	Safety code for handling and storage of building material
33.	IS : 8758	Recommendation for Fire Precautionary Measures in construction of Temporary Structures and Pandals.
34.	IS : 8989	Safety Code for Erection of Concrete Framed Structures.
35.	IS : 9706	Code of Practices for construction of Arial ropeways for transportation of material
36.	IS : 9759	Guidelines for de-watering during construction
37.	IS : 9944	Recommendations on safe working load for natural and man-made fibre roap slings
38.	IS : 10291	Safety code for dress divers in civil engineering works
39.	IS :10386 – Part I	Safety Code for Construction, Operation and Maintenance for River Valley Projects.
40.	IS :10386 – Part II	Safety Code for Construction, Operation and Maintenance of River Valley Projects.
41.	IS : 11057	Code of practice for Industrial safety nets
42.	IS : 13415	Code of Practice on safety for Protective barriers in and around building
43.	IS : 13416	Recommendations for preventive measures against hazards at working places

OISD – GDN – 207

FOR RESTRICTED
CIRCULATION ONLY

OCTOBER 2002

CONTRACTOR SAFETY

OISD – GUIDELINES – 207

Oil Industry Safety Directorate
Government of India
Ministry of Petroleum & Natural Gas

CONTRACTOR SAFETY

CONTENTS

CONTRACTOR SAFETY

1.0 INTRODUCTION

Oil and Gas operations like Drilling, Production, Refining, Transportation and Distribution are inherently hazardous. A large number of contractor workforce is deployed to carry out construction, maintenance and other jobs. The analysis of the incidents in the Petroleum Sector indicates that a large number of incidents involved contractor workforce and have resulted in either casualty or injury besides leading to property damage and operational interruptions and environmental degradation.

In order to improve the safety levels of oil installations, the contractor safety is of utmost importance and there is a need to institute a good contractor safety system.

2.0 SCOPE

This standard covers broadly the guidelines on the management system for enhancing the safety levels of the contractor workforce deployed in construction, maintenance and operation activities in the hydrocarbon industry.

The safety precautions to be taken while carrying out different activities during construction / maintenance have separately been covered in OISD-GDN-192 on "Safety Practices during Construction".

3.0 DEFINITIONS

Work station/Work site

A place/unit where the job is carried out by contractor/executing agency in specified manner with safety, during construction phase or in operation phase.

Owner

Any physical or legal person/entity for whom prescribed job is carried out.

It shall also include owner's designated representative / consultant /nominee / agent, authorised from time to time to act for and on its behalf, for supervising / co-ordinating the activities of the contractor/execution agency.

Contractor / Executing Agency

A physical or legal person/entity having contractual obligation with the owner, and who deploys one or more worker on the site.

Contractor Worker

It covers all workmen who are either self-employed or employed through contractor, the casual workers and includes contractor's supervisor, working at a location / site employed directly by Owner or through their contractor.

Incident

An incident is an unplanned, uncontrolled, unintended or unforeseen event, caused by unsafe acts and / or unsafe conditions, resulting in or having the potential to result in personal injury and/or property damage.

Consultant

Consultant is a physical or legal person/entity engaged by owner to provide the consultancy services to owner for management of the contract on their behalf or as specified.

Designer

Designer is a physical or legal person / entity engaged by owner to provide design services of a work site.

Owner's Representative / Engineer In Charge

The Owner's representative/Engineer-in-charge is the one, who has been designated by the owner to manage the contract.

Owner's Safety Officer

A properly trained person designated by owner who ensures safety at work site.

4.0 DUTIES/ RESPONSIBILITIES

4.1 OWNER

4.1.1 Owner's Management

The commitment to safety has to be emphasised by the owner by practice by its own management and employees at all levels. The duties and responsibilities of owner should include:

i) To institute a mechanism for identification and compliance of all applicable statutory rules & regulations (Refer Annexure I for a list of few important Bureau of Indian Standards & statutory regulations).

ii) To provide specific information to contractors and make workers aware on the hazards associated with job assigned.

iii) To provide information about Risk Mitigation measures available at the place of work.

iv) To provide the contractor with information on Owners Safety Plan & Regulations, Emergency Management Plan, lockout/ tag out procedure, confined space entry, work permit system, excavation/trench permit system etc.

v) To specify rules (e.g. for security including access arrangements) and safety rules such as fire protection, first aid arrangements, Work Permit systems etc.

vi) To provide comprehensive list of statutory regulations / standards and specification, to be complied with during execution of contract, in the tender document itself.

vii) To ensure training of the contractor workforce, medical examination, and proper usage of safety equipment.

viii) To specify the requirements of Health, Safety and Environment (HSE) (commensurate with the nature of job) in Pre- Qualification criteria.

ix) To designate Engineer-in-charge and safety officer.

x) To arrange for a multi-disciplinary safety audit team to conduct surprise / regular safety audits and monitor the implementation of the recommendations.

xi) To introduce suitable schemes for motivation of the contractor worker to adhere to safety guidelines.

xii) To review safety practices & their implementation through periodic surprise visit of the work sites and monthly review meeting.

xiii) To develop the HSE plans and incorporate the same in the tender document.

xiv) To liaise with external agencies like press, public etc and with law enforcement, regulatory, statutory agencies etc.

xv) To report to statutory agencies on safety compliance and accidents, if any.

4.1.2 Owner's Representative/Engineer-in-charge

The duties & responsibilities of engineer-in-charge should include:

i) To ensure that all Contract requirements including Health, Safety, Environment & Security are complied with.

ii) To ensure that contractor workforce deployed is adequately qualified, trained and in state of health to commensurate with the requirements of the job.

iii) To ensure that the Tools / Tackles and Machinery being used are properly

tested and are in sound working conditions and necessary resources proposed for providing safe place of work and necessary PPE are being used.

iv) To take the required necessary corrective action immediately upon noticing or receipt of a report on noncompliance or any such condition which poses a threat to health, safety or environment. If during the course of execution of the contract, any situation of non-compliance with the contractor's safety and health plan are noticed / reported, the same will be taken up with the contractor for correction. In the event of repeated non compliance, suitable action to be initiated as per the contract.

v) To ensure that the incidents are reported to all concerned within stipulated timeframe.

vi) To ensure submission of a plan for safe working (Method Statement) from contractor and approval of the same by competent person / department.

vii) To ensure that Work Permit System in line with OISD-STD-105 is adhered to.

viii) To ensure availability of all the documentation needed for the execution of contract.

ix) To ensure that the quality controls have been maintained during fabrication/erection and all jobs required for safe commissioning have been carried out.

x) To ensure safe dismantling of all temporary facilities/connections put up by the contractor, after completion of work.

xi) To compile a report on the safety performance (at the conclusion of each contract or periodically such as annually for renewable and long-term contracts), which is to be considered in future when selecting contractors.

xii) To ensure that the Consultant, contractor and sub-contractor employ / designate qualified & trained Safety Engineer / Officer commensurate with requirement of the job.

4.1.3 Owner's Safety Officer

The duties & responsibilities of the Owner's Safety Officer should include:

i) To assess the hazards associated with jobs in consultation with all concerned and establish safe working procedure including identification of the escape routes.

ii) To establish a written record of factors which can cause injuries and illnesses.

iii) To undertake routine/surprise inspections of all work sites and identify unsafe conditions & practices, if any. Check for compliance of the safety practices being followed with approved HSE Plan.

iv) To investigate promptly the incidents (including near-miss) in order to advise corrective and/or preventive action.

v) To maintain statistical information for use in analyzing all phases of incidents and events involving contract personnel.

vi) To provide the means for complying with the reporting requirements for occupational injuries and illnesses.

vii) To check whether the proposed working arrangements are safe and satisfactory, particularly at the interface between the contractor's planned work and owner’s existing facilities.

viii) To communicate to the Contractor the imposed restrictions which may affect the work/personnel such as the temporary closure of a corridor or electrical isolation of equipment.

ix) To review and monitor the contractor's adherence to approved HSE plan and all applicable environmental, health, and safety requirements.

x) To ensure that Consultant, Contractor's Managers, Supervisors and workmen at all levels (who will plan, monitor, oversee and carry out the work) undergo Health, Safety and Environmental training in their respective responsibilities with respect to conducting work safely and with due regard for the protection of the environment.

xi) To identify areas of operations where specialized training is required to deal with potential dangers.

xii) To document and to bring to the attention of the Owner's Supervisor and Contractor any non-compliance/violation of the safety norms against approved safety and health plan or safety and health requirements and also raise these issues in the Safety Committee Meetings.

xiii) To take part in Tool Box Meetings at random and to ensure maintenance of records.

4.2 CONTRACTOR

4.2.1 Contractor's Management

Duties & responsibilities of the contractor should include the following:

i) To implement safe methods and practices, deploy appropriate machinery, tools & tackles, experienced supervisory personnel and skilled work force etc. required for execution.

ii) To prepare a comprehensive and documented plan for implementation, monitoring and reporting of Health, Safety and Environment (HSE) and implement the same after its approval.

iii) To nominate qualified & trained Safety Engineers / Officers reporting to the Site in charge, for supervision, co-ordination and, liaison for the implementation of the safety plan.

Similar HSE Plan should be implemented at the sub- contractor's or supplier's site /office. However the compliance with the HSE Plan is to be the sole responsibility of the Contractor.

iv) To arrange suitable facilities in liaison with the owner for drinking water, toilets, lighting, canteen, crèche etc as applicable as per Laws/ Legislation at site and also arrange for workmen compensation insurance, third party liability insurance, registration under ESI / PF act etc as applicable.

v) To arrange for fire protection equipment as per the advice of owner.

vi) To ensure that its employees have completed appropriate health and safety training as required by the statute / regulation and also as per requirements of the Owner / Consultant. The documentation of such training imparted to all its employees should be maintained and produced for verification as required.

vii) To comply with all the security arrangements of owner.

viii) To ensure that the plant and equipment used on-site by him / his employees is correctly registered, controlled and maintained in sound working condition.

ix) To ensure availability of First Aid boxes and First Aid trained attendant.

x) To ensure that all incidents including near misses are reported to all concerned immediately.

In construction projects where sub-contractors are engaged, the contractor should set out the responsibilities, duties and safety measures that are expected of

the sub-contractor's workforce. These measures should include the provision and use of specific safety equipment, methods of carrying out specific tasks on safety and the inspection and appropriate use of tools.

The responsibilities indicated separately under contractor's Supervisor, Safety Officer and contract worker are contractually that of the Contractor and legally binding on the Contractor only. However the specific detailing as above has been given separately for guidance and operational convenience.

The selection of sub contractors, if employed, should be approved by the owner. Sub-contractor should comply fully with all safety rules and conditions applicable to the main contractor.

4.2.2 Contractor's Supervisor / Safety Officer

Duties & responsibilities of the Contractor's supervisor/Safety Officer should include the following:

i) To ensure strict compliance with work permit system by carrying out work only with appropriate work permits and after ensuring that all safety precautions / conditions in the permit are complied with and closing the same after job completion.

ii) To ensure that required guards and protective equipment are provided, used, and properly maintained.

iii) To ensure that tools and equipment are properly maintained and tested.

iv) To plan the workload and assign workers to jobs in commensuration with their qualification, experience and state of health.

v) To ensure that the workers understand the work to be done, the hazards that may be encountered, and the proper precautions/procedure for carrying out the work safely.

vi) To take immediate action to correct any violation of safety rules observed or reported.

vii) To ensure that the workers likely to be exposed to hazardous chemicals/materials have access to appropriate Material Safety Data Sheets (MSDS), wherever applicable, and provide necessary mitigation measures.

viii) To ensure inspection and certification of all tools (hand operated as well as mechanically operated) being used. Defective tools shall be immediately removed.

ix) To ensure that appropriate warning signboards or tags are displayed.

x) To ensure that workers have proper training for their job assignments, including use of appropriate PPE and first aid fire fighting equipment.

xi) To comply with all applicable safety and health standards, rules, regulations and orders issued by competent authority pertaining to the assigned activities.

xii) To ensure that sick and/or injured workers receive appropriate first aid and/or medical attention.

xiii) To report each incident and/or injury in accordance with established procedures and assist in investigation.

xiv) To take necessary action for correction of any unsafe act / condition at the workplace. However, in case the same is outside the limits of authority, it should be reported to Owner's Engineer-in-charge immediately.

xv) To conduct daily inspections to ensure compliance with safety standards, codes, regulations, rules and orders applicable to the work concerned.

xvi) To ensure that workers under their supervision are aware of their responsibilities.

xvii) To arrange daily tool box meeting and regular site safety meetings and maintain records in the required formats. (Refer Clause 5.9.1)

xviii) To arrange stand-by supervisor/ worker where situations so demand.

xix) To develop methods and display banners/posters to inculcate safety consciousness.

xx) To attend training and ensure participation of his workers for training as per schedule arranged by the Owner / Consultant and keeps himself updated.

xxi) To keep records of number of persons working at the site.

xxii) To keep a constant liaison with Engg-in-charge / owners' representative on safety issues.

xxiii) To maintain accident & nearmiss record in a register.

xxiv) To ensure that only PPE of the approved type by owner is used at site.

A separate Safety Officer should be assigned, where more than 100 workers are employed at site. For smaller jobs, the supervisor should assume the role of the safety officer also.

4.2.3 Contract workers

The duties & responsibilities of the contractor worker should include the following:

i) To perform work safely as per the job requirement and instructions.

ii) To inform all concerned regarding unsafe conditions/acts.

iii) To wear PPE as stipulated and necessary for the job.

iv) To inform promptly to their supervisor regarding all work related incidents resulting in personal injury, illness and/or property damage.

v) To take all necessary and appropriate safety precautions to protect themselves, other personnel and the environment.

4.3 CONSULTANT

The activities and responsibilities covered under the scope of the Owner may be delegated to the consultant in those cases as applicable, based on the respective contract conditions. The primary responsibility of Consultant is to ensure compliance with agreed HSE plan for the contract by the Contractor. However those responsibilities conferred on Owner as Principal employer cannot be delegated to consultant.

Where the consultant's scope involves Engineering and Design, those factors under **Designer** should also be applicable.

In all cases, the Consultant's scope should include submission of latest HSE plans for work under his and Contractor's purview and implementing the same till job completion. It should conform to owner's overall HSE plan. This should include Guidelines and Implementation and Reporting Methodology to be followed with required report formats.

Adequate number of Safety Officers shall be provided by the Consultant with necessary skills required for the work to be performed.

The Consultant shall review the documents submitted by the contractor and advise owner on acceptance as well as advise suitability and number of Contractor's safety officers / supervisors.

4.4 DESIGNER

The Process Designer should identify all hazards and risks likely to be encountered during fabrication, erection including

dismantling, Pre-commissioning, commissioning and Performance run to meet the Guarantees and advise the risk mitigation measures.

All the hazards and safety measures to be adopted while handling Dangerous chemicals and Catalysts should be detailed by the Process Licensor and the same should be again included in the scope of the suppliers. Specific write ups/MSDS should be obtained from Patented single source suppliers also.

Designs should recognize, include and apply safe practice during preparation, construction and subsequent operational use and maintenance after completion of the Project.

All documents including drawings and calculations are to be originated, checked and approved in accordance with latest international codes, standards, specifications and design basis philosophy.

Preferred use of low risk materials, policy on hazardous substances, preferred use of low noise and dust-suppressed equipment etc. should be encouraged.

5.0 SAFETY MANAGEMENT

5.1 JOB SAFETY ANALYSIS (JSA)

Job safety analysis (JSA) provides a mechanism by which the contractor, safety officer or supervisor take a detailed look at how an individual task is performed and its inherent hazards and preventive measures. This procedure helps in integrating accepted safety and health principles and practices into a particular operation. In a JSA, each step of the job is examined to identify potential hazards and to determine the safest way to do the job.

A job safety analysis includes five steps as below:

- Select a job
- Break the job down into a sequence of steps
- Identify the hazards against each of these steps (based on knowledge of accident, causes of injuries and personal experience) and determine the preventive measures to overcome these hazards
- Apply the controls to the hazards
- Evaluate the controls

5.2 CRITERIA OF SELECTION OF A CONTRACTOR

“Contractor Safety” can be ensured to a large extent if competent agency for execution of assignment or job, based on HSE system agreed upon by owner, is selected. It is necessary to assess his capabilities and competencies to perform work safely.

A databank should be developed for all the contractors for their past performance on HSE aspects. An attempt should also be made to get similar data from other similar industries.

The data required will depend upon complexity involved in the job and type / size of resources required. Format needs to be suitably developed depending upon size, nature of the job & hazard associated therein. The format designed should also take care of the skill required to carry out the job.

Performance review is essential for all type of contractors. It helps in recording actual performance/experience with contractors while the contract is in progress. It is essential that resources agreed as per the contract are reviewed at mobilization stage for ensuring compliance from the day one and thorough effective supervision / monitoring system are at place.

This activity also helps in taking timely action in case of unsatisfactory performance to correct the situation and ensure safe work during execution period and deciding about suitability of the contractor for future jobs.

The periodicity of such performance review will depend upon size/type/complexity of contract. However, the performance should be reviewed at least at mobilisation stage and at the end of the contract.

5.3 SITE PLANNING AND LAYOUT

Before starting the construction/maintenance job at existing workplace in operation or green field locations, following should be ensured: -

i) Details regarding location of workshop/ fabrication yard, site office, stores, laboratory, electrical installations, placement of construction machinery, medical and welfare facilities, lighting underground and above ground piping route, cable route etc. should be decided prior to commencement of the work in consultation with owner / Consultants and implementation should be ensured. Layout should be displayed at strategic locations.

ii) The resources required to meet any emergency situations like fire fighting, first aid etc. should be planned and mobilized as per the job requirement.

iii) The sequence or order in which work to be done and any hazardous operations or processes should be identified.

iv) Free access to site shall be provided with clear roads, passage, gangways, staircases etc. Access to construction site should be leveled, open and free from any obstructions like construction material or scrap/waste, exposure to hazards such as falling materials, material handling equipment and vehicles. Any pit or ditch shall be covered or barricaded.

v) Arrangements should be made to maintain good housekeeping at site. Scrap and debris generated out of construction work should be removed/disposed off at a regular interval as directed. Emergency exit should be provided in case of blockade of primary exit.

vi) Suitable warning notices and also the routes to and from welfare facilities should be displayed prominently.

vii) Pedestrian pathways and routes for vehicular traffic (light/heavy vehicles including material handling equipment) should be earmarked.

viii) Artificial lighting to be provided at places where work continues or workers pass by after sunset or in case natural light is insufficient like confined spaces.

ix) Keep all equipment /machines under cover to prevent them from dust, rain/flood water, heat etc. and follow storage instructions as applicable for each of them.

5.4 GATE ENTRY PROCEDURE

Gate entry at any site / workplace / unit is to be restricted to ensure entry of only authorised persons / vehicles.

5.4.1 Entry procedure for all contractor worker should be as follows:

A. Issuance of Pass

i) The passes are to be issued after the owner's representative/engineer-in-charge forwards the application of the contractor providing complete details of the workers being engaged. The contractor may be asked to submit Character & Antecedents (C&A) verification of individual worker from concerned authorities.

ii) With regard to issuance of passes for all vehicles including material handling equipment, owner's representative / engineer-in-charge should forward the application only after ensuring that all documents pertaining to the fitness of the vehicle/equipment and valid driving license of the driver etc. are available.

iii) The passes should be serially numbered with address, contractor name, identification mark, signature of the worker etc.

iv) Special colour code for passes should be used for persons entering different

areas like Administrative Block, Unit area, Project Area (wherever applicable).

v) Contractor workers engaged on routine basis for long periods should be provided with monthly photo pass.

vi) Special permit is required separately for working beyond normal working hours and holidays.

B. Gate Entry

i) Entry of the contractor's employees should be permitted with valid gate passes only.

ii) Entry of contractor's workers should be allowed in presence of authorized representative of contractor.

iii) Records of persons at the time of entry/exit should be maintained.

iv) At the entry gate of the location, a physical checking for non-carrying of lighter, matchboxes, explosives etc. should be carried out.

v) Gate passes/Identity Cards should be displayed on persons at all the times.

vi) For Mega-projects at existing / operating installations, it is preferable to have a separate gate for entry of contractor workers and also the project areas should be segregated fencing from operational area by fencing / other physical means.

vii) No vehicle should be allowed to enter in an operational area without proper flame arrestor.

viii) Awareness on Safety through training / posters etc. highlighting Do's and Don'ts should be spread within entire contractor workforce. Video/Audio tapes on Safety Topics should be played preferably.

ix) For occasionally engaged labourers such as for material handling etc., spot photograph may be preferably taken with two copies (one for preparing the pass and other for attachment with gate register). Specific advice and recommendation of User Department may be given due cognizance. Relevant details are to be written. The pass should be collected back at the gate after day's work.

5.4.2 Tank Truck Loading (TTL) Operation :

At the loading / unloading location, a large no. of Tank Trucks of petroleum products enter the installation. Crew members are generally not regular entrants. The procedure should be as follows:

i) The gate pass should be issued to the individual crew members on written request of the transporter mentioning TT registration nos., License and certificate of training as per MV rule 9.

ii) Character & Antecedent (C & A) verification of the TTL crew through local police is to be done preferably and record maintained.

iii) For loading/unloading purpose, register entry at security gate is made before allowing entry into the premises with recording of names of crew members, time of entry, pass Sr. No., TT no. etc.

iv) For loading/unloading, crew is allowed entry alongwith TT only, after checking of TT from explosive/security point of view.

v) Out time, invoice no., Destination etc., are recorded while TTs go out of the security gate.

5.5 TRAINING

Training is to educate contractor workforce on various hazards associated with the job/workplace and on the respective preventive / mitigation measures to avoid untoward incidents.

i) Workers should be adequately and suitably:

(a) informed of potential safety and health hazards to which they may be exposed to at their workplace;

(b) instructed and trained in the measures available for the prevention, control and protection against those hazards.

ii) No person should be employed in any work at a workplace unless that person has received the necessary information, instruction and training so as to be able to do the work competently and safely. The competent authority should, in collaboration with employers, promote training programs to enable all the workers to read and understand the information / instructions related to safety and health matters.

iii) The information, instruction and training should be given in a language understood by the worker and written, Oral, visual and participative approaches should be used to ensure that the worker has assimilated the information.

iv) Every worker should receive instruction and training regarding the general safety and health measures common to the workplace. This should include:

(a) general rights and duties of workers at the workplace;

(b) means of access and egress both during normal working and in an emergency;

(c) measures for good housekeeping;

(d) location and proper use of welfare amenities and first aid facilities provided;

(e) proper use and care of the items of personnel protective equipment and protective clothing provided to the worker;

(f) general measures for personal hygiene and health protection;

(g) fire precautions to be taken;

(h) action to be taken in case of an emergency;

(i) requirements of relevant safety and health rules and regulations.

Copies of the relevant safety and health rules, regulations and procedures should be available to workers upon the commencement of and upon any change of employment.

5.5.1 Training Techniques

a) Lectures

This technique should be applied when it is required to transfer information in local language to a large contractor workforce with controlled content and time.

b) Case Study

This is an effective technique based on the presentation of case of real events by Trainer to highlight probable causes like Human Error, ignorance about the job etc.

c) Videos

Videos, an effective technique of communication, should be used to display the right techniques of performing a task in a safe manner and hazards associated with a job.

d) Demonstration at site

Right way to do a job should invariably be demonstrated to workers at the site itself. The right way is also a safe way. Hazards due to wrong procedures, short cuts and their adverse effects etc. should also be highlighted.

5.5.2 Training/Awareness Module and Frequency

A. General Safety Training to all categories of contractor employees should be imparted before induction and annually thereafter. No person should be allowed to enter the installation without undergoing this training. This training program may cover:

i) Mandatory uses of PPE like Cotton clothes, Helmet, Safety Shoes, Safety Belts etc.

ii) Probable Hazards

iii) Important Telephone No / Escape route

iv) First Aid

v) Use of Fire extinguisher

The contractor workers, if engaged in operation of the plants/facilities, should be trained in line with Clause No. 4.6 of OISD-GDN-206 on "Safety Management System". For other categories of contractor workers, training modules for different category employees are as follows:

B. Contractor Supervisor

Contractor Supervisor should be trained in accordance with the provision of clause no. 5.1.1.2, 5.2.7, 5.3.10, 5.6.12 and 5.7.8 of OISD-STD-154 on 'Safety Aspects in Functional Training'

C. Contractor Worker

Yearly training programme should be carried out for contractor worker and the records should be maintained. The training programme should cover at least the following:

i) Worker responsibility for safety of himself and work area.

ii) Associated hazards with the job and job area including electrical shock hazards.

iii) Importance of First Aid fire fighting equipment, their use & operations

iv) Communication system at the installation

v) Fire / Accident Reporting procedure

vi) General Safety rules

vii) Safety Measures during execution of job such as:

- Welding / Cutting / Grinding
- Working at height
- Confined space entry
- X ray / radiation
- Erection / Dismantling of scaffolding
- Tank construction and repairs
- Handling of chemicals etc.

viii) Importance & use of PPE

ix) Emergency Routes

x) Assembly Points

xi) Job Specific Training

D. Consultant / Contractor

Awareness program should be carried out for Consultant / Contractor at the time of induction. This program should cover at least the following:

i) Responsibility of contractor for safety of their personnel and work area

ii) Hazardous property of Petroleum products and chemical used

iii) Communication system

iv) Fire / Accident Reporting procedure

v) Medical facility available

vi) Statutory requirements

vii) Importance of First Aid equipment and required at the site

viii) Work Permit system

ix) Direct/ Indirect losses due to accident

x) Safety Measures while executing the jobs such as:

- Welding / Cutting / Grinding
- Working at height
- Confined space entry
- X ray / radiation
- Erection / Dismantling of scaffolding
- Tank construction and repairs
- Handling of chemicals etc.
- electrical jobs

xi) Safety training needs of their supervisors and workers

xii) Importance & Use of PPE at the site

xiii) General Safety rules at the installation

E Security Personnel

Training program should be carried out for Security personnel at the time of induction and annually thereafter and the records should be maintained. The training program should cover at least the following:

i) Layout of Plant and Facilities
ii) Vulnerable locations
iii) Safety regulations (Statutory and in company)
iv) Fire Protection Facilities and Locations
v) Role in case of Fire / Disaster
vi) Emergency Procedure and Drills
vii) Industrial First Aid
viii) Use of Personnel Protective Equipment
ix) Disaster Management Plan

5.6 INSPECTION / AUDIT

Inspection / Audit is a tool to evaluate compliance of all safety requirements. Most of the information could be gathered through site inspection using ready-made check lists to ensure that contractors / agencies abide by the safety rules and norms while working at operating / construction sites.

A checklist, while carrying out different type of jobs, should be developed based on hazards associated with the job being performed and requirements as per OISD-GDN-192 on "Safety Practices during Construction". Typical format is enclosed at Annexure II, which should be modified to suit the requirement of the site / job to be done.

Before starting the work and at regular intervals thereafter, Contractor's Supervisor/safety Officer and Owner's representative / Engineer-in charge/safety Officer should inspect as per the checklist so prepared to ensure that contractor has prepared to start the work with all safety precaution required for safe execution of job.

5.7 PENALTIES FOR NON-COMPLIANCE

Financial or other type of penalties like seizure of gate passes, stoppage of work for a limited period etc. may be levied on the contractors or their workers for non-compliance of safety rules. A provision of suitable accident severity based penalty clause for contractor may be incorporated to ensure adherence of systems and procedures. A few of the usual non-compliance are as follows:

-- Non-usage of PPEs like Safety helmet / Safety shoes / Safety goggles / Respiratory protection etc. by the contractor personnel

-- Non-usage of the safety belt and life line by the workers while working at height

-- Non-provision of basic safety requirement such as 24 V lamp for working in confined space, uncertified / non standard lifting tools, earth leakage protection & earthing connections for electrical appliances as per Indian Electricity Rules, emergency isolation switches etc.

-- Violation of Safety Permit conditions like Fire fighting equipment

-- Non-barricading of area while rigging, digging etc.

-- Working without valid work permit

-- Unauthorised road closure/blockage

5.8 INCIDENT REPORTING AND INVESTIGATION SYSTEM

All the incidents including near-miss should be reported immediately by contractor's Supervisor to Contractor and owner's Supervisor/Engineer-in-charge, who should inform to Owner's Safety Officer and owner's Management. Owner's Safety Department will be required for onward reporting as per OISD, Statutory requirements.

All accidents regardless of the extent of injury or damage should be investigated in order to find probable causes, lessons learnt thereof and remedial measures required to prevent its recurrence.

The incident investigation should be done as per provision of clause no. 4.12 of OISD-GDN-206 on 'Safety Management System' . All the recommendations of investigation / Enquiry Report need to be monitored closely for its implementation. A proper record needs to be maintained to ensure implementation of all the recommendations and same should be reviewed from time to time.

5.9 SAFETY COMMITTEE MEETINGS

Following three type of safety committee meetings should be held aiming at raising the level of safety consciousness at the site:

5.9.1 Toolbox meeting

To maintain awareness, update training and convey important safety and health information, contractor supervisors should conduct tool box meetings at least weekly and also prior to start of any work. All the contractor workers should attend this meeting. The owner's supervisor/Engineer-in-charge and safety officers should also attend these meetings on random basis. Tool box meeting should be conducted more frequently depending upon circumstances. Record of the same can be maintained in the following typical format.

TOOLBOX MEETING FORM

SUBJECT :
PRESENTER :
DATE :
TIME : From….. To…..
CONTENT IN BRIEF :

Participant's Name	Signature
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5.9.2 Site Safety Committee Meeting

Primary purpose of this safety committee is to enable owner, contractor and workers to work together to monitor the site safety and health plan so as to prevent accidents and improve working condition on site. Its size and membership will depend on the size and nature of job.

The safety committee should include representatives of owner, consultant, contractor identified as safety officer/supervisor. It should be headed by Engineer-in-charge.

The safety committee should have regular and frequent meetings, atleast fortnightly, to discuss the safety and health program on site and to make suggestions for improvement. The meetings should be documented with a time bound action plan. The functions carried out by safety committee should include:

i) Review compliance of pending items of last Safety meetings.

ii) Consideration of the reports of safety personnel.

iii) Discussion of accident/near-miss and illness reports in order to make appropriate recommendation for prevention.

iv) Examination/evaluation of suggestions made by workers.

v) Dissemination of acquired knowledge through training programs and information sharing sessions.

vi) Discussion & review of Fire Prevention & Disaster Management Plan.

vii) To send recommendation to Apex Body for consideration/approvals.

5.9.3 Safety Review Meeting by Location Head

This meeting should be headed by the Location head and attended by Owner's Supervisor/Engineer-in-charge, owner's safety Officer and all concerned department heads. Prime purpose of this review is to ensure that all the recommendations of various committees are being complied with and to take decisions on critical points raised. This meeting should take place at least once in every quarter. All the investigation reports/ audit findings with status of implementation of recommendations should be discussed.

5.10 SAFETY EQUIPMENT / PERSONNEL PROTECTIVE EQUIPMENT

The type of safety equipment to be used is decided based on the job requirement. Selection should be made based on OISD-GDN-192, OISD-STD-155 (Part I & II) and the job requirement. Safety equipment / Personnel Protective Equipment (PPE) shall be of approved make. Contractor shall provide necessary training to each employee regarding proper usage and upkeep of PPE including its limitation.

A register showing stock and issue of PPE should be maintained by the contractor at site and must be available for inspection.

6.0 REFERENCES

1) OISD-GDN-206 on "Safety Management System"

2) OISD-GDN-192 on "Safety During Construction"

3) OISD-STD-155 Part(I&II) on "Personnel Protective Equipment"

4) Building & Other Construction workers (Regulation of Employment & Condition of Service) Act 1996

ANNEXURE I

LIST OF SAFETY CODES FOR CIVIL WORKS PUBLISHED BY BUREAU OF INDIAN STANDARDS

Sl.no.	Code No.	Title
1	IS: 818	Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations – First Revision.
2	IS: 875	Code of practice for Structural safety of buildings: Masonry walls
3	IS: 933	Specification for Portable Chemical Fire Extinguisher, Foam Type – Second Revision.
4	IS: 1179	Specification for Equipment for Eye and Face Protection during Welding – First Revision
5	IS: 1904	Code of practice for Structural safety of buildings: Shallow foundations
6	IS: 1905	Code of practice for Structural safety of buildings: Masonry walls
7	IS: 1989 – Part II	Leather Safety Boots and shoes for heavy metal industry
8	IS: 2171	Specification for Portable Fire Extinguishers, Dry Powder Type – Second Revision
9	IS: 2361	Specification of Building Grips – First Revision
10	IS: 2750	Specification for Steel Scaffoldings
11	IS: 2925	Specification for Industrial Safety Helmets – First Revision
12	IS: 3016	Code of Practice for Fires Precautions in Welding and Cutting Operations – First Revision
13	IS: 3521	Industrial Safety Belts and harnesses
14	IS: 3696 – Part I	Safety Code for Scaffolds and Ladders: Part I – Scaffolds
15	IS: 3696 – Part II	Safety Code for Scaffolds and Ladders: Part II – Ladders
16	IS: 3764	Safety Code for Excavation Work
17	IS: 4014 – Part I & II	Code of Practice for Steel Tubular Scaffolding
18	IS: 4081	Safety Code for Blasting and Related Drilling Operations
19	IS: 4082	Recommendations on stacking and storage of construction materials at site
20	IS: 4130	Safety Code for Demolition of Buildings – First Revision
21	IS: 4138	Safety Code for working in compressed air – First Revision

22	IS: 4756	Safety Code for Tunneling works
23	IS: 4912	Safety requirements for Floor and Wall openings, Railings and toe boards – First Revision
24	IS: 5216 – Part I & II	Recommendations on safety procedures and practices in electrical work
25	IS: 5121	Safety code for piling and other deep foundations
26	IS: 5916	Safety Code for Construction involving use of Hot Bituminous materials
27	IS: 6994 – Part I	Specifications for safety gloves: Part I – Leather and Cotton gloves
28	IS: 5983	Specification for Eye Protectors – First Revision
29	IS: 6922	Criteria for safety and design of structures subject to underground blasts
30	IS: 7155	Code of recommended practices for conveyor safety
31	IS: 7205	Safety Code for Erection on Structural Steel Works
32	IS: 7069	Safety Code for Handling and Storage of Building Materials
33	IS: 7293	Safety Code for Working with Construction Machinery
34	IS: 7323	Guidelines for operation of Reservoirs
35	IS: 7969	Safety Code for handling and storage of building materials
36	IS: 8758	Recommendation for Fire Precautionary Measures in construction of Temporary Structures and Pandals
37	IS: 8989	Safety Code for Erection of Concrete Framed Structures
38	IS: 9706	Code of Practices for construction of Arial ropeways for transportation of material
39	IS: 9759	Guidelines for de-watering during construction
40	IS: 9944	Recommendations on safe working load for natural and manmade fibre rope slings
41	IS: 10667	Guide for selection of industrial safety equipment for protection foot and leg
42	IS: 10291	Safety Code for dress divers in civil engineering works
43	IS: 10386 – Part I	Safety Code for Construction, Operation and Maintenance for River Valley Projects
44	IS: 10386 – Part II	Safety Code for Construction, Operation and Maintenance for

		River Valley Projects
45	IS: 11057	Code of Practice for Industrial Safety Nets
46	IS: 13415	Code of Practice on safety for Protective barriers in and around building
47	IS: 13416	Recommendations for preventive measures against hazards at working places

Statutory Regulations

Latest Statutory Acts and Rules, as given below, may be referred:-

1. The Petroleum Acts 1934 and Petroleum Rules 2002
2. The Factory Act, 1948 (As amended by Factory Amendment Act 1987) and concerned Factory Rules
3. The Water (Prevention and Control of Pollution) Act 1974 & Rules 1975
4. The Environment (Protection) Act 1986
5. The Manufacturing, Storage and Import of Hazardous Rules 1989
6. The Hazardous Wastes Management (Management & Handling) Rules 1989
7. The Indian Electricity Act 1901 and Rules 1956
8. The Indian Explosive Acts, 1884 & The Indian Explosive Rules 1983
9. The Gas Cylinder Rules 1981and the static & Mobile Pressure Vessels (Unfired) Rules 1981
10. The Indian Boiler Act 1923 and Regulations 1950
11. The Public Liability Act 1991 as amended in 1992
12. The Motor Vehicle act 1988 and Central Motor Vehicle rules 1989
13. Building & Other Construction workers (Regulation of Employment & Condition of Service) Act 1996

In addition to above, various other statutory acts like EPF, ESIS, Minimum wage act and other local statutory requirements shall also be complied with.

ANNEXURE II

CHECK LIST FOR SAFETY INSPECTION / AUDIT

Job _____ Location _____ Date of Audit_____Frequency _____

Inspected by _____ Contractor (s) _____

Sl.no.	ITEM	YES	NO	NA	REMARKS / ACTION
1.0	**PERSONNEL PROTECTIVE EQUIPMENT (PPE):** Are following PPEs being used as per the job requirements?				
1.1	Safety Helmets				
1.2	Safety Shoes				
1.3	Gum Boots				
1.4	Safety Belts with life line				
1.5	Gloves				
1.6	Ear Plug				
1.7	Goggles				
1.8	Shield Glass				
1.9	Face Protection				
1.10	Breathing Apparatus				
1.11	Canister Mask				
1.12	Hand wash / Eye wash/ Respirating filter / cloth				
1.13	Boiler Suit				
1.14	Others				
2.0	**HOUSE KEEPING**				
2.1	Whether Waste Bins are provided / used				
2.2	Are Passageways / Walkways clear?				
2.3	Is General neatness O.K.?				
2.4	Is the Ground free from oil, grease etc. and is not found to be slippery?				
2.5	Others				

3.0	**EXCAVATION**				
3.1	Whether soil stability is checked?				
3.2	Whether proper shoring for the excavation is provided to prevent cave-in for side of slope >45 Degree?				
3.3	Whether proper precautions have been taken if the excavation is adjoining to heavy structure like building, street and roadways?				
3.4	While excavating whether proper slope usually 45^0 & suitable benches of 0.5 m width at each 1.5 m depth are provided?				
3.5	Whether barricading of 1m height with glowing caution board is provided for excavation beyond 1.5m depth?				
3.6	Whether excavating earth is placed beyond 1m of the edge of the trench?				
3.7	Whether heavy vehicle movement is restricted to come too close to the excavating area?				
3.8	Whether necessary precaution is taken for underground pipes, sewers, cables by contractors?				
3.9	Whether excavation hot work permit is taken?				
3.10	Whether extra precaution is taken for bailing out water properly while excavating?				
3.11	During rains whether the excavation is done with extra precaution to prevent caving in?				
3.12	Whether two separate entry/ exit points with necessary ladders / steps, as per requirement, have been provided?				
3.13	Whether one person is available at all the time to communicate any hazards noticed with workers working in deep trenches or excavation?				
3.14	Whether necessary precautions like				

	regular gas testing are being taken in areas having hydrocarbons and LPG so that no gas accumulation takes place in the trenches.				
3.15	Whether IS: 4081-1986 & Indian Explosive act & rules for storage, handling & carrying of explosive material and execution of blasting operation is followed?				
3.16	Whether in case of mechanised excavation, caution board is provided for do's and don'ts like 'Nobody to enter' within one meter of the extreme reach?				
3.17	Whether the following are inspected during excavation work :- a) Boulder formation encountered b) Collapsing / development of cracks of sides c) Marked damage to support d) Unexpected fall of ground e) Inspection of site after each blast.				
3.18	Others				
4.0	**PERMITS**				
4.1	Whether valid work permit is issued to start any work?				
4.2	Whether all conditions of the permit are fulfilled before starting the job?				
4.3	As noted in the permit, whether compliance of all the recommendations are ensured?				
4.4	Whether permits are available at work site all the times?				
4.5	Whether hot work permit registered in fire station?				
4.6	Whether permits are being closed after the completion of job?				
4.7	Others				
5.0	**SAFETY IN CUTTING / WELDING/GRINDING**				
5.1	Whether LPG / Oxygen / Acetylene/ Gas				

	cylinders are kept outside only while working in confined space?				
5.2	Are Acetylene /LPG cylinders kept in upright position and secured at designated places under shed – wet gunny bags wrapped around it if the same is under sun at designated place?				
5.3	Check cylinder and cylinder valves for any kind of damage?				
5.4	Whether protective valves are kept on cylinder while not in use?				
5.5	Whether proper means and method for transportation of cylinders to avoid dropping and rolling are being adopted / followed?				
5.6	Whether gas cylinders, regulators are kept away/free from oil and grease?				
5.7	Whether all hoses were found to be free of any damage or crack?				
5.8	Whether oxygen and acetylene cylinders are stored separately?				
5.9	Whether color coding is being used for easy identification of different type of cylinders and hoses?				
5.10	Whether cylinder keys are available near the cylinder?				
5.11	Whether gas torches with NRV with flash back arrestor of approved make are only being used?				
5.12	Whether pressure gauges are in working condition and checked from time to time?				
5.13	Whether welding shields are used while welding?				
5.14	Whether proper earthing for welding machines are provided?				
5.15	Whether power is taken from approved sources (welding receptacles)?				
5.16	Whether welding receptacles are properly grounded?				

5.17	Whether welding cables are maintained in good condition and without any joints/ cuts?				
5.18	Whether to avoid short circuit, welding machines are protected against rain?				
5.19	Whether earth connectors are securely connected to the job and not to the adjoining pipeline or structure?				
5.20	Whether flame arrestor of DG set is of approved make and quality?				
5.21	Others				
6.0	**SAND / SHOT BLASTING**				
6.1	Whether sand blasting is used only after getting approval from competent authority?				
6.2	Whether air compressor used for sand / shot blasting are positioned away from work place?				
6.3	Whether exhaust of the prime mover is directed away from the work place?				
6.4	Whether in case of motor driven compressor, the body of the motor as well as the compressor is properly earthed?				
6.5	Whether line operator of sand/shot blasting wear suitable PPEs including mask?				
6.6	Whether adequate measures are adopted to confine dust/spray particles?				
6.7	Whether adequate measures are taken for proper ventilation while the work is done in confined space?				
6.8	Others				
7.0	**SAFETY WHILE WORKING AT HEIGHTS / SCAFFOLDING / LADDERS**				
7.1	Whether work permit is obtained to take up work at height above 3 mts?				
7.2	Whether steel pipes scaffoldings are used in unit/off site areas?				

7.3	Whether provision for suitable platform with all scaffoldings are made? Whether its construction is as per specification with toe board and railing?				
7.4	Whether the area below working at height is cordoned?				
7.5	Whether suitable platform is provided?				
7.6	Whether ISI approved quality and good condition safety belts are used while working at heights?				
7.7	Whether life line of safety belt is Anchored to an independent secured support capable of withstanding load of a falling person?				
7.8	Whether the area around the scaffold is cordoned off to prohibit the entry of unauthorized person?				
7.9	Whether ropes used are of good condition and adequate strength free of defects?				
7.10	Whether ladder is placed at secured and leveled surface?				
7.11	Whether it is extended 1.5 Mts. Above the landing point?				
7.12	Whether ladder used are of adequate length and tying short ladder is avoided?				
7.13	Whether metallic ladders are placed away from electrical system?				
7.14	Whether tools or materials are removed after completion of the day's job at heights?				
7.15	Whether a valid permit is obtained before taking up work on asbestos or fragile roof?				
7.16	Whether sufficient precaution is taken while working on fragile roof?				
7.17	Whether provision is made to arrange duck ladder, crawling board for working at fragile roof?				
7.18	Whether scaffolding has been erected on rigid / firm / levelled surfaces only?				

7.19	Whether scaffold has been inspected by competent person prior to being put in use?				
7.20	Whether the scaffolding has been designed for the load to be borne?				
7.21	Whether the erection and dismantling of the scaffolding is being done only by trained persons and under supervision?				
7.22	Whether safety net with proper working arrangement and life line has been provided?				
7.23	Others				
8.0	**SAFETY IN CONFINED SPACE**				
8.1	Whether a permit is obtained to enter a confined space?				
8.2	Whether gas test for hydrocarbon, toxic gas, oxygen level is obtained before entering any confined space?				
8.3	Whether adequate oxygen level is ensured in confined space before entering? If not, whether all precaution like using of Breathing Apparatus set is ensured?				
8.4	Whether, in case of chance of ingress of hydrocarbon gases / toxic gases, Personnel Monitoring System (PMS) is used or not?				
8.5	Whether only in presence of a supervisor, worker enters in confined space?				
8.6	Whether provision of sufficient means of entry and exit is available?				
8.7	Whether provision of ventilation to remove welding fumes, dust, exhaust gases are made?				
8.8	Whether provision of 24V (Hand lamps with cage as per OISD-STD-155) light for working inside space is made?				

8.9	Is it strictly ensured that a stand-by trained person is standing outside before a person enters a confined space and communication is being maintained all the time with workers working inside?				
8.10	Whether life belt with one end under control of stand-by person outside is kept while working in confined space?				
8.11	Whether Personnel protective Equipment are in good condition as specified in the permit?				
8.12	Whether absence of Hydrogen Sulfide, CO or other toxic gas is ensured before entering into a confined space? If yes, whether proper required PPE like BA, Gas Mask are used.				
8.13	Whether boxing up is being done only as per the approved procedures and by competent persons?				
8.14	Whether all the safety precautions listed in OISD-GDN-192 are taken while working in sewers, OWS etc.?				
8.15	Whether proper house keeping is being maintained inside the confined space?				
8.16	Whether training has been provided to workers working in the confined space and the workers only of sound health are being asked to work in the confined space?				
8.17	Others				
9.0	**SAFETY IN MATERIAL HANDLING**				
9.1	Whether all lifting tools, tackles, machines, chains, ropes etc. are of sound construction, made of sound material and maintained in good condition?				
9.2	Whether safe working load, date of testing visibly marked/painted on the equipment?				
9.3	Whether lifting tools, tackles are of adequate strength for the load to be handled?				
9.4	Whether all parts including the working gears fixed or movable of every lifting machine, chain, rope, tackles specify the				

	following condition: a) Thoroughly examined by competent person at least once a year or such interval as required by statutory authority. b) Document of such examination are maintained and produced to owner supervisor before use of particular equipment?				
9.5	Whether chain blocks and cables are inspected before each use to assure their sound condition?				
9.6	Whether hoist and lift if used are: a) Properly maintained and thoroughly examined by competent authority at least once in every year. b) A register to be maintained to record particulars of such examination in prescribed forms and shall be produced to the owner supervisor before use.				
9.7	Whether area below the movement of boom of crane is cleared to avoid injury from falling objects?				
9.8	Whether it is ensured that crew of truck leave the truck in crane handling area before starting loading / unloading, if not involved in rigging operation?				
9.9	Whether transporting material from one place to another is done by suitable means?				
9.10	Whether carrier with sufficient capacity without projecting parts is used for transporting materials?				
9.11	Whether riggers engaged are well trained and conversant with signaling procedures including night signalling if required?				
9.12	Whether permission of authorized person is obtained before working on or near an overhead crane?				
9.13	Whether trained riggers are available all the time along with crane?				

9.14	Whether barricading has been done to ensure no unauthorised person enters in the working area of the crane?				
9.15	Whether lifting plan has been prepared and approved before start of the work?				
9.16	Whether route of crane movement has been planned before the crane moves out of the garage?				
9.17	Whether it has been ensured that no electrical cable come within 3 metres or safe distance from the boom of the crane?				
9.18	Whether boom is being kept in the horizontal position or locked while idling?				
9.19	Whether material is being stacked / destacked in trucks with the help of wedges to ensure no slippage while loading / unloading takes place?				
9.20	Whether the forklift / crane is being operated only by trained person?				
9.21	Others				
10.0	**ELECTRICAL SAFETY**				
10.1	Has the Electrical Line Clearance procedure been followed involving electrical and other concerned Dept. and filling of formats?				
10.2	Have Danger Signs with Voltage rating/ Men at work signboards been displayed at both Sub Station as well as the work site?				
10.3	Has the contractor worker understood the electrical circuit on which he is going to work with probable electrical hazards and mitigation measures to be adopted?				
10.4	Whether contractor has engaged electrician (s) having valid electrical licence in line with provisions in Indian Electricity Rules?				

10.5	Have all checks prior to switching operation been carried out and authorisation of owner/ user section obtained subsequently?				
10.6	Have all earthing links on electrical conductors removed before charging the line/ apparatus?				
10.7	Have PPE as prescribed under Indian Electricity Rules been in place, kept healthy and used?				
10.8	Are earthing and bonding arrangement of non-current carrying metallic parts in line with provisions of Indian Electricity Rules – 1956 amended time to time as IS: 3043?				
10.9	Have electrical part of OISD-GDN-192 and Clause No. 9.0 for Temporary installations in OISD-173 been understood and followed wherever applicable?				
10.10	Are flexible wires having voltage of 240 volts above earth potential taken through PVC conduits?				
10.11	Whether portable hand lamps with a voltage rating of not more than 24 volts used with flameproof enclosures in confined spaces within columns, vessels etc?				
10.12	Have the Switches, MCBs, fuses etc. been inspected for proper ratings?				
10.13	Has Earth Leakage Circuit Breaker (ELCB) been used on the incoming side to protect against leakage of current? Is the device tested every time the work is started?				
10.14	Whether all portable appliances are provided with insulated Three pin Plugs and socket arrangement?				
10.15	Whether industrial type extension boards and plug sockets are used?				
10.16	Has the electrical equipment brought to site by contractor been inspected by owner's supervisor/ safety officer for damage/cuts/abrasion etc? Is record of				

	Insulation Resistance, wherever required , being kept?				
10.17	Have standard practices for termination of conductors/ cables been followed (e.g. use of proper lugs, crimping tool, cable glands etc)? Is cable armour in continuity from feeding point to load?				
10.18	Are the Contractor supervisor and workmen well acquainted with first aid for electrical shock?				
10.19	Are the wires/ cables identifiable along their route towards the load by using colour coding and/or markers?				
10.20	Others				
11.0	**ROAD WORK**				
11.1	Whether site is barricaded and provided with warning signs including night warning lamps/ self glowing markers at appropriate location for diversion of traffic?				
11.2	Whether mixing aggregates with bitumen is done with the help of batch mixing plants? If no, whether adequate precautions have been taken?				
11.3	Whether road rollers, bitumen sprayers, pavement finishers are driven by experienced drivers with valid driving licenses?				
11.4	Whether the worker handling hot bitumen sprayers or spreading bitumen aggregate mix or mixing bitumen with aggregate are provided with PVC hand gloves rubber shoes with pegging upto knee joints?				
11.5	Others				
12.0	**FORM WORK, REINFORCEMENT**				
12.1	Whether form work, shuttering, shoring etc. are adequately designed and provided to erect the structure and to support the expected load?				

12.2	Whether staging (support) for shuttering is designed for loads like worker movement, impact load and other incidental loads during construction?				
12.3	Whether workers use PPEs at work site?				
12.4	Whether all safety procedures are adopted while cutting rod?				
12.5	Whether proper staging and bundling is provided for supplying rods at height?				
12.6	Whether sufficient cross bracings are provided for high staging works at vulnerable points?				
12.7	Others				
13.0	**CONCRETING**				
13.1	Whether the concreting area is barricaded?				
13.2	Whether vibrator hoses, pumping concrete accessories are in healthy condition and mechanically strong?				
13.3	Whether it is ensured that no pipe line in concrete pumping system is attached to any temporary strut such as scaffolds etc.?				
13.4	Whether it is checked that safety guards around moving parts are provided in concrete mixer/ machines?				
13.5	Whether earthing of electrical mixers, vibrator etc. are checked?				
13.6	Whether entry of unauthorised person in the concreting area is restricted?				
13.7	Whether adequate lighting arrangement is made in the concreting area if working during night?				
13.8	Whether PPEs like gum boots, gloves and dust masks etc. are being used?				
13.9	For overhead or underground work, whether form work and shuttering have been checked so that the same do not collapse during concreting?				

13.10	Others				
14.0	**DEMOLISHING (DEMOLISHING BY BLAST NOT CONSIDERED)**				
14.1	Has the stability of structure been examined by competent person and found OK?				
14.2	Are non-sparking tools being used, if required?				
14.3	Is intermittent clearing operation being done to keep the area reasonably tidy and clean?				
14.4	Whether effective barricading has been provided?				
14.5	Whether Electrical and other facilities like water, oil, gas pipelines have been isolated/protected?				
14.6	Whether the plan of demolition (including sequence of activities) has been prepared and approved prior to start of the work?				
14.7	Others				
15.0	**RADIOGRAPHY**				
15.1	Are safety precautions for handling of source as per guidelines of BARC being followed?				
15.2	Is the potency of the source being used within acceptable limits as per the BARC regulations?				
15.3	Is the area being cordoned with proper signs during radiography?				
15.4	Does proper place exist as per BARC regulations for storage of source / Personnel safety equipment?				
15.5	Does the radiographer has valid certificate of radiography from competent authority (BARC)?				
15.6	Is radiographer using Exposure Meter / Dosi Meter?				
15.7	Whether minimum occupancy of the				

	premises / workplace is being ensured while radiography is in progress?				
15.8	Is permit system being followed?				
15.9	Others				
16.0	**ADDITIONAL SAFETY PRECAUTION FOR UNITS WITH HYDROCARBONS**				
16.1	Are jobs being carried out with a valid work permit only as per OISD-STD-105 "Work Permit System".				
16.2	Is smoking prohibited in all places containing combustible or flammable materials and "No Smoking" notices prominently displayed.				
16.3	Are only approved type electrical installations and equipment, including portable lamps, being used?				
16.4	Are oily rags, waste, wooden materials and clothes or other substances liable to spontaneous ignition being removed?				
16.5	Are the combustible materials properly shielded in case same cannot be removed from the area?				
16.6	Has welding screens (like metal/asbestos/ water curtain) been put up to protect other equipment / facilities/ OWS/ drains in adjoining areas against flying sparks, as may be required?				
16.7	Is Gas-testing being done with the means of a calibrated Gas detection Meter prior to start of Hot work and being done subsequently at regular intervals as per the requirement?				
16.8	Are regular inspections being done of places where there are fire risks like in the vicinity of heating appliances, electrical installations and conductors, stores of flammable and combustible materials, welding and cutting operations?				
16.9	Are fire-extinguishing equipment being placed at strategic locations and are kept well maintained and inspected at suitable intervals by a competent person.				
16.10	Are access to fire-extinguishing equipment such as hydrants, portable				

	extinguishers and connections for hoses kept clear at all times?				
16.11	Are all supervisors and a sufficient number of workers trained in the use of fire-extinguishing equipment?				
16.12	Are audio means, to give warning in case of fire provided, audible in all parts of the site where persons are liable to work?				
16.13	Is there an effective evacuation plan in place so that all persons are evacuated speedily without panic?				
16.14	Others				
17.0	**EMERGENCY PROCEDURES**				
17.1	Is signaling / siren system effective?				
17.2	Is arrangement for rescuing affected person adequate?				
17.3	Are signs showing emergency exit route installed?				
17.4	Is emergency exit route clear of obstacles?				
17.5	Is communication system adequate?				
17.6	Whether emergency vehicle with driver has been provided to meet any emergency situation?				
17.7	Does any tie-up with hospitals or local doctors exist?				
17.8	Has the assembly point for workers in case of emergency been identified and earmarked?				
17.9	Has training been provided to a few workers for First Aid?				
17.10	Others				
18.0	**WELFARE FACILITIES**				
18.1	Is hygienic conditions prevailing at labour camps?				
18.2	Are First Aid facilities available?				

18.3	Does proper sanitation exist at site office and labour camps?				
18.4	Does any arrangement of medical facilities like tie ups with nearby hospital exist?				
18.5	Is proper drinking water facility available for workmen & staff?				
18.6	Are crèches provided for children (if applicable)?				
18.7	Is any proper place/canteen/restroom provided for eating food and taking rest?				
18.8	Is any place earmarked for storing / keeping clothing?				
18.9	Is Adequate washing facility available?				
18.10	Does proper ventilation at working place exist?				
18.11	Others				
19.0	**GENERAL**				
19.1	Are illumination levels at workplace and passages adequate?				
19.2	Is communication system adequate?				
19.3	Are display and caution boards provided at strategic locations?				
19.4	Are road barriers being used for blocking any roads/passage?				
19.5	Has the structure been adequately secured against storm/high winds during construction/ erection?				
19.6	Are the equipment properly earthed?				
19.7	Are vehicles being checked like brakes, oil, lights etc. on regular basis?				
19.8	Is compressed air being used only for its intended purpose and not for any other purpose?				
19.9	Are only proper clothes and not loose clothes being used while working around				

	machinery?				
19.10	Are nails or other sharp objects being removed or bent?				
19.11	Are machine guards over moving parts of machinery such as coupling, pulley, wheel etc. installed?				
19.12	Whether after maintenance of machinery the guards are securely fitted before putting into operation?				
19.13	Are working platforms / gangways provided with hand rails & toe guards?				
19.14	Are swing platforms provided with chains & secured adequately when not in use?				
19.15	Are the approaches to work sites being maintained & kept clear of obstacles?				
19.16	Whether engines of equipment entering into the operating area have exhaust and muffler system with approved spark arrestor?				
19.17	Whether vehicles/engine driven equipment, electrical equipment and tools used are certified?				
19.18	Whether contractors inform his workers about hazards and safe procedures?				
19.19	Whether sufficient care is taken so that spark do not go outside working enclosure & falls below?				
19.20	Whether contractor's qualified / trained supervisor is present?				
19.21	Whether all exhausts of engines are provided with approved type of flame arrestors and exhaust is not facing toward the place where the workers are working?				
19.22	Others				

Signature of the Auditor

निर्माण स्थल पर स्वास्थ्य, सुरक्षा एवं पर्यावरण प्रबंधन हेतु मानक विनिर्देशन

STANDARD SPECIFICATION FOR HEALTH, SAFETY&ENVIRONMENTAL (HSE)MANAGEMENT AT CONSTRUCTION SITES

Rev	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman Approved by
8	25/10/2018	REVISED & UPDATED	BT	AP	AKK	RKT
7	31/01/2017	REVISED & UPDATED	AS	AP	AKK	RN
6	26/02/2014	REVISED & UPDATED	SM	DJ	RKD	SC
5	19/12/2012	REVISED & UPDATED	SM	SM	RKD	DM
4	13/02/2008	REVISED & UPDATED	AS	RK	SCB	VC
3	17/07/2007	REVISED & UPDATED	AS	MPJ	VNP	VC
2	11/08/2005	REVISED & UPDATED	MPJ	MPJ	VNP	VJN

Abbreviations:

AERB	:	Atomic Energy Regulatory Board
ANSI	:	American National Standards Institute
BARC	:	Bhabha Atomic Research Centre
BS	:	British Standard
EIL	:	Engineers India Limited
ELCB	:	Earth Leakage Circuit Breaker
EPC	:	Engineering, Procurement and Construction
EPCC	:	Engineering, Procurement, Construction and Commissioning
ESI	:	Employee State Insurance
GCC	:	General Conditions of Contract
GM	:	General Manager
GTAW	:	Gas Tungsten Arc Welding
HOD	:	Head of Department
HSE	:	Health, Safety & Environment
OH&S	:	Occupational Health and Safety
LTI	:	Lost Time Injuries
HIRAC	:	Hazard, Identification Risk Assessment & Control
OISD	:	Oil Industry Safety Directorate
HV	:	High Voltage
IS	:	Indian Standard
ISO	:	International Organization for Standardization
IE	:	Indian Electricity
LOTO	:	Lock Out & Tag Out
LPG	:	Liquefied Petroleum Gas
LSTK	:	Lump Sum Turn Key
MV	:	Medium Voltage
PPE	:	Personal Protective Equipment
RCCB	:	Residual Current Circuit Breaker
RCM	:	Resident Construction Manager or Site-in-Charge, as applicable
SCC	:	Special Conditions of Contract
SLI	:	Safe Load Indicator
SWL	:	Safe Working Load
TPI	:	Third Party Inspection
TBT	:	Tool Box Talks

Construction Standards Committee

Convenor: Sh. A K Kundu, ED (Construction)

Members: Sh. Amitava Pal, GGM (Construction)
Sh. Janak Kishore, CGM (Projects)
Sh. Rajeev Jain, GM (SCM)
Sh. Udayan Chakravarty, GM (Piping)
Sh. Ravindra Kumar, GM (Construction)
Sh. S K Goel, AGM (Construction)

CONTENTS

1.0 SCOPE

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied by Contractors/Vendors including their sub-contractors/sub vendors during construction.

This specification is not intended to replace the necessary professional judgment needed to design & implement an effective HSE system for construction activities and the contractor is expected to fulfill HSE requirements in this specification as a minimum. It is expected that contractor shall implement best HSE practices beyond whatever are mentioned in this specification.

Requirements stipulated in this specification shall supplement the requirements of HSE Management given in relevant Act(s)/ Legislations, General Conditions of Contract (GCC), Special Conditions of Contract (SCC) and Job (Technical) Specifications. Where different documents stipulate different requirements, the most stringent shall apply.

2.0 REFERENCES

The document should be read in conjunction with following:

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Building and other construction workers Act,
- Indian Factories Act
- Job (Technical) specifications
- Relevant International/ National Codes (refer Appendix-A for standards/codes on HSE)
- Relevant State & National Statutory requirements.
- Operating Manuals Recommendation of Manufacturer of various construction Machineries
- Occupation Health and Safety Management System (OHSAS 18001:2007) and Environmental Management System (ISO 14001:2015)

3.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENTAL (HSE) MANAGEMENT SYSTEM TO BE COMPLIED BY BIDDERS

3.1 Management Responsibility

3.1.1 HSE Policy & Objectives

The Contractor should have a documented and duly approved HSE policy &objectives to demonstrate commitment of their organization to ensure health, safety and environmental aspects in their line of operations.

3.1.2 Management System

The HSE management system of the Contractor shall cover the HSE requirements & commitments to fulfill them, including but not limited to what have been specified under clauses 1.0 and 2.0 above. The Contractor shall obtain the approval of its site specific HSE Plan from EIL/ Owner prior to commencement of any site works. Corporate as well as Site management of the Contractor shall ensure compliance of their HSE Plan at work sites in its entirety in true spirit.

3.1.3 Indemnification

Contractor shall indemnify & hold harmless, Owner/EIL & their representatives, free from any and all liabilities arising out of non-fulfillment of HSE requirements or its consequences.

3.1.4 Deployment & Qualifications of Safety Personnel

The Contractor shall designate / deploy various categories of HSE personnel at site as indicated below in sufficient number. In no case, deployment of safety Supervisor / Safety Steward shall substitute deployment of Safety Officer / Safety Engineer what is indicated in relevant statute of BOCW Act i.e. deployment of safety officer/Safety Engineer is compulsory at project site. The Safety supervisors, Safety stewards/Observer etc. would facilitate the HSE tasks at grass root level for construction sites and shall assist Safety Officer /Engineers.

Contractor shall appoint safety personnel as given below for every work shift (As per table below):

(i) Safety Observer/Steward: Contractor shall depute one Safety Observer/Steward for every 100 workers and additionally thereon.

(ii) Safety Supervisor: In addition to above (i), contractor shall depute one Safety Supervisor for every 250 workers and additionally thereon.

(iii) Safety Engineer: In addition to above (i &ii), one safety engineer/ officer for every 1000 workers and additionally thereon.

<table>
<tr><th rowspan="2">No. of Workers deployed</th><th colspan="3">Requirement of Safety Personnel for every shift</th></tr>
<tr><th>Safety Observer/Steward</th><th>Safety Supervisor</th><th>Safety Engineer/ Officer</th></tr>
<tr><td>1-100</td><td>One</td><td rowspan="2">One (1-250)</td><td rowspan="7">One</td></tr>
<tr><td>101-200</td><td>Two</td></tr>
<tr><td>201-300</td><td>Three</td><td rowspan="3">Two (250-500)</td></tr>
<tr><td>301-400</td><td>Four</td></tr>
<tr><td>401-500</td><td>Five</td></tr>
<tr><td>Up to 1000</td><td>Ten</td><td>Four</td></tr>
<tr><td>Up to 2000</td><td>Twenty</td><td>Eight</td><td>Two</td></tr>
</table>

In case any of the safety personnel leave the contractor the same shall be intimated to the owner/ Consultant/ EIL. The contractor shall recruit new personnel and fill up the vacancy.

a) Safety Steward/Observer

As a minimum, he shall possess class XII pass certificate and trained in fire-fighting as well as in safety/occupational health related subjects, with minimum two year of practical experience in construction work environment and should have adequate knowledge of the local language spoken by majority of the workers at the construction site.

b) Safety Supervisor

As a minimum, he shall possess a recognized graduation Degree in Science (with Physics & Chemistry) or a Diploma in Engg. Or Tech. with minimum Two years of practical experience in construction work environment and should possess requisite skills to deal with construction safety & fire related day-to-day issues.

c) Safety Officer / Safety Engineer

Safety Officer/Engineer should possess following qualification & experience:

(i) Recognized degree in any branch of Engg. or Tech. or Architecture with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than two years, **or** possessing recognized diploma in any branch of Engg. or Tech with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than five years.

(ii) Recognized degree or one year diploma in Industrial safety (from any Indian Institutes recognized by AICTE or State Council of Tech. Education of any Indian State / Union territory) with at least one paper in construction safety (as an elective subject).

(iii) Preferably have adequate knowledge of the language spoken by majority of the workers at the construction site.

Alternately

(i) Person possessing Graduation Degree in Science with Physics & Chemistry and degree or one year diploma in Industrial Safety (from any Indian institutes recognized by AICTE or State Council of Tech. Education of any Indian State/ Union Territory) with practical experience of working in a building, plant or other construction works (as Safety Officer, in line with Indian Factories Act, 1958) for a period of not less than five years, may be considered as Safety Officer.

d) HSE In-Charge

In case there is more than one Safety Officer at any project construction site, one of them, who is senior most by experience (in HSE discipline), may be designated as HSE In-Charge. Duties & responsibilities of such person shall be commensurate with that of relevant statute and primarily to coordinate with top management of EIL/Client and contractors.

In case the statutory requirements i.e. State or Central Acts and / or Rules as applicable like the Building and Other Construction Workers' Regulation of Employment and Conditions of Service- Act,1996 or State Rules (wherever notified), the Factories Act, 1948 or Rules (wherever notified), etc. are more stringent than above clarifications, the same shall be followed.

Contractors shall ensure physical availability of safety personnel at the place of specific work location, where Hot Work Permit is required/granted. No work shall be started at any of the project sites until above safety personnel & concerned Site Engineer of Contractor are physically deployed at site. The Contractor shall submit a HSE Organogram clearly indicating the lines of responsibility and reporting system and elaborate the responsibilities of safety personnel in their HSE Plan.

The Contractor shall verify & authenticate credentials of such safety personnel and furnish Bio-Data/Resume/Curriculum Vitae of the safety personnel as above for EIL/Owner's approval, at least 1 month before the mobilization. The Contractor, whenever required, shall arrange submission of original testimonials/certificates of their Safety personnel, to EIL/Owner (for verification/scrutiny, etc.)

Imposition/ Realization of penalty shall not absolve the Contractor from his/her responsibility of deploying competent safety officer at site.

Adequate planning and deployment of safety personnel shall be ensured by the Contractor so that field activities do not get affected because of non-deployment of competent & qualified safety personnel in appropriate numbers.

3.1.5 Implementation, Inspection/Monitoring

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

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

c) The Contractor shall ensure physical presence of their field engineers / supervisors, during the continuation of their contract works / site activities including all material transportation activities. Physical absence of experienced field engineers / supervisors of Contractor at critical work spot during the course of work may invite halting / stoppage of work.

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

e) Contractor skilled workmen like riggers, scaffold erectors, welders, crane operators etc. should have sufficient past experience and skill on the relevant job.

f) The Contractor shall ensure important safety checks right from beginning of works at every work site locations and to this effect format No. HSE-10 "Daily Safety Check List" shall be prepared by field engineer & duly checked by safety personnel for conformance.

g) The Contractor shall carry out inspection to identify various unsafe conditions of work sites/machinery/equipments as well as unsafe acts on the part of workmen/supervisor/engineer while carrying out different project related works.

h) Adequate records for all inspections shall be maintained by the Contractor and the same shall be furnished to EIL/Owner, whenever sought.

i) To demonstrate involvement/commitment of site management of Contractor, at least one Safety Walk through in a month shall be carried out by Contractor's head of site (along with his area manager/field engineers) and a report shall be furnished to EIL/Owner as per format No: HSE-1" Safety walk through report" followed by compliance for unsatisfactory remarks.

j) As a general practice lifting tools/tackles, machinery, accessories etc. shall be inspected, tested and examined by competent person(approved by concerned State authorities) before being used at site and also at periodical interval (e.g. during replacement, extension, modification, elongation/reduction of machine/parts, etc.) as per relevant statutes. Hydra, cranes, lifting machinery, mobile equipments/ machinery/ vehicles, etc. shall be inspected regularly by only competent / experienced personnel at site and requisite records for such inspections shall be maintained by contractor. Contractor shall also maintain records of maintenance of all other site machinery (e.g. generators, rectifiers, compressors, cutters, etc.) &portable tools/equipments being used at project related works (e.g. drills, abrasive wheels, punches, chisels, spanners, etc.).The Contractor shall not make use of arbitrarily fabricated 'derricks' at project site for lifting/ lowering of construction materials.

k) Site facilities /temporary. installations, e.g. batching plant, cement godown, DG-room, temporary electrical panels/distribution boards, shot-blasting booth, fabrication yards, etc. and site welfare facilities, like labour colonies, canteen/pantry, rest-shelters, motor cycle/bicycle-shed, First-aid centers, urinals/toilets, etc. should be periodically inspected by Contractor (preferably utilizing HR/Admin. personnel to inspect site welfare facilities) and records to be maintained.

3.1.6 Behaviour Based Safety

a) The contractor shall develop a system to implement Behavior-Based Safety (BBS) through which work groups can identify, measure and change the behaviors of employees and workers towards construction safety aspects.

b) The BBS process shall include the following:
- Identify the behaviors critical to achieve required safety performance.
- Communicate the behaviors and how they are performed correctly by all

- Observe the work force and record safe/at risk behaviors. Intervene with workers to give positive reinforcement when unsafe behaviors are observed. Provide coaching/correction when at risk behaviors are observed
- Collect and record observation data
- Summarize and analyze observation data
- Communicate observation data and analysis results to all employees
- Provide recognition or celebrate when safe behaviour improvements occur
- Change behaviours to be observed or change activators or change consequences as appropriate.
- Communicate any changes to workforce

c) Contractor through its own HSE committee shall implement the above process.

d) The necessary procedures and Monthly reporting formats shall be developed by the contractor for approval by EIL/Owner.

e) Contractor shall assess & recognize the behavioral change of its site engineers / supervisors once in a six month and constantly motivate / encourage them to implement HSE practices at project works

f) The HSE committee of contractor shall observe individual's behavior for safe practices adapted for utilization/execution of work for followings a minimum:-

- PPE
- Tools &equipments
- Hazard Identification & control
- House keeping
- Confined space entry
- Hot works
- Excavation
- Loading & unloading
- Work at height
- Stacking & storage
- Ergonomics

3.1.7 **Awareness and Motivation**

a) The Contractor shall promote and develop awareness on Health, Safety and Environmental protection among all personnel working for the Contractor.

b) The contractor shall display safety statistics board at all prominent location .Also shall provide dedicated notice board for displaying of safety alerts or any other safety related notices for awareness site workforces.

c) Regular awareness programs and fabrication shop/work site meetings at least on monthly basis shall be arranged on HSE activities to cover hazards/risks involved in various operations during construction.

d) Contractor to motivate & encourage the workmen & supervisory staff by issuing/ awarding them with tokens/ gifts/ mementos/ monetary incentives/ certificates etc. The motivational program shall be organized on regular basis.

3.1.8 **Fire Prevention & First-Aid**

a) The Contractor shall arrange suitable First-aid measures such as First Aid Box (Refer Appendix-B for details), stand-by Emergency Vehicle .Additionally separate ambulance with trained personnel/male or female nurse to administer First Aid shall be provided by the Contractor beyond deployment of 500 workmen during day/night working hours. At least one fire extinguisher shall be placed at each location of DG Set, Hot works, electrical booth etc.

b) The Contractor shall arrange installation of fire protection measures such as adequate number of steel buckets with sand & water and adequate number of appropriate portable fire extinguishers (Refer Appendix-C for details) to the satisfaction of EIL/Owner.

c) The Contractor shall arrange EMERGENCY MOCK DRILL like fire, bomb threat, gas leakage, earth quake, etc. at each site at least once in three months, involving site workmen and site supervisory personnel & engineers. The Contractor shall maintain record of such mock drills at project site.

d) The contractor shall require to tie-up with the hospitals located in the neighborhood for attending medical emergency.

3.1.9 Documentation

The Contractor shall evolve a comprehensive, planned and documented system covering the following as a minimum for implementation and monitoring of the HSE requirements and the same shall be submitted for approval by owner/EIL.

- HSE Organogram
- Site specific HSE Plan
- Safety Procedures, forms and Checklist. Indicative list of HSE procedures is attached as Appendix :H
- Inspections and Test Plan
- HIRAC Register as per Format no: HSE-19 to identify, assess, analyze & mitigate the construction hazards& incorporate relevant control measures before actually executing site works.
- Environmental Aspect Impact Register as per Format no: HSE-18 (identify, assess, analyze & mitigate the environmental impact & incorporate relevant control measures).
- Legal Register to identify and comply to all applicable HSE related legal requirements.

The monitoring for implementation shall be done by regular inspections and compliance of the observations thereof. The Contractor shall get similar HSE requirements implemented at his sub-contractor(s) work site/office, if applicable. However, compliance of HSE requirements shall be the responsibility of the Contractor. Any review/approval by EIL/Owner shall not absolve contractor of his responsibility/liability in relation to fulfilling all HSE requirements.

3.1.10 Audit

The Contractor shall submit an Audit Plan to EIL/Owner indicating the type of audits covering following as minimum:

a) Internal HSE audits regularly on six monthly basis by engaging internal qualified auditors (viz safety officers/Construction personnel having 5years experience in construction safety and Lead Auditor Course: OSHA 18001certification).However, minimum two internal HSE audit will have to be conducted irrespective of time period of the contract.

b) External HSE audits regularly on yearly basis by engaging authorized auditing agencies (viz. National Safety Council etc.) or qualified external auditors (viz safety officers/Construction personnel having 10years experience in construction safety and Lead Auditor Course: OHSAS 18001certification). However, minimum one external HSE audit will have to be conducted irrespective of time period of the contract.

All HSE shortfalls/ non-conformances on HSE matters brought out during review/audit, shall be resolved forthwith (generally within a week) by Contractor& compliance report shall be submitted to EIL/Owner.

In addition to above audits by contractor, the contractor's work shall be subjected to HSE audit by EIL/Owner at any point of time during the pendency of contract. The Contractor shall take all actions required to comply with the findings of the Audit Report and issue regular Compliance Reports for the same to OWNER/ EIL till all the findings of the Audit Report are fully complied.

Failure to carry-out HSE Audits& its compliance (internal & external) by Contractor, shall invite penalization.

3.1.11 **Meetings**

i. The Contractor shall ensure participation of his top most executive at site (viz. Resident Construction Manager / Resident Engineer/ Project Manager / Site-in-Charge) in Safety Committee/HSE Committee meetings arranged by EIL/Owner usually on monthly basis or as and when called for. In case Contractor's top most executive at site is not in a position to attend such meeting, he shall inform EIL/Owner in writing before the commencement of such meeting indicating reasons of his absence and nominate his representative – failure to do so may invite very stringent penalization against the specific Contractor, as deemed fit as per Contract. The obligation of compliance of any observations during the meeting shall be always time bound. The Contractor shall always assist EIL/Owner to achieve the targets set by them on HSE management during the project implementation.

ii. In addition, the Contractor shall also arrange internal HSE meetings chaired by his top most executive at site on fortnightly basis and maintain records. Such internal HSE meetings shall essentially be attended by field engineers / supervisors including safety personnel of the Contractor and its associates. Records of such internal HSE meetings shall be maintained by the Contractor for review by EIL/Owner or for any HSE Audits.

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

a) Confirmation of record notes /minutes of previous meeting
b) Discussion on outstanding subjects of previous points / subjects, if any
c) Incidents / Accidents (of all types) at project site, if any
d) Current topics related to site activities / subjects of discussion
e) House keeping
f) Behavioral Safety
g) Information / views / deliberations of members / site sub-contractors
h) Report from Owner / Client
i) Status of Safety awareness, Induction programs & Training programs

The time frame for such HSE meeting shall be religiously maintained by one and all.

3.1.12 **Intoxicating drinks & drugs and smoking**

a) The Contractor shall ensure that his staff members & workers (permanent as well casual) shall not be in a state of intoxication during working hours and shall abide by any law relating to consumption & possession of intoxicating drinks or drugs in force.

b) The Contractor shall not allow any workman to commence any work at any locations of project activity who is/are influenced / effected with the intake of alcohol, drugs or any other intoxicating items being consumed prior to start of work or working day.

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

d) The Contractor shall ensure that all personnel working for him comply with "No-Smoking" requirements of the Owner as notified from time to time. Cigarettes, lighters, auto ignition tools or appliances as well as intoxicating drugs, dry tobacco powder, etc. shall not be allowed inside the project / plant complex.

e) Smoking shall be permitted only inside smoking booths, if any, exclusively designated & authorized by the Owner/EIL.

3.1.13 **Penalty**

The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliances and also for repeated failure in implementation of any of the HSE provisions,

EIL/Owner may impose stoppage of work without any cost & time implication to the Owner and/or impose a suitable penalty.

The amount of penalty to be levied against defaulted Contractor shall be up to a cumulative limit of

2.0% (Two percent) of the contract value for Item Rate or Composite contracts with an overall ceiling of 1,00,00,000(Rupees One Crore).

0.5% (Zero decimal five percent) of the contract value for LSTK, OBE, EPC, EPCC or Package contracts with an overall ceiling of 10,00,00,000(Rupees Ten Crores)

This penalty shall be in addition to all other penalties specified elsewhere in the contract. The decision of imposing stop-work-instruction and imposition of penalty shall rest with EIL/Owner. The same shall be binding on the Contractor. Imposition of penalty does not make the Contractor eligible to continue the work in unsafe manner.
The amount of penalty applicable for the Contractor on different types of HSE violations is specified below:

Sl. No.	Violation of HSE Norms	Penalty Amount
1.	For not using personal protective equipment like Helmet, Safety Shoes, and other safety gadgets as applicable as per nature of work.	Rs.500/- per day/Item / Person
2.	Working without Work Permit/Clearance	Rs.20,000/- per occasion
3	Execution of work without deployment of requisite field engineer / supervisor at work spot	Rs.5,000/- per violation per day
4.	Unsafe electrical practices (not installing ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire/cables on the roads, electrical jobs by incompetent person, etc.)	Rs.10,000/- per item per day
5.	Working at height without full body harness, using non-standard/ rejected scaffolding and not arranging fall protection arrangement as required, like hand-rails, life-lines, Safety Nets etc.	Rs.10,000/- per case per day
6.	Unsafe handling of compressed gas cylinders (No trolley, jubilee clips double gauge regulator, and not keeping cylinders vertical during storage/handling, not using safety cap of cylinder).	Rs.1,000/- per item per day
7.	Use of domestic LPG for cutting purpose / not using flash back arresters on both the hoses/tubes on both ends.	Rs.5,000/-per occasion
8.	No fencing/barricading of excavated areas / trenches.	Rs.5,000/- per occasion
9.	Not providing shoring/strutting/proper slope and not keeping the excavated earth at least 1.5M away from excavated area.	Rs.5,000/-per occasion
10.	Non display of scaffold tags, caution boards on erected scaffolds.	Rs.1,000/- per occasion per day
11.	Traffic rules violations like over speeding of vehicles, rash driving, talking on mobile phones during vehicle driving, wrong parking, not using seat belts, vehicles not fitted with reverse horn / warning alarms / flicker lamps during foggy weather.	Rs.3,000/-per occasion per day

Sl. No.	Violation of HSE Norms	Penalty Amount
12.	Absence of Contractor's RCM/SIC or his nominated representative (prior approval must be taken for each meeting for nomination) from site HSE meetings whenever called by EIL/Owner& failure to nominate his immediate deputy for such HSE meetings.	Rs.10,000/- per meeting
13.	Failure to maintain HSE records by Contractor Safety personnel, in line with approved HSE Plan/Procedures/Contract specifications.	Rs.10,000/- per month
14.	Failure to conduct daily site safety inspection (by Contractor's Site Engineer & safety officer), internal HSE meeting, internal HSE Awareness/Motivation Program and Site HSE Training at predefined frequencies (as approved in HSE Plan).	Rs.10,000/- per occasion
15.	Failure to fill online/submit the monthly HSE report by 5th of subsequent month to Engineer-in-Charge/ Owner	Rs10,000/-per occasion and Rs.1,000/-per day of further delay
16.	Poor House Keeping	Rs.5,000 /- per occasion per subject
17.	Failure to report & follow-up accident (including Near Miss) reporting system within specific time-frame.	Rs.20,000/- per occasion
18.	Degradation of environment (not confining toxic spills, spilling oil/lubricants onto ground)	Rs.10,000/- per occasion
19.	Not medically examining the workers before allowing them to work at height / to work in confined space / to work in shot-blasting / to work for painting / to work in bitumen or asphalt works, not providing ear muffs while allowing them to work in noise polluted areas, made them to work in air polluted areas without respiratory protective devices, etc.	Rs.5,000/- per occasion per worker
20.	Violation of any other safety condition as per job HSE plan / work permit and HSE conditions of contract (e.g. using crowbar on cable trenches, improper welding booth, not keeping fire extinguisher ready at hot work site, unsafe rigging practices, non-availability of First-Aid box at site, not providing dead man handle switch for blasting, whiplash arrestor for the compressor line, not using hood with respiratory devices by blaster for shot//grit blasting, etc.)	Rs.5,000/- per occasion
21.	Penalty for non-deployment of ambulance in case of man-power more than 500 or not providing dedicated emergency vehicle in case of man-power less than 500.	Rs.3,000 per day
22.	Failure to carry-out Safety audit in time (internal & external),close-out of identified shortfalls of Observations of Safety Aspects(OSA), etc.	Rs.20,000/- per occasion (for internal audit & OSA). Rs.30,000/-per occasion for external audit
23.	Carrying out sand blasting instead of grit/shot blasting	Rs.50,000/- per day

Sl. No.	Violation of HSE Norms	Penalty Amount
24.	Failure to deploy adequately qualified and competent Safety Officer	Rs.10,000/- per day per Officer
25.	Utilization of hydra/back-hoe loader for material shifting or any other unauthorized /unsafe lifting works	Rs.25,000/- per occasion
26.	Any Fatal Accident	Rs.10,00,000/-per fatality
27.	Any violation not covered above	To be decided by EIL/Owner.

Note: Penalty amount deducted from the contractor shall be utilized by owner/EIC for the promotion of the safety during the currency of the project.

The Contractor shall make his field engineers/supervisors fully aware of the fact that they keep track with the site workmen for their behavior and compliance of various HSE requirements. Safety lapses / defects of project construction site shall be attributable to the concerned job supervisor / engineer of the Contractor, (who remains directly responsible for safely executing field works). For repeated HSE violations, concerned job supervisor / engineer shall be reprimanded or appropriate action, as deemed fit, shall be initiated (with information to EIL & Owner) by the concerned Contractor.

Contractor shall initiate verbal warning shall be given to the worker/employee during his first HSE violation. A written warning shall be issued on second violation and specific training shall be arranged / provided by the Contractor to enhance HSE awareness/skill including feedback on the mistakes/ flaws. Any further violation of HSE stipulations by the erring individuals shall call for his forthright debar from the specific construction site. A record of warnings for each worker/employee shall be maintained by the Contractor, like by punching their cards / Gate passes or by displaying their names at the Project entry gate. Warnings, penalizations, appreciations etc. shall be discussed in HSE Committee meetings by site Head of the Contractor.

3.1.14 Accident/ Incident investigation

All accidents/incidents shall be informed to EIL/Owner at least telephonically by Contractor immediately and in writing within 24 hours on Format No. HSE-2 as applicable, by Contractor. Thereafter, a Supplementary Accident/Incident investigation Report on Format No. HSE-3 shall be submitted to EIL/Owner within 72 hours. Near Miss incident(s), Dangerous accidents/incident shall also be reported on Format No. HSE-4 within24 hours. The accident/ incident shall be investigated by a team of Contractor's senior Site personnel (involving Site-in-Charge or at least by his deputy) for establishing root-cause and recommending corrective & preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to EIL/Owner. Owner/EIL shall have the liberty to independently investigate such occurrences and the Contractor shall extend all necessary help and cooperation in this regard. EIL/Owner shall have the right to share the content of this report with the outside world.

3.2 House Keeping

The Contractor shall ensure that a high degree of housekeeping is maintained and shall ensure inter-alia; the followings:

a) All surplus earth and debris are removed/disposed-off from the working areas to designated location(s).

b) Unused/surplus cables, steel items and steel scrap lying scattered at different places within the working areas are removed to identify location(s).

c) All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).

d) Roads shall be kept clear and materials like pipes, steel, sand, boulders, concrete, chips and bricks etc. shall not be allowed on the roads to obstruct free movement of men & machineries.

e) Fabricated steel structural, pipes & piping materials shall be stacked properly.

f) Water logging on roads shall not be allowed.

g) No parking of trucks/trolleys, cranes and trailers etc. shall be allowed on roads, which may obstruct the traffic movement.

h) Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.

i) Protective measures to be ensured with projected rebar by suitable means.

j) Trucks carrying sand, earth and pulverized materials etc. shall be covered while moving within the plant area/ or these materials shall be transported with top surface wet.

k) The contractor shall ensure that the atmosphere in plant area and on roads is free from particulate matter like dust, sand, etc. by keeping the top surface wet for ease in breathing.

l) At least two exits for any unit area shall be assured at all times – same arrangement is preferable for digging pits/ trench excavation/ elevated work platforms/ confined spaces etc.

m) Welding cables and the power cable must be segregated and properly stored and used. The same shall be laid away from the area of movement and shall be free from obstruction.

n) Schedule for upkeep /cleaning of site to be firmed up and implemented on regular basis.

The Contractor shall carry-out regular checks (minimum one per fortnight) as per format No. HSE-11 for maintaining high standard of housekeeping and maintain records for the same. The Contractor shall provide supervisor for housekeeping exclusively for management of day-to-day housekeeping activities.

3.3 HSE Measures

3.3.1 Construction Hazards

The Contractor shall ensure identification of all Occupational Health, Safety & Environmental hazards in the type of work he is going to undertake and enlist mitigation measures. Contractor shall carry out HIRAC specifically for high risk jobs/critical jobs like

a) Working at height (+2.0 Mts height) for cold (incl. colour washing, painting, insulation etc.) & hot works.
b) Work in confined space,
c) Deep excavations &trench cutting (depth > 2.0 mts.)
d) Operation & Maintenance of Batching Plant.
e) Shuttering / concreting (in single or multiple pour) for columns, parapets & roofs.
f) Erection & maintenance of Tower Crane.
g) Erection of structural steel members / roof-trusses / pipes at height more than 2.0 Mts. with or without crane.
h) Erection of pipes (full length or fabricated) at height more than 2.0 Mts. height with Crane of 100T capacity.
i) All lifts using 100T Crane plus mechanical pulling.
j) All lifts using two cranes in unison (Tandem Lifting).
k) Any lift exceeding 80% capacity of the lifting equipments (hydra, crane etc.).

l) Laying of pipes (isolated or fabricated) in deep narrow trenches – manually or mechanically.
m) Maintenance of crane / extension or reduction of crane-boom on roads or in yards.
n) Erection of any item at >2.0 Mts. height using 100T crane or of higher capacity
o) Hydrostatic test of pipes, vessels & columns and water-flushing.
p) Radiography jobs (in-plant & open field)
q) Work in Live Electrical installations / circuits
r) Handling of explosives &Blasting operations
s) Demolishing/ dismantling activities
t) Welding/ gas cutting jobs at height (+2.0 Mts.)
u) Lifting/placing roof-girders at height (+2.0 Mts.)
v) Lifting & laying of metallic / non-metallic sheet over roof/structures.
w) Lifting of pipes, gratings, equipments/vessels at heights (+2.0 Mts.) with & without using cranes
x) Calibration of equipment, instruments and functional tests at yards / work-sites.
y) Operability test of Pump, Motors (after coupling) & Compressors.
z) Cold or Hot works inside Confined Space.
aa) Transportation & shifting of ODC consignments into project areas.
bb) Working in "Charged/Live" elect. Panels
cc) Stress Relieving works (Electrically or by Gas-burners).
dd) Pneumatic Tests
ee) Card board blasting
ff) Grit Blasting activity
gg) Catalyst loading/unloading
hh) Erection/dismantling of scaffolding
ii) Chemical cleaning

The necessary HSE measures devised shall be put in place, prior to start of an activity &also shall be maintained during the course of works, by the Contractor. Copies of such HIRAC shall be kept available at work sites by the Contractor to enable all concerned carrying out checks / verification.
A list of typical construction hazards along with their effects & preventive measures is given in **Appendix-E.**

3.3.2 Accessibility

e) The Contractor shall provide safe means of access(in sufficient numbers)& efficient exit to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen and EIL/Owner.
f) The Contractor shall implement use of all measures including use of "life line", "fall-arresters", "retractable fall arresters", "safety nets" etc. during the course of using all safe accesses & exits, so that in no case any individual remains at risk of slip & fall during their travel.
g) A ladder or step- ladder must have a level and firm footing, in case of use of fixed ladders, sufficient foot hold and hand hold to be provided.
h) The access to operating plant / project complex shall be strictly regulated. Any person or vehicle entering such complex shall undergo identification check, as per the procedures in force / requirement of EIL/Owner.
i) Accessibility to 'confined space' shall be governed by specific system / regulation, as established at project site.

3.3.3 Personal Protective Equipment (PPEs)

a) The Contractor workmen shall be permitted entry inside the project premises only with proper PPEs.

b) The Contractor shall ensure that all their staff, workers and visitors including their sub-contractor(s) have been issued (records to be kept) & wear appropriate PPEs like nape strap type safety helmets preferably with head &sweat band with ¾" cotton chin strap (made of industrial HDPE), High ankle safety shoes with steel toe cap and antiskid sole, Coverall, full body harness (CE marked and conforming to EN361), protective goggles, gloves, ear muffs, respiratory protective devices, etc. All these gadgets shall conform to applicable IS Specifications/CE or other applicable international standards. The Contractor shall implement a regular regime of inspecting physical conditions of the PPEs being issued / used by the workmen of their own & also its sub-agencies and the damaged / unserviceable PPEs shall be replaced forthwith.

c) Owner/EIL may issue a comprehensive color scheme for helmets to be used by various agencies. The Contractor shall follow the scheme issued by the owner/EIL and shall choose colour other than white (for Owner) or blue (for EIL). All HSE personnel shall preferably wear dark green band on their helmet or green color safety helmet so that workmen can approach them for guidance during emergencies. HSE personnel shall preferably wear such dresses with fluorescent stripes, which are noticeable during night, when light falls on them.

d) Florescent jackets with respective company logo to be worn by the contractor workmen with different color coding for categories like supervisor and workmen.

e) Workers required using or handling alkalies, acid or other similar corrosive substance at site shall be provided with appropriate protective equipment, in accordance with MSDS.

f) For shot blasting, the usage of protective face shield and helmets, gauntlet and protective clothing is mandatory. Such protective clothing should conform relevant IS Specification.

g) For off-shore jobs/contracts, contractor shall provide PPEs (new) of all types to EIL & Owner's personnel, at his (contractor's) cost. All personnel shall wear life jacket at all time.

h) Contractor shall arrange copy of inspection /test certificate of the newly procured PPEs from the manufacturer.

i) An indicative list of HSE standards/codes is given under **Appendix-A**.

j) Contractor shall ensure procurement & usage of following safety equipments/ accessories (conforming to applicable IS mark / CE standard) by their staff, workmen & visitors including their subcontractors all through the span of project construction / pre-commissioning/ Commissioning:-'

i. PPEs (Helmet with company name/logo, Safety Goggles, Coverall, Ear-muff, Face Shield, Hand Gloves, High Ankle Safety Shoes, Gum Boot etc.)
ii. Barricading tape / warning signs
iii. Rechargeable Safety torch (flame-proof)
iv. Safety nets (with tie-chords)
v. Fall arresters
vi. Portable ladders (varying lengths)
vii. Life-lines (steel wire-rope, dia. not less than 8.0 mm)
viii. Full body double lanyard Safety harness with Rebar/ladder hook or scaffolding hook.
ix. Lanyard
x. Karabiner
xi. Retractable fall arresters (various length)
xii. Portable fire extinguishers (DCP type) – 5 kg&10 kg capacity
xiii. Portable Multi Gas detector
xiv. Sound level meter
xv. Digital lux meter
xvi. Fire hoses & flow nozzles
xvii. Fire blankets/ Fire retardant cloth (with eyelets)

3.3.4 Working at height

a) The Contractor shall issue permit for working (PFW) at height after verifying and

certifying the checkpoints as specified in the attached permit (Format No. HSE-6). He shall also undertake to ensure compliance to the conditions of the permit during the currency of the permit including adherence of personal protective equipments. Contractor's Safety Officer shall verify compliance status of the items of permit document after implementation of action is completed by Contractor's execution / field engineers at work site. HIRAC for specific works at height duly commented by EIL/Owner, shall be kept attached with particular Permit for Work (PFW) at site for ready reference & follow-up.

b) Such PFW shall be initially issued for one single shift or expected duration of normal work and extended further for balance duration, if required. EIL/Owner can devise block-permit system at any specific area, in consultation with project specific HSE Committee to specify the time-period of validity of such PFW or its renewal. This permit shall be applicable in areas where specific clearance from Owner's operation Deptt./ Safety Deptt. is not required. EIL / Owner's field Engineers/Safety Officers/Area Coordinators may verify and counter sign this permit (as an evidence of verification) during the execution of the job.

c) All personnel shall be medically examined & certified by registered doctor, confirming their 'medical fitness (Vertigo or epilepsy must be covered under test report)for working at height. The fitness examination shall be done once in six months.

d) In case work is undertaken without taking sufficient precautions as given in the permit, EIL/ Owner Engineers may exercise their authority to cancel such permit and stop the work till satisfactory compliance/rectification is arranged made. Contractors are expected to maintain a register for issuance of permit and extensions thereof including preserving the used permits for verification during audits etc.

e) The Contractor shall arrange (at his cost) and ensure use of Fall Arrester Systems by his workers. Fall arresters are to be used while climbing/descending tall structures or vessels / columns etc. These arresters should lock automatically against the anchorage line, restricting free fall of the user. The device is to be provided with a double security opening system to ensure safe attachment or release of the user at any point of rope. In order to avoid shock, the system should be capable of keeping the person in vertical position in case of a fall. All the fall arrest systems should be cleaned after use and stored in a clean & dry area .Defective Safety Harness, lanyards & life line must be discarded from workplace and record to be maintained.

f) The Contractor shall ensure that Full body harnesses with double lanyards conforming IS Specifications /EN361 and having authorized CE marking is used by all personnel while working at height. The lanyards and life lines should have enough tensile strength to take the load of the worker in case of a fall. One end of the lanyard shall be firmly tied with the harnesses and the other end with life line. The harness should be capable of keeping the workman vertical in case of a fall, enabling him to rescue himself.

g) The Contractor shall provide Roof Top Walk Ladders for carrying out activities on sloping roofs in order to reduce the chances of slippages and falls.

h) The Contractor shall ensure that a proper Safety Net System is used wherever the hazard of fall from height is present. The safety net, preferably a knotted one with mesh ropes conforming to IS 5175/ ISO 1140 shall have a border rope & tie cord of minimum 12mm dia. The Safety Net shall be located not more than 6.0 meters below the working surface extending on either side upto sufficient margin to arrest fall of persons working at different heights.

i) In case of accidental fall of person on such Safety Net, the bottom most portion of Safety Net should not touch any structure, object or ground.

j) Grade separators shall be provided in Pipe-rack/Tech-structures to arrest falling objects like welding spatters, welding rods, nuts, bolts, tools etc. and to facilitate U/G and A/G works simultaneously.

k) Beam Clamps may be used for construction of localized temporary working platforms sheds for welding booths etc. at height in all types of steel structure due to faster installation and requirement of less scaffolding materials.

l) Hanging Platform, manufactured by Standard HSE equipment vendors must be encouraged for painting of Buildings etc.

m) All the tools used at height (like spanner, screw driver etc.) shall be provided with securing arrangement like back-pack/waist pouch to prevent accidental slippage from worker hand.

n) The Contractor shall install temporary lightening arrester in tall structures during construction to save human life and to avoid damage to equipments& machineries. During the possibility of a thunderstorm, all the work at height where a person can be exposed to lightning shall be stopped.

o) To the extent possible use Roller arrangement to shift overhead pipes from one end to other in Pipe Racks Area.

p) The Contractor shall ensure positive isolation while working at different levels like in the pipe rack areas. The working platforms with toe boards & hand rails shall be sufficiently strong & shall have sufficient space to hold the workmen and tools & tackles including the equipments required for executing the job. Such working platforms shall have mid-rails, to enable people work safely in sitting posture.

3.3.5 Scaffoldings& Barricading

a) Suitable steel scaffoldings only shall be provided to workmen for all works that cannot be safely done from the ground or from solid construction except such short period work that can be safely done using ladders or certified (by 3rd party competent person) man-basket. When a ladder is used, an extra workman shall always be engaged for holding the ladder. The ladder shall be inspected before use for cracked or split stiles, missing, broken, loose or damaged rungs & splinters. The ladder shall be of adequate length to enable it to extend to at least 1.0m above the landing place or working point. Metallic ladders shall be only used as access.

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b) The Contractor shall ensure that the scaffolds used during construction activities shall be strong enough to take the designed load. Main Contractor shall always furnish duly approved construction-design details of scaffold & SWL (from competent designers) free of charge, before they are being installed/ constructed at site. Owner/EIL reserves the right to ask the Contractor to submit certification and or design calculations from his Head Office/ Design/ Engineering expert regarding load carrying capacity of the scaffoldings. All steel tubing, couplers and fittings used for scaffolding shall conform to IS 3696 or an acceptable equivalent. Only metallic scaffold boards shall be allowed to use. Steel tubes shall be free from cracks, splits. Surface flaws & other defects. All couplers & fittings shall be properly oiled and maintained. Nuts shall have a free running fit on their bolts. Bolts with worn or damaged thread shall be replaced.

c) All scaffolds shall be inspected by a competent Scaffolding Inspector (person with scaffolding related experience in construction field and having a training of scaffolding supervisor from a institute/agency like National Safety Council etc.). He shall paste a GREEN tag (duly signed by competent Scaffolding Inspector) on each scaffold found safe and a RED tag (duly signed by competent Scaffolding Inspector) on each scaffold found unsafe. Scaffolds with GREEN tag only shall be permitted to be used and Scaffolds with RED ones shall immediately be made inaccessible. Work being found continuing on scaffolds with RED tag shall be considered unauthorized work by Contractor and may invite penalization from EIL/Owner. For every 120-125 m^2 /m^3 area / volume or its parts thereof minimum one TAG shall be provided.

d) The Contractor shall ensure positive barricading (indicative as well as protective) of the excavated, radiography, heavy lift, high pressure hydrostatic & pneumatic testing and other such areas. Sufficient warning signs shall be displayed along the barricading areas.

e) Scaffolding shall be constructed using foot seals or base plates only. Base plates shall be used below each standard on surface .Sole plate of timber shall be used beneath the base plate to achieve greater load distribution.

3.3.6 **Electrical installations**

a) All electrical installations/ connections shall be carried out as per the provisions of latest revision of following codes/standards, in addition to the requirements of Statutory Authorities and IE/applicable international rules& regulations:

- OISD STD 173 : Fire prevention & protection system for electrical installations
- SP 30 (BIS) : National Electric Code

b) All electrical installations shall be approved by the concerned statutory authorities.

c) All temporary electrical installations / facilities shall be regularly checked by the licensed/competent electricians of the Contractor and appropriate records shall be maintained in format no: HSE-12" Inspection of temporary electrical booth/installation at project construction site". Such inspection records are to be made available to EIL/Owner, whenever asked for.

3.3.6.1 The Contractor shall meet the following requirements:

a. Shall make Single Line Diagram (SLD) for providing connection to each equipments& machinery and the same (duly approved by EIL/Owner) shall be pasted on the front face of DBs (distribution boards) or JBs (Junction boxes) at every site. (A typical Switch Board Sketch is attached as Appendix -G)

b. Ensure that electrical systems and equipment including tools & tackles used during construction phase are properly selected, installed, used and maintained as per provisions of the latest revision of the Indian Electrical/ applicable international regulations.

c. Shall deploy qualified & licensed electricians for proper & safe installation and for regular inspection of construction power distribution system/points including their earthing. A copy of the license shall be submitted to EIL / Owner for records. Availability of at least one competent (ITI qualified) / licensed electrician (by State Elec. authorities) shall be ensured at site round the clock to attend to the normal/emergency jobs.

d. All switchboards / welding machines shall be kept in well-ventilated & covered shed/ with rain shed protection. The shed shall be elevated from the existing ground level to avoid water logging inside the shed. Installation of electrical switch board must be done taking care of the prevention of shock and safety of machine.

e. No flammable materials shall be used for constructing the shed. Also flammable materials shall not be stored in and around electrical equipment / switchboard. Adequate clearances and operational space shall be provided around the equipment.

f. Fire extinguishers and insulating mats shall be provided in all power distribution centers.

g. Temporary electrical equipment shall not be employed in hazardous area without obtaining safety permit.

h. Proper housekeeping shall be done around the electrical installations.

i. All temporary installations shall be tested before energizing, to ensure proper earthing, bonding, suitability of protection system, adequacy of feeders/cables etc.

j. All welders shall use hand gloves irrespective of holder voltage.

k. Multilingual (Hindi, English and local language) caution boards, shock treatment charts and instruction plate containing location of isolation point for incoming supply, name & telephone No. of contact person in emergency shall be provided in substations and near all distribution boards / local panels.

l. ELCB tester /test meter shall be used for testing the ELCBs operation. ELCBs testing shall be carried out by using ELCB tester on monthly basis but in specific cases like heavy rain as decided by owner/EIC. Record of the testing shall be maintained.

m. Regular inspection of all installations at least once in a month. (Ref. **Format HSE-12**).

3.3.6.2 The following features shall also be ensured for all electrical installations during construction phase by the contractor:

a. Each installation shall have a main switch with a protective device, installed in an enclosure adjacent to the metering point. The operating height of the main switch shall not exceed 1.5 M. The main switch shall be connected to the point of supply by means of armoured cable.

b. The outgoing feeders shall be double or triple pole switches with fuses / MCBs. Loads in a three phase circuit shall be balanced as far as possible and load on neutral should not exceed 20% of load in the phase.

c. The installation shall be adequately protected against overload, short circuit and earth leakage by the use of suitable protective devices. Fuses wherever used shall be HRC type. Use of rewirable fuses shall be strictly prohibited. ELCB/RCCB (Residual Current Circuit Breaker) must be fitted with all Electrical installation. The earth leakage device shall have an operating current not exceeding 30 mA.

d. All connections to the hand tools / welding receptacles shall be taken through proper switches, sockets and plugs.

e. All single phase sockets shall be minimum 3 pin type only. All unused sockets shall be provided with socket caps.

f. Only 3 core (P+N+E) overall sheathed flexible cables with minimum conductor size of 1.5 mm^2 copper shall be used for all single phase hand tools.

g. Only metallic distribution boxes with double earthing shall be used at site. No wooden boxes shall be used.

h. All power cables shall be terminated with compression type cable glands. Tinned copper lugs shall be used for multi-strand wires / cables.

i. Cables shall be free from any insulation damage.

j. Minimum depth of cable trench shall be 750 mm for MV & control cables and 900 mm for HV cables. These cables shall be laid over a sand layer and covered with sand, brick & soil for ensuring mechanical protection. Cables shall not be laid in waterlogged area as far as practicable. Cable route markers shall be provided at every 25 M of buried trench route.

When laid above ground, cables shall be properly cleated or supported on rigid poles of atleast 2.1 M high. Minimum head clearance of 6 meters shall be provided at road crossings.

k. Underground road crossings for cables shall be avoided to the extent feasible. In any case no underground power cable shall be allowed to cross the roads without pipe sleeve.

l. All cable joints shall be done with proper jointing kit. No taped/temporary joints shall be used.

m. An independent earthing facility should preferably be established within the temporary installation premises. All appliances and equipment shall be adequately earthed. In case of armored cables, the armour shall be bonded to the earthing system. IS: 3043 Code for earthing practices shall be followed at project site.

n. All cables (green colour) and wire rope used for earth connections shall be terminated through tinned copper lugs.

o. In case of local earthing, earth electrodes shall be buried near the supply point and earth continuity wire shall be connected to local earth plate for further distribution to various appliances. All insulated wires for earth connection shall have insulation of green colour.

p. Separate core shall be provided for neutral. Earth / Structures shall not be used as a neutral in any case.

q. ON/OFF position of all switches shall be clearly designated / painted for easy isolation in emergency.

3.3.7 Welding/ Grinding/Gas cutting

a) Contractor shall ensure that flash back arrestors conforming to BS:6158 or equivalent are installed on all gas cylinders as well as at the torch end of the gas hose, while in use.

b) All cylinders shall be mounted on trolleys and provided with a closing key. Empty & filled-up gas cylinders shall be stored separately with TAG, protecting them from direct sun or rain. Minimum 2 nos. of Portable DCP type fire extinguishers (10 kg) shall be maintained at the gas cylinder stores. Stacking & storing of compressed gas cylinders shall be arranged away from DG set, hot works, Elect. Panels / Elec. boards, etc.

c) The burner and the hose placed downstream of pressure reducer shall be equipped with Flash Back Arrester/Non Return Valve device.

d) The hoses for acetylene and oxygen cylinders must be of different colours. Their connections to cylinders and burners shall be made with a safety collar.

e) At end of work, the cylinders in use shall be closed and hoses depressurized.

f) Cutting of metals using gases, other than oxygen &acetylene, shall require written concurrence from Owner.

g) Grinding activity shall not be carried out in confined spaces without a valid work permit.

h) All grinding/cutting machines shall be guarded and fitted with Dead-Man switch and this shall not be bypassed any time.

i) All welding/grinding machines shall have effective earthing at least at distinctly isolated two points.

j) In order to help maintain good housekeeping, and to reduce fire hazard, live electrode bits shall be contained safely and shall not be thrown directly on the ground.

k) The hoses of Acetylene and Oxygen shall be kept free from entanglement & away from common pathways / walkways and preferably be hanged overhead in such a manner which can avoid contact with cranes, hydra or other mobile construction machinery.

l) Hot spatters shall be contained / restricted appropriately (by making use of effective fire-retardant cloth/fabric) and their flying-off as well as chance of contact with near-by flammable materials shall be stopped. The Fire retardant blanket shall be woven from ceramic yarn with eyelets.

m) The Contractor shall arrange adequate systems & practices for accumulation / collection of metal & other scraps and remnant electrodes and their safe disposal at regular interval so as to maintain the fabrication and other areas satisfactorily clean & tidy.

n) All gas cylinders must have a cylinder cap on at all times when not in use.

3.3.8 Ergonomics and tools & tackles

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

b) All lifting tools, tackles, equipment, trailers, trucks/dumpers, accessories including cranes shall be tested periodically by statutory/competent authority for their condition and load carrying capacity. Valid test & fitness certificates from the applicable authority shall be submitted to Owner/EIL for their review/acceptance before the lifting tools, tackles, equipment, trailers, trucks/dumpers, accessories and cranes are used. Third party inspection certificate is mandatory for all lifting tools & tackles before put into use.

c) Load testing of Cranes by competent person must be made mandatory after each modification/alteration of crane configuration/change in boom length. All heavy equipments including cranes must be maintained in good condition & record of such maintenance shall be maintained.

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

e) Colour coding system for lifting tools & tackles shall be followed on quarterly basis for a particular colour as mentioned below:

Period	Colour Code
January, February, March	Blue
April, May, June	Yellow
July, August, September	Green
October, November, December	Orange
For Quarantine (Unsafe Tools & Tackles)	Red

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

i. Wherever required the Contractor shall make use of Elevated Work Platforms (EWP) or Aerial Work Platforms (mobile or stationary) to avoid ergonomical risks and workmen shall be debarred to board such elevated platform during the course of their shifting / transportation.

ii. Contractor shall ensure installation of Safe Load Indicator (SLI) on all cranes (while in use) to minimize overloading risk. SLI shall have capability to continuously monitor and display the load on the hook, and automatically compare it with the rated crane capacity at the operating condition of the crane. The system shall also provide visual and audible warnings at set capacity levels to alert the operator in case of violations.

iii. The contractor shall be responsible for safe operations of different equipments mobilized and used by him at the workplace like transport vehicles, Tower Crane, engines, cranes, mobile ladders, scaffoldings, work tools, etc.

iv. Tower Crane, Crane, Hydra mobile Crane (F-15 or equivalent), Hydraulic Rig & Boom Lift shall be inspected on fortnightly basis as per Format No. HSE-20, HSE-21, HSE-22, HSE-23 & HSE-24.

v. The Contractor shall deploy experienced operator & may arrange training program for operators of hydra mobile crane, crane, excavator, mobile machinery, Tower Crane, etc. at site by utilizing services from renowned manufacturers.

vi. Hydra mobile crane (F-15 or equivalent) having steering control mechanism shall be permitted at construction site only for the purpose of loading/unloading. However, continuous rigger availability during marching of hydraulic crane at site shall be ensured by contractor.

3.3.9 Occupational Health

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

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

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

d) Appropriate respiratory protective devices (hood with respiratory devices) shall be used to protect workmen from inhalation of air borne contaminants like silica, asbestos, gases, fumes, etc.

e) Workmen shall be made aware of correct methods for lifting, carrying, pushing & pulling of heavy loads. Wherever possible, manual handling shall be replaced by mechanical lifting equipments.

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

g) To avoid work related upper limb disorders (WRULD) and backaches, Display Screen Equipments' workplace stations shall be carefully designed & used with proper sitting postures. Power driven hand-held tools shall be maintained in good working condition to minimize their vibrating effects and personnel using these tools shall be taught how to operate them safely & how to maintain good blood circulation in hands.

h) The Contractor shall arrange health check-up (by registered medical practitioner) for all the workers at the time of induction. Health check may have to be repeated if the nature of duty assigned to him is changed necessitating health check or doubt arises about his wellness. EIL/Owner reserves the right to ask the contractor to submit medical test reports. Regular health check-ups are mandatory for the workers assigned with Welding, Radiography, Blasting, Painting, Heavy Lift and Height (>2m) jobs. All the health check-ups shall be conducted by registered Medical practitioner and records are to be maintained by the Contractor.

i) The Contractor shall arrange Medical Camps at regular intervals at work sites and labor colonies to assess health condition of workers.

j) The Contractor shall ensure vaccination of all the workers including their families, during the course of entire project span.

3.3.10 Hazardous substances

a) Hazardous, inflammable and/or toxic materials such as solvent coating, thinners, anti-termite solutions, water proofing materials shall be stored in appropriate containers preferably with lids having spillage catchment trays and shall be stored in a good ventilated

area. These containers shall be labeled with the name of the materials highlighting the hazards associated with its use and necessary precautions to be taken. Respective MSDS (Material Safety Data Sheet) shall be made available at site &may be referred whenever problem arises.

b) Where contact or exposure of hazardous materials are likely to exceed the specified limit or otherwise have harmful effects, appropriate personal protective Equipments such as gloves, goggles/face-shields, aprons, chemical resistant clothing, respirator, etc. shall be used.

c) The work place shall be checked prior to start of activities to identify the location, type and condition of any asbestos materials which could be disturbed during the work. In case asbestos material is detected, usage of appropriate PPEs by all personnel shall be ensured and the matter shall be reported immediately to EIL/ Owner.

3.3.11 Slips, trips & falls

a) The contractor shall establish a regular cleaning and basic housekeeping programme that covers all aspects of the workplace to help minimize the risk of slips, trips & falls. The contractor shall take positive measures like keeping the work area tidy, storing waste in suitable containers & harmful items separately, keeping passages, stairways, entrances & exits especially emergency ones clear, cleaning up spillages immediately and replacing damaged carpet/ floor tiles, mats & rugs at once to avoid slips, trips & falls.

b) Grating removal permit system should be implemented during construction phase. So that after permanent gratings are installed on platforms and tech structure floors; removal of any gratings for whatever purpose (including for lifting piping material etc.) is required to be sanctioned by signed permit by HSE officers of both contractor and Engineer-in-charge. The spot where gratings are removed shall be hard-barricaded during course of work. The removed gratings shall be re-installed immediately after completion of work or at the time of cessation of work every day whichever is earlier and the permit shall be closed on daily basis. A register shall be maintained for recording all the grating removal permits and their closure shall be monitored on daily basis.

3.3.12 Radiation exposure

a) All personnel exposed to physical agents such as ionizing &non-ionizing radiation, including ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.

b) For Open Field Radiography works, requirements of Bhabha Atomic Research Centre (BARC)/ Atomic Energy Regulatory Board (AERB) shall be followed.

c) The Contractor shall implement an effective system of control (as described in the AERB regulations) at site for handling radiography-sources & for avoiding its misuse & theft.

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

e) In case the radiography work has to be carried out at day time, suitable methodology to be used so that other works, people are not affected.

3.3.13 Explosives/Blasting operations

a) Blasting operations shall be carried out as per latest Explosive Rules (Indian/ International) with prior permission. The Contractor shall obtain license from Chief Controller of Explosives (CCoE) for collection, transportation, storage of explosives as well as for carrying out blasting operations.

b) The Contractor shall prepare exclusive method statement (in cognizance with statutory requirements)for rock blasting works &diffusing unfired explosives, if any, at project site before carrying out actual task. Nowhere blasting shall be carried out by the Contractor or its agency without the involvement of competent supervisor and licensed blaster.

3.3.14 Demolition/ Dismantling

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

b) The contractor shall disconnect service lines (power, gas supply, water, etc.)/ make alternate arrangements prior to start of work and restore them, if required as directed by EIL/ Owner at no extra cost.

c) Before carrying out any demolition/dismantling work, the contractor shall take prior approval of EIL/Owner and generate the Format No.HSE-9. For revamp jobs in operating plants where location of underground utilities is not known with certainty, the contractor shall depute an experienced engineer for supervision and shall make adequate arrangements for Fire-fighting& First-Aid during the execution of these activities.

d) The Contractor shall arrange approved HIRAC/ Method Statement for the specific demolition / dismantling task and corresponding action plan commensurate with hazards / risks associated therein. In no case any activity related to demolition / dismantling shall be carried out by the Contractor without engaging own supervision / field engineer.

3.3.15 Road Safety

a) The Contractor shall ensure adequately planned road transport safety management system.

b) The vehicles shall be fitted with reverse warning alarms & flashing lights / fog-lights and usage of seat belts shall be ensured.

c) The Contractor shall also ensure a separate pedestrian route for safety of the workers and comply with all traffic rules & regulations, including maintaining speed limit of 20 KMPH or indicated by owner for all types of vehicles / mobile machinery. The maximum allowable speed shall be adhered to.

d) In case of an alert or emergency, the Contractor must arrange clearance of all the routes, roads, access. The Contractor shall deploy sufficient number of traffic controllers at project site routes / roads/ accesses, to alert reversing movement of vehicles & machinery as well as pedestrians. Experienced drivers/operators with valid driving license (LMV/HMV) shall be allowed to drive/operate the vehicles/equipments.

e) Dumpers, Tippers, etc. shall not be allowed to carry workers within the plant area and also to & from the labour colony to & from project sites.

f) Hydra mobile crane (F-15 or equivalent) shall only be allowed for handling (loading/unloading) the materials at fabrication/ storage yards and in no case shall be allowed to transport the materials over project / plant roads.

g) The Contractor shall not deploy any such mobile machinery / Equipments, which do not have competent operator and / or experienced banks-man/signal-man. Such machinery/equipments shall have effective limit-switches, reverse-alarm, front & rear-end lights etc. and shall be maintained in good working order.

h) The Contractor shall not carry-out maintenance of vehicles / mobile machinery occupying space on project / plant roads and shall always arrange close supervision for such works.

i) For pipeline jobs, the contractor shall submit a comprehensive plan covering transportation, loading / unloading of pipes, movement of side booms, movement of vehicles on the ROW, etc.

j) Contractor's shall arrange /install visible road signs, diversion boards, caution boards, etc. on project roads for safe movement of men and machinery.

3.3.16 Welfare measures

Contractor shall, at the minimum, ensure the following facilities at work sites:

a) A crèche at site where 10 or more female workers are having children below the age of 6 years.
b) Adequately ventilated / illuminated rooms at labour camps & its hygienic up-keeping.
c) Reasonable canteen facilities at site and in labour camps at appropriate location depending upon site conditions. Contractor shall make use of "industrial" variety of LPG cylinder & satisfactory illumination at the canteens. Necessary arrangement for efficient disposal of wastes from canteens & urinals /toilets shall also be made and regular review shall be made to maintain the ambience satisfactorily hygienic &shall also comply with all applicable statutory requirements.
d) Adequately lighted & ventilated Rest rooms at site (separate for male workers and female workers).
e) Provision for suitable mobile toilets to be made available by Contractor for remote/scattered job locations.
f) Urinals, Toilets, drinking water, washing facilities, adequate lighting at site and labour camps, commensurate with applicable Laws/ Legislation.
g) The contractor at periodic interval shall arrange to prevent mosquito breeding by fumigation/spraying of insecticides at workplace/fabrication yard.

3.3.17 Environment Protection

Contractor shall ensure proper storage and utilization methodology of materials that are detrimental to the environment. Where required, Contractor shall ensure that only the environment friendly materials are selected and emphasize on recycling of waste materials, such as metals, plastics, glass, paper, oil & solvents. The waste that cannot be minimized, reused or recovered shall be stored and disposed of safely. In no way, toxic spills shall be allowed to percolate into the ground. The contractor shall not use the empty areas for dumping the wastes.

Contractor to submit Environmental Aspect Impact Register detailing the list of activities in his scope, the respective environmental impact and the actions taken to minimize the impact. Environmental Aspect Impact Register to be prepared as per Format HSE-18 and to be updated and maintained till job completion.

The contractor shall strive to conserve energy and water wherever feasible.

The contractor shall ensure dust free environment at workplace by sprinkling water on the ground at frequent intervals. The air quality parameters for poisonous gases, toxic releases, harmful radiations, etc. shall be checked by the contractor on daily basis and whenever need arises.

The contractor shall not be allowed to discharge chemicals, oil, silt, sewage, sullage and other waste materials directly into the controlled waters like surface drains, streams, rivers, ponds. A discharge plan suggesting the methods of treating the waste before discharging shall be submitted to EIL/Owner for approval.

For pipeline jobs, top soil shall be stacked separately while making ROW through fields. This fertile soil shall be placed back on top after backfilling.

For offshore construction barges, arrangements shall be made for safe disposal of human, food & other wastes and applicable laws in this regard shall be followed.

3.3.18 Rules & Regulations

All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials, substances and wastes. Contractor shall not dump, release or otherwise discharge or disposes off any such materials without the express

authorization of EIL/Owner. An indicative list of Statutory Acts & Rules relating to HSE is given under Appendix-D.

3.3.19 Weather Protection

Contractor shall take appropriate measures to protect workers from severe storms, rain, solar radiations, poisonous gases, dust, etc. by ensuring proper usage of PPEs like Sun glasses, Sun screen lotions, respirators, dust masks, etc. and rearranging/ planning he construction activities to suit the weather conditions. Effective arrangement (without creating inconvenience to project facilities & permanent installations) for protecting workmen from hailstorm, drizzle in the form of temporary shelter shall be made at site.

3.3.20 Communication

All persons deployed at the work site shall have access to effective means of communication so that any untoward incident can be reported immediately and assistance sought by them.

All health & safety information shall be communicated in a simple & clear language easily understood by the local workforce.

For information to all, typical subjects that should be communicated are: -

Inside the company (Top to down)

a. Quality Policy
b. HSE Policy contents
c. Environment Policy
d. HSE Objectives
e. Safety Cardinal Rules
f. HSE Target – reached or missed
g. Praises & Warnings to personnel for HSE Management
h. Safety Walk Through Reports and safety defects / shortfalls (by management)
i. HSE Audit results
j. Revised Statutory Health & Safety provisions, if any
k. H & S publicity
l. Suggestions

Inside the Company (Bottom to up)

a. Complaints
b. Compliances on safety defects / shortfalls
c. Suggestions
d. Proposals for changes & improvements
e. HSE Reports (including near-miss reports)

3.3.21 Confined Space Entry

The contractor shall generate a work permit (Format No. HSE -7) before entering a confined space. People, who are permitted to enter into confined space, must be medically examined & certified by registered doctor, confirming their 'medical fitness for working in confined space'. All necessary precautions mentioned therein shall be adhered to. An attendant shall be positioned outside a confined space for extending help during an emergency. Effective communication shall be maintained between personnel in confined space and outside by combination of visual/voice or portable radio. Compressed gas cylinders shall not be taken into confine space. Entry Register for confined space to be maintained with the name and time of entry/exit. All appropriate PPEs and air quality parameters shall be checked before entering a confined space. It shall be ensured that the piping of the equipment which has to be opened is

pressure- free by checking that blinds are in place, vents are open and volume is drained. Inside confined space works, only electrical facilities / installations of 24V shall be permitted. Contactor shall ensure usage of safe & suitable arrangement of oxygen supply for individual workmen (during the course of work in confined space), if oxygen concentration is found to be less than 19.5% (v/v) there. All persons must be made aware of the risk associated with Nitrogen &all precautionary measures shall be taken when vessel/ sphere/ pipelines etc. are being purged with nitrogen.

3.3.22 **Heavy Lifts**

a) The contractor shall submit detailed rigging study/ plan for EIL/ Owner approval prior to lifting equipment requiring a crane of approx. 100 MT capacity or more due to constraints of its dimensions, location of foundation height, approach & weight.

b) Contractor shall generate the format no. HSE-15 "Permit for heavy lift/critical erection"

c) The Safe Working Load (SWL) and manufacturer's serial numbers shall be clearly marked on the slings and the lifting gears, either by tagging, stamping, engraving or embossing.

d) Prior to actual lifting activities, contractor shall check the validity of the crane inspection certificate issued by statutory/ competent authority. This requirement shall also apply to all rigging equipments utilized for the job.

e) The contractor shall, at all times, be responsible for all rigging activities.

f) The Contractor shall ensure medical fitness of all workmen who are engaged / involved in erection of equipments, vessels etc. and such fitness checks shall be carried-out every six months interval with the help of a registered medical practitioner & record shall be maintained

g) Adequate safety measures such as positive barricading, usage of appropriate PPEs, permit to work, etc. shall be taken during all heavy or critical lifts.

h) Ground condition should be suitable to sustain the Ground Bearing Load of the Crane with full load condition.

i) For lifting any material (irrespective of shape, size or volume), at any height, it is always advisable to prepare a Plan of Erection (PoE) taking into consideration hazards & risks associated therein – this can enable people to put their own experiences of various natures & side-by-side establish a practical method for risk-free erection / lifts. The contractor shall prepare PoE & shall document the same, when risks are identified as "medium" or "high" and the same shall be approved by its competent / qualified engineer.

3.3.23 **Key Performance Indicators**

The contractor shall measure an activity in both leading & trailing indicators for statistical and performance measurement. The activities pertaining to key performance indicators are covered in Monthly HSE Report (Format No. HSE-5). The contractor shall try to achieve a statistically fair record and strive for its continual improvement.

Leading Indicators viz:-:

- Number of Safety Inductions carried-out at site (for workmen & staff members)
- Number of HSE inspections carried out
- Number of "Safety Walk Through" carried-out by site-head.
- Number of HSE shortfalls / lapses identified per contractor& closed-out in time.
- Number of Safety Meetings conducted (in-house / with contractors)
- Number of HSE Audits made (internal & external) vis-à-vis non conformances raised
- Number of HSE Awareness / Motivational program conducted by contractors
- Number of HSE Trainings conducted at site for supervisors & workmen
- Study of Near miss case reported
- Encouragements / Awards / Recognitions to workmen, job supervisors & field engineers.
- Suggestions for improvement

Trailing Indicators viz:-:

- Calculation of HSE statistics viz frequency rate, severity rate, LTA free manhours etc.
- Analysis of incidents / accidents (nature, severity, types etc.)
- Study of Incident / Accident with respect to :-

  - Variety
  - Period of the year / project span
  - Timings of the incident / accident
  - Age profile of victims
  - Body parts involved
  - Penalty levied for causing incident / accident

3.3.24 Unsuitable Land Conditions

Contractor shall take appropriate measures and necessary work permits/clearances if work is to be done in or around marshy areas, river crossings, mountains, monuments, etc. The Contractor shall make right assessment and take all necessary action for developing work areas to make them safe & suitable for crane operations or other vehicular movement before carrying out any project related activity / operation. Contractor shall take all necessary actions to make the surroundings of its site establishments (site office, stores, lay-down area etc.) work-worthy safe and secure.

3.3.25 Under Water Inspection

Contractor shall ensure that boats and other means used for transportation, surveying & investigation works shall be certified seaworthy by a recognized classification society. It shall be equipped with all life saving devices like life jackets, adequate fire protection arrangements and shall possess communication facilities like cellular phones, wireless, walkie-talkie. All divers used for seabed surveys, underwater inspections shall have required authorized license, suitable life-saving kit. Number of hours of work by divers shall be limited as per regulations. EIL/ Owner shall have the right to inspect the boat and scrutinize documents in this regard.

3.3.26 Excavation

The Contractor shall obtain permission from competent authorities prior to excavation wherever required.

The Contractor shall locate the position of buried utilities (water line, cable route, etc.) by referring to project / plant drawing / in consultation with EIL/Owner. The Contractor shall start digging manually to locate the exact position of buried utilities & thereafter use mechanical means.

In case of non-availability of sufficient data/ drawings, underground services i.e. underground cable/ pipe shall be checked by cable detector/ pipe locator by the contractor.

The Contractor shall keep soil heaps at least 1.5 M away from edge or a distance equal to depth of pit (whichever is more)

All excavated pits greater than 10 Sq.M plan area and depth more than 1.5M shall have at least two access routes for ingress and egress. Also, additional access routes shall be provided such that distance between any two access routes shall not be more than 20M.

The Contractor shall maintain sufficient “angle of repose” during excavation – shall also provide slope or suitable bench as decided by EIL / Owner.

The Contractor shall arrange “battering” or “benching” wherever required for preventing collapse of edge of excavations.

The Contractor shall identify & arrange de-watering pump or well-point system to prevent earth collapse due to heavy rain / influx of underground water.

The Contractor shall arrange protective fencing/ hard barricading with warning signal around excavated pits, trenches, etc. along with minimum 2 (two) entries, exits / escape ladders.

The Contractor must avoid "underpinning" / under-cutting to prevent collapse of chunk of earth during excavation

The Contractor shall use "stoppers" to prevent over-run of vehicle wheels at the edge of excavated pits / trenches.

The Contractor shall arrange strengthening of "shoring" & "strutting" proactively to avoid collapse of earth / edges due to vehicular movement in close proximity of excavated areas / pits/ trenches, etc.

3.4 Tool Box Talks (TBT)

Contractor shall conduct daily TBT with workers prior to start of work and shall maintain proper record of the meeting. A suggested format is given below. The TBT is to be conducted by the immediate supervisor of the workers.

The Contractor shall conduct TBT before start of every morning or evening shift or night shift activities, for alerting the workers on specific hazards and their appropriate dos & don'ts. The Contractor shall provide sufficient rests to the site workmen and their foremen to avert fatigue & thereby endangering their lives during the course of site works.

TOOLBOX TALK RECORDING SHEET

Date & Time		
Work Location		
Subject (Nature of work)		
Presenter		
Hazards involved		
Precautions to be taken		
Worker's Name	Signature	Section
Remarks, in any		

The topics during TBT shall include

- Hazards related to work assigned on that day and precautions to be taken.
- Any forthcoming HSE hazards/events/instruction/orders, etc.

The above record can be kept in local language, which workers can read. These records shall be made available to EIL/ Owner whenever demanded.

3.5 Training & Induction Programme

a) Initial induction of workers into Construction oriented activities and appraising them about the methodology of works and how to carry-out safely and the same should not be inter mixed with Tool Box Talks or HSE Training. In this regard careful action should be made & maintained for imparting HSE induction to every individual, irrespective of his task/designation/level of employment, whereas, HSE Training should be imparted to specific person/group of people who are to carry-out that specific task more than once – for

example, Riggers must be trained for working at heights, welders must be trained for work in confined space, fitters/carpenters, mesons must be trained for work at heights, etc.

b) Contractor shall conduct Safety induction programme on HSE for all his workers and maintain records. The Gate Pass shall be issued only to those workers who successfully qualify the Safety induction programme.

c) The Contractor shall brief the visitors about the HSE precautions which are required to be taken before their proceeding to site and make necessary arrangements to issue appropriate PPEs like Aprons, hard hats, ear-plugs, goggles & safety shoes etc., to his visitors. The Contractor shall always maintain relevant acknowledgement from visitor on providing him brief information on HSE actions.

d) Contractor shall ensure that all his personnel possess appropriate training to carry out the assigned job safely. The training should be imparted in a language understood by them and should specifically be trained about

- Potential hazards to which they may be exposed at their workplace
- Measures available for prevention and elimination of these hazards

The topics during training shall cover, at the minimum: -

- Why safety should be considered during work - explanation
- Education about hazards and precautions required
- Employees' duties & responsibilities
- Emergency and evacuation plan
- HSE requirements during project activities
- Fire fighting and First-Aid
- Use of PPEs
- Occupational health issues – dos & don'ts
- Local laws on intoxicating drinks, drugs, smoking in force
- Common environmental subjects – lighting, ventilation, vibration, smoke/fumes etc.

e) Records of the training shall be kept and submitted to EIL/ Owner.

f) The Contractor shall make regular program for conducting Safety Training on various topics related to various activities & their safe-guarding utilizing experienced persons / outside agency / faculty. A program for Safety Training (indicative list as per Appendix –F) shall be furnished by the Contractor in its HSE Plan.

g) For offshore and jetty jobs, contractor shall ensure that all personnel deployed have undergone a structured sea survival training including use of lifeboats, basket landing, use of radio communication etc. from an agency acceptable to Owner/EIL.

3.6 Additional Safety Requirements for Working inside a Running Plant

As a minimum, the contractor shall ensure adherence to following safety requirements while working in or in the close vicinity of an operating plant:

a) Contractor shall obtain permits for Hot work, Cold work, Excavation and Confined Space from Owner in the prescribed format.

b) The contractor shall monitor record and compile list of his workers entering the operational plant/unit each day and ensure & record their return after completing the job.

c) Contractor's workers and staff members shall use designated entrances and proceed by designated routes to work areas only assigned to them. The workers shall not be allowed to enter units' area, tanks area, pump rooms, etc. without work authorization permit.

d) Work activities shall be planned in such a way so as to minimize the disruption of other activities being carried out in an operational plant/unit and activities of other contractors.

e) The contractor shall submit a list of all chemicals/toxic substances that are intended to be used at site and shall take prior approval of the Owner.

f) Specific training on working in a hydrocarbon plant shall be imparted to the work force and mock drills shall be carried out for Rescue operations/First-Aid measures.

g) Proper barricading/cordoning of the operational units/plants shall be done before starting the construction activities. No unauthorized person shall be allowed to trespass. The height and overall design of the barricading structure shall be finalized in consultation with the Owner and shall be got approved from the Owner.

h) Care shall be taken to prevent hitting underground facilities such as electrical cables, hydrocarbon piping during execution of work.

i) Barricading with water curtain shall be arranged in specific/critical areas where hydrocarbon vapors are likely to be present such as near horton spheres or tanks. Positioning of fire tenders (from owner) shall also be ensured during execution of critical activities.

j) Emergency evacuation plan shall be worked out and all workmen shall be apprised about evacuation routes. Mock drill operations may also be conducted.

k) Flammable gas test shall be conducted prior to any hot work using appropriate measuring instruments. Sewers, drains, vents or any other gas escaping points shall be covered with flame retardant tarpaulin.

l) Respiratory devices shall be kept handy while working in confined zones where there is a danger of inhalation of poisonous gases. Constant monitoring of presence of Gas/Hydrocarbon shall be done.

m) Clearance shall be obtained from all parties before starting hot tapping, patchwork on live lines and work on corroded tank roof.

n) Positive isolation of line/equipment by blinding for welding/cutting/grinding shall be done. Closing of valve will not be considered sufficient for isolation.

o) Welding spatters shall be contained properly by using fire retardant blanket and in no case shall be allowed to fall on the ground containing oil. Similar care shall be taken during cutting operations.

p) The vehicles, cranes, engines, etc. shall be fitted with spark arresters on the exhaust pipe and got it approved from Safety Department of the Owner.

q) Plant air should not be used to clean any part of the body or clothing or use to blow off dirt on the floor.

r) Gas detectors should be installed in gas leakage prone areas as per requirement of Owner's plant operation personnel.

s) Flame proof electrical distribution board, plug and socket shall be used for electrical appliances.

t) Experienced full time safety personnel shall be exclusively deployed to monitor safety aspects in running plants.

3.7 Self-Assessment and Enhancement

The contractor shall develop a method of check & balance through self-assessment& enhancement techniques and shall explore the opportunities for continual improvement in the HSE system.

3.8 HSE Promotion

The contractor shall encourage his workforce to promote HSE efforts at workplace by way of organizing workshops/ seminars/ training programs, celebrating HSE awareness weeks &National Safety Day, conducting quizzes & essay competitions, distributing pamphlets, posters & material on HSE, providing incentives for maintaining good HSE practices and granting incentives/ bonus for completing the job without any lost time accident.

3.9 Lock Out and Tag Out (LOTO) for Isolation of Energy Source

a) Contractor shall follow the LOTO/ Isolation procedure of owner for all energy source isolations installed/ under purview by /of owner i.e. "Brown field"

b) For all the other energy source (not under purview of client/owner) i.e. "Green field" Contractor shall develop a system to ensure the isolation of equipments, pipelines, Vessel, electrical panels from the energy source covering following as minimum:-

- Identification of all energy source viz electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, radiation and other forms of stored or kinetic energy.
- Establishing the energy isolation devices viz manually operated electrical circuit breakers, disconnection switches, blind flanges, etc.
- Installation of Lock Out devices for preventing the inadvertent release of stored energy and Tag Out devices ("Danger", "Do Not operate" or Do not Remove" tags) to indicate that testing, maintenance or servicing is underway and the device cannot be operated until the tag out device is removed.
- Lock Out and Tag out log book
- Permit for isolation and de-isolation of energy source as per format No.: HSE-16
- Availability of competent persons like experienced operators at substations, pump house, units etc., supervisors etc.

c) Contractor shall ensure that all the sources are locked out and tagged properly before giving clearance to start the job.

d) After the completion of job, contractor shall ensure all tools and tackles are removed and nobody is present in the working area and signing on LOTO log book.

e) Only on confirmation of above the contractor will remove their lock and tag from the isolation points and give instructions for energizing the same. Only the person carrying out the task shall himself carry the key for the lock in /Lock out.

4.0 DETAILS OF HSE MANAGEMENT SYSTEM BY CONTRACTOR

4.1 On Award of Contract

The Contractor shall submit a comprehensive Health, Safety and Environmental Plan or programme for approval by EIL/Owner prior to start of work. The Contractor shall participate in the pre-start meeting with EIL/Owner to finalize HSE Plans which shall including the following:

- HSE policy & Objectives
- Job procedure to be followed by the Contractor for construction activities including handling of equipments, scaffolding, electric installations, etc. describing the risks

involved, actions to be taken and methodology for monitoring each activity. Indicative list of procedures is enclosed as Annexure-H

- EIL/Owner review/audit requirement.
- Organization structure along with responsibility and authority, on HSE activities.
- Administrative & disciplinary steps involving implementation of HSE requirements
- Emergency evacuation plan/ procedures for site and labour camps
- Procedures for reporting & investigation of accidents and near misses.
- HSE Inspection
- HSE Training programme at project site
- HSE Awareness programme at project site
- Reference to Rules, Regulations and statutory requirements.
- HIRAC
- Environment Aspect Impact Register
- Legal Register
- HSE documentation viz reporting, analysis & record keeping.

4.2 During Job Execution

Contractor shall implement approved Health, Safety and Environment management plan or programme including but not limited to as brought out under para 3.0. Contractor shall also ensure:

a) to arrange workmen compensation insurance, registration under ESI Act, third party liability insurance, registration under BOCW Act etc., as applicable.

b) to arrange all HSE permits before start of activities (as applicable), like permits for hot work, working at heights (Refer Format No. HSE-6), confined space (Refer Format No. HSE-7), Radiation Work Permit (Refer Format No. HSE-8), Demolishing/ Dismantling Work Permit (Refer Format No. HSE-9), Permit for erection/modification & dismantling of scaffolding (Refer Format No:HSE-14),Permit for heavy lift/critical erection (Refer Format No:HSE-15) ,Permit for energy Isolation & De-isolation" (HSE-16) ,storage of chemical/ explosive materials & its use and implement all precautions mentioned therein. In this regard, requirements of *Oil industry Safety Directorate Standard No*. Std -105 "Work Permit Systems" shall be complied with while working in existing Oil or Gas processing plants. List of the persons involved shall be maintained as annexure to the work permit issued for a particular activity.

c) to submit, timely, the completed checklist on HSE activities in Format No.HSE-1, Monthly HSE report in Format No.HSE-5 (use of web based package (www.eil.co.in/conthse) is compulsory wherever the facility is available else a hard copy is to be submitted), accident/ incident reports, investigation reports etc. as per EIL/Owner requirements. Compliance of instructions on HSE shall be done by Contractor and informed urgently to EIL/Owner.

d) that his top most executive at site attends all the Safety Committee/HSE meetings arranged by EIL/Owner and carries out safety walk regularly. Only in case of his absence from site that a second senior most person shall be nominated by him, in advance, and communicated to EIL/Owner for performing the above tasks.

e) display at site office and at prominent locations HSE Policy, caution boards, list of hospitals, emergency services available, safety signs like Men at work, Speed Limits, Hazardous Area, various do's & don'ts, etc.

f) provide posters, banners for safe working to promote safety consciousness.

g) identify, assess, analyze & mitigate the construction hazards& incorporate relevant control measures before actually executing site works. (HIRAC = Hazard Identification, Risk Analysis and Control).

h) identify, assess, analyze & mitigate the environmental impact & incorporate relevant control measures through Environmental Aspect Impact Register

i) Identify and comply to all applicable HSE related legal requirements by preparing and maintaining a Legal register

j) arrange testing, examination, inspection of own as well as borrowed construction equipments/ machinery (stationary &mobile) before being used at site and also at periodical interval, through own resources and also by 3rd party competent agencies (as deemed fit in statutes). Records of such test, examination etc. shall be maintained & shall be submitted to EIL/Owner as & when asked for.

k) Carry-out audits/inspection (internal & external) at his works as well as sub-contractor works as per approved HSE plan/procedure/programme & submit the compliance reports of identified shortfalls for EIL/Owner review.

l) Arranging HSE training for site workmen (of his own &subcontractors) through internal or external faculty at periodical intervals.

m) Assistance & cooperate during HSE audits by EIL/Owner or any other 3rd party and submit compliance report.

n) Generate & submit of HSE records/report as per this specification.

o) Contractor shall arrange minimum 100 lux illumination level at construction site for night works& record shall be maintained.

p) The contractor shall assign responsible person as in charge for night works and it shall be informed to owner/EIL.

q) Appraise EIL/Owner on HSE activities at site regularly.

r) Carry-out all dismantling activities safely, with prior approval of EIL/Owner representative.

s) The Contractor shall ensure that "Hot works" and painting works do not continue at the same place/ location at project site for which chance or probability of "fire" incident exists.

4.3 During Short Listing of the Sub-Contractors

The contractor shall review the HSE management system of the sub-contractors in line with the requirements given in this specification. The contractor shall be held responsible for the shortcomings observed in the HSE management system of the sub-contractor(s) during execution of the job.

5.0 RECORDS

At the minimum, the contractor shall maintain/ submit HSE records in the following reporting formats:

Safety Walk Through Report	HSE-1
Accident/ Incident Report	HSE-2
Supplementary Accident/ Incident Investigation report	HSE-3
Near Miss Incident Report	HSE-4
Monthly HSE Report	HSE-5
Permit for working at height	HSE-5
Permit for working in confined space	HSE-7
Permit for radiation work	HSE-8
Permit for demolishing/ dismantling	HSE-9
Daily Safety checklist	HSE-10
Housekeeping Assessment & compliance	HSE-11
Inspection of temporary electrical booth/installation	HSE-12
Inspection for scaffolding	HSE-13

Permit for erection/ modification & dismantling of scaffolding	HSE-14
Permit for heavy lift/ critical erection.	HSE-15
Permit for Energy isolation and de-isolation.	HSE-16
Permit for Excavation	HSE-17
Environmental Aspect Impact Register	HSE-18
HIRAC Register	HSE-19
Checklist for Tower Crane	HSE-20
Crane Inspection Checklist	HSE-21
Hydra Crane Inspection Checklist	HSE-22
Hydraulic Rig Inspection Checklist	HSE-23
Boom Lift Inspection Checklist	HSE-24
Inspection reports of Equipment/ Tools/ Tackles	*
Report of Toolbox Talks	As indicated in specification
PPE issue report/ Register	*
Site inspection reports	*
Training records	*

(*) The formats shall be developed in consultation with EIL/Owner.

APPENDIX-A
(Sheet 1 of 2)

A. IS CODES ON HSE

SP: 53	Safety code for the use, Care and protection of hand operated tools.
IS: 838	Code of practice for safety & health requirements in electric and gas welding and cutting operations
IS: 1179	Eye & Face precautions during welding, equipment etc.
IS: 1860	Safety requirements for use, care and protection of abrasive grinding wheels.
IS: 1989 (Pt -II)	Leather safety boots and shoes
IS: 2925	Industrial Safety Helmets
IS: 3016	Code of practice for fire safety precautions in welding & cutting operation.
IS: 3043	Code of practice for earthing
IS: 3764	Code of safety for excavation work
IS: 3786	Methods for computation of frequency and severity rates for industrial injuries and classification of industrial accidents
IS: 3696	Safety Code of scaffolds and ladders
IS: 4083	Recommendations on stacking and storage of construction materials and components at site
IS: 4770	Rubber gloves for electrical purposes
IS: 5121	Safety code for piling and other deep foundations
IS: 5216 (Pt-I)	Recommendations on Safety procedures and practices in electrical works
IS: 5557	Industrial and Safety rubber lined boots
IS: 5983	Eye protectors
IS: 6519	Selection, care and repair of Safety footwear
IS: 6994 (Pt-I)	Industrial Safety Gloves (Leather & Cotton Gloves)
IS: 7293	Safety Code for working with construction Machinery
IS: 8519	Guide for selection of industrial safety equipment for body protection
IS: 9167	Ear protectors
IS: 11006	Flash back arrestor (Flame arrestor)
IS: 11016	General and safety requirements for machine tools and their operation
IS: 11057	Specification for Industrial safety nets
IS: 11226	Leather safety footwear having direct moulded rubber sole
IS: 11972	Code of practice for safety precaution to be taken when entering a sewerage system
IS: 13367	Code of practice-safe use of cranes
IS: 13416	Recommendations for preventive measures against hazards at working place

APPENDIX-A
(Sheet 2 of 2)

B. INTERNATIONAL STANDARDS ON HSE

Safety Glasses	:	ANSI Z 87.1, ANSI ZZ 87.1, AS 1337, BS 2092, BS 1542, BS 679, DIN 4646/ 58311
Safety Shoes	:	ANSI Z 41.1, AS 2210, EN 345
Hand Gloves	:	BS 1651
Ear Muffs	:	BS 6344, ANSI S 31.9
Hard Hat	:	ANSI Z 89.1/89.2, AS 1808, BS 5240, DIN 4840
Goggles	:	ANSI Z 87.1
Face Shield	:	ANSI Z 89.1
Breathing Apparatus	:	BS 4667, NIOSH
Welding & Cutting	:	ANSI Z49.1
Safe handling of compressed:P-1		(Compressed Gas Association Gases in cylinders 1235 Jefferson Davis Highway, Arlington VA 22202 - USA)
Full body harness	:	EN-361
Lanyard	:	EN-354
Karabiner	:	EN-362 and EN-12275

APPENDIX-B

DETAILS OF FIRST AID BOX

SL. NO.	DESCRIPTION		QUANTITY
1.	Small size Roller Bandages, 1 Inch Wide	(Finger Dressing small)	6 Pcs.
2.	Medium size Roller Bandages, 2 Inches Wide	(Hand & Foot Dressing)	6 Pcs.
3.	Large size Roller Bandages, 4 Inches Wide	(Body Dressing Large)	6 Pcs.
4.	Large size Burn Dressing	(Burn Dressing Large)	4 Pkts.
5.	Cotton Wool	(20 gms packing)	4 Pkts.
6.	Antiseptic Solution Dettol (100 ml.) or Savlon		1 Bottle
7.	Mercurochrome Solution (100 ml.) 2% in water		1 Bottle
8.	Ammonia Solution (20 ml.)		1 Bottle
9.	A Pair of Scissors		1 Piece
10.	Adhesive Plaster (1.25 cm X 5 m)		1 Spool
11.	Eye pads in Separate Sealed Pkt.		4 pcs.
12.	Tourniqut		1 No.
13.	Safety Pins		1 Dozen
14.	Tinc. Iodine/ Betadine (100 ml.)		1 Bottle
15.	Polythene Wash cup for washing eyes		1 No.
16.	Potassium Permanganate (20 gms.)		1 Pkt.
17.	Tinc. Benzoine (100 ml.)		1 Bottle
18.	Triangular Bandages		2 Nos.
19.	Band Aid Dressing		5 Pcs.
20.	Iodex/ Moov (25 gms.)		1 Bottle
21.	Tongue Depressor		1 No.
22.	Boric Acid Powder (20 gms.)		2 Pkt.
23.	Sodium Bicarbonate (20 gms.)		1 Pkt.
24.	Dressing Powder (Nebasulf) (10 gms.)		1 Bottle
25.	Medicinal Glass		1 No.
26.	Duster		1 No.
27.	Booklet (English& Local Language)		1 No. each
28.	Soap		1 No.
29.	Toothache Solution		1 No.
30.	Vicks (22 gms.)		1 Bottle
31.	Forceps		1 No.
32.	Snake –Bite Lancet		1No.
33.	Note Book		1 No.
34.	Splints		4 Nos.
35.	Lock		1 Piece
36.	Life Saving/Emergency/Over-the counter Drugs		As decided at site

Box size: Suitable size first aid box to be used for first aid items

Note : The medicines prescribed above are only indicative. Equivalent medicines can also be used. A prescription, in this regard, shall be required from a qualified Physician.

APPENDIX-C

TYPE OF FIRES VIS-À-VIS FIRE EXTINGUISHERS

Fire Extinguisher → / Fire ↓	Water	Foam	CO_2	Dry Powder	Multi purpose (ABC)
Originated from paper, clothes, wood	✔	✔	can control minor surface fires	can control minor surface fires	✔
Inflammable liquids like alcohol, diesel, petrol, edible oils, bitumen	✖	✔	✔	✔	✔
Originated from gases like LPG, CNG, H_2	✖	✖	✔	✔	✔
Electrical fires	✖	✖	✔	✔	✔

LEGEND : ✔ : CAN BE USED

✖ : NOT TO BE USED

Note: Fire extinguishing equipment must be checked atleast once a year and after every use by an authorized person. The equipment must have an inspection label on which the next inspection date is given. Type of extinguisher shall clearly be marked on it.

APPENDIX-D

List of Statutory Acts & Rules Relating to HSE

- The Indian Explosives Act and Rules
- The Motor Vehicle Act and Central Motor Vehicle Rules
- The Factories Act and concerned Factory Rules
- The Petroleum Act and Petroleum Rules
- The Workmen Compensation Act
- The Gas Cylinder Rules and the Static & Mobile Pressure Vessels Rules
- The Indian Electricity Act and Rules
- The Indian Boiler Act and Regulations
- The Water (Prevention & Control & Pollution) Act
- The Water (Prevention & Control of Pollution) Cess Act
- The Mines & Minerals (Regulation & Development) Act
- The Air (Prevention & Control of Pollution) Act
- The Atomic Energy Act
- The Radiation Protection Rules
- The Indian Fisheries Act
- The Indian Forest Act
- The Wild Life (Protection) Act
- The Environment (Protection) Act and Rules
- The Hazardous Wastes (Management & Handling) Rules
- The Manufacturing, Storage & import of Hazardous Chemicals Rules
- The Public Liability Act
- The Building and Other Construction Workers (Regulation of Employment and Condition of Service) Act
- Other statutory acts Like EPF, ESIS, Minimum Wages Act.

APPENDIX-E (Sheet 1 of 12)

CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(A) EXCAVATION Pit Excavation upto 3.0m	Falling into pit	Personal injury	Provide guard rails/ barricade with warning signal Provide at least two entries/ exits. Provide escape ladders.
	Earth Collapse	Suffocation/ Breathlessness Buried	Provide suitable size of shoring and strutting, if required. Keep soil heaps away from the edge equivalent to 1.5m or depth of pit whichever is more. Don't allow vehicles to operate too close to excavated areas. Maintain at least 2m distance from edge of cut. Maintain sufficient angle of repose. Provide slope not less than 1:1 and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock. Battering/benching the sides.
	Contact with buried electric cables Gas/ Oil Pipelines	Electrocution Explosion	Obtain permission from competent authorities, prior to excavation, if required. Locate the position of buried utilities by referring to plant drawings. Start digging manually to locate the exact position of buried utilities and thereafter use mechanical means.
Pit Excavation beyond 3.0m	Same as above plus Flooding due to excessive rain/ underground water	Can cause drowning situation	Prevent ingress of water Provide ring buoys Identify and provide suitable size dewatering pump or well point system
	Digging in the vicinity of existing Building/ Structure	Building/Structure may collapse Loss of health & wealth	Obtain prior approval of excavation method from local authorities. Use under-pining method Construct retaining wall side by side.
	Movement of vehicles/ Equipments close to the edge of cut.	May cause cave-in or slides. Persons may get buried.	Barricade the excavated area with proper lighting arrangements Maintain at least 2m distance from edge of cut and use stop blocks to prevent over-run Strengthen shoring and strutting

APPENDIX-E: (Sheet 2 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
Narrow deep excavations for pipelines, etc.	Same as above plus Frequent cave-in or slides	May cause severe injuries or prove fatal	Battering/benching of sides Provide escape ladders
	Flooding due to Hydro- static testing	May arise drowning situation	Same as above plus Bail out accumulated water Maintain adequate ventilation.
Rock by excavation blasting	Improper handling of explosives	May prove fatal	Ensure proper storage, handling & carrying of explosives by trained personnel. Comply with the applicable explosive acts & rules.
	Uncontrolled explosion	May cause severe injuries or prove fatal	Allow only authorized persons to perform blasting operations. Smoking and open flames are to be strictly prohibited
	Scattering of stone pieces in atmosphere	Can hurt people	Use PPE like goggles, face mask, helmets etc.
Rock excavation by blasting (Contd)	Entrapping of persons/ animals.	May cause severe injuries or prove fatal	Barricade the area with red flags and blow siren before blasting.
	Misfire	May explode suddenly	Do not return to site for at least 20 minutes or unless announced safe by designated person.
Piling Work	Failure of pile-driving equipment	Can hurt people	Inspect Piling rigs and pulley blocks before the beginning of each shift.
	Noise pollution	Can cause deafness and psychological imbalance.	Use personal protective equipments like ear plugs, muffs, etc.
	Extruding rods/casing	Can hurt people	Barricade the area and install sign boards Provide first-aid
	Working in the vicinity of 'Live-Electricity'	Can cause electrocution/ Asphyxiation	Keep sufficient distance from Live-Electricity as per IS code. Shut off the supply, if possible Provide artificial/rescue breathing to the injured
(B) CONCRETING	Air pollution by cement	May affect Respiratory System	Wear respirators or cover mouth and nose with wet cloth.
	Handling of ingredients	Hands may get injured	Use gloves & other PPE.
	Protruding reinforcement rods.	Feet may get injured	Provide platform above reinforcement for movement of workers or provide end caps for protection on reinforcement bars.

APPENDIX-E : (Sheet 3 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Earthing of electrical mixers, vibrators, etc. not done.	Can cause electrocution/ asphyxiation	Ensure earthing of equipments and proper functioning of electrical circuit before commencement of work.
	Falling of materials from height	Persons may get injured	Use hard hats Remove surplus material immediately from work place. Ensure lighting arrangements during night hours
	Continuous pouring by same gang	Cause tiredness of workers and may lead to accident.	Insist on shift pattern Provide adequate rest to workers between subsequent pours.
	Revolving of concrete mixer/ vibrators	Parts of body or clothes may get entrapped.	Allow only mixers with hopper Provide safety cages around moving motors Ensure proper mechanical locking of vibrator
Super-structure	Same as above plus Deflection in props or shuttering material	Shuttering/props may collapse and prove fatal	Avoid excessive stacking on shuttering material Check the design and strength of shuttering material before commencement of work Rectify immediately the deflection noted during concreting.
	Passage to work place	Improperly tied and designed props/planks may collapse	Ensure the stability and strength of passage before commencement of work. Do not overload and stand under the passage.
(C) REINFOR-CEMENT	Curtailment and binding of rods	Persons may get injured	Use PPE like gloves, shoes, helmets, etc. Avoid usage of shift tools
	Carrying of rods for short distances/at heights	Workers may get injured their hands and shoulders.	Provide suitable pads on shoulders and use safety gloves. Tie up rods in easily liftable bundles Ensure proper staging.
	Checking of clear distance/ cover with hands	Rods may cut or injure the fingers	Use measuring devices like tape, measuring rods, etc.
	Hitting projected rods and standing on cantilever rods.	Persons may get injured and fell down	Use safety shoes and avoid standing unnecessarily on cantilever rods Avoid wearing of loose clothes

APPENDIX-E: (Sheet 4 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Falling of material from height	May prove fatal	Use helmets Provide safety nets
	Transportation of rods by trucks/ trailers	Protruded rods may hit the persons	Use red flags/lights at the ends Do not protrude the rods in front of or by the side of driver's cabin. Do not extend the rods 1/3rd of deck length or 1.5m whichever is less
(D)WELDING AND GAS CUTTING	Welding radiates invisible ultraviolet and infra-red rays	Radiation can damage eyes and skin.	Use specified shielding devices and other PPE of correct specifications. Avoid thoriated tungsten electrodes for GTAW
	Improper placement of oxygen and acetylene cylinders	Explosion may occur	Move out any leaking cylinder Keep cylinders in vertical position Use trolley for transportation of cylinders and chain them Use flashback arrestors
	Leakage/ cuts in hoses	May cause fire	Purge regulators immediately and then turn off Never use grease or oil on oxygen line connections and copper fittings on acetylene lines Inspect regularly gas carrying hoses Always use red hose for acetylene & other fuel gases and black for oxygen
	Opening-up of cylinder	Cylinder may burst	Always stand back from the regulator while opening the cylinder Turn valve slowly to avoid bursting Cover the lug terminals to prevent short circuiting
	Welding of tanks, container or pipes storing flammable liquids	Explosion may occur	Empty & purge them before welding Never attach the ground cable to tanks, container or pipe storing flammable liquids Never use LPG for gas cutting

APPENDIX-E: (Sheet 5 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(E) RADIOGRAPHY	Ionizing radiation	Radiations may react with the skin and can cause cancer, skin irritation, dermatitis, etc.	Ensure Safety regulations as per BARC/AERB before commencement of job. Cordon off the area and install Radiation warning symbols Restrict the entry of unauthorized persons Wear appropriate PPE and film badges issued by BARC/AERB
	Transportation and Storage of Radiography source	Same as above	Never touch or handle radiography source with hands Store radiography source inside a pit in an exclusive isolated storage room with lock and key arrangement. The pit should be approved by BARC/AERB. Radiography source should never be carried either in passenger bus or in a passenger compartment of trains. BARC/AERB has to be informed before source movement. Permission from Director General of Civil Aviation is required for booking radio isotopes with airlines.
	Loss of Radio isotope	Same as above	Try to locate with the help of Survey Meter. Inform BARC/AERB (*)
(F) ELECTRICAL INSTALLATION AND USAGE	Short circuiting	Can cause Electrocution or Fire	Use rubberized hand gloves and other PPE Don't lay wires under carpets, mats or door ways. Allow only licensed electricians to perform on electrical facilities Use one socket for one appliance Ensure usage of only fully insulated wires or cables Don't place bare wire ends in a socket Ensure earthing of machineries and equipments Do not use damaged cords and avoid temporary connections Use spark-proof/flame proof type field distribution boxes.

(*) Atomic Energy Regulatory Board (AERB),
Bhabha Atomic Research Centre (BARC)
Anushakti Nagar, Mumbai – 400 094

APPENDIX-E: (Sheet 6 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Do not allow open/bare connections Provide all connections through 30mAELCB Protect electrical cables/equipments from water and naked flames Check all connections before energizing
	Overloading of Electrical System	Bursting of system can occur which leads to fire	Display voltage and current ratings prominently with 'Danger' signs. Ensure approved cable size, voltage grade and type Switch off the electrical utilities when not in use Do not allow unauthorized connections. Ensure proper grid wise distribution of Power
	Improper laying of overhead and underground transmission lines/cables	Can cause electrocution and prove fatal	Do not lay unarmoured cable directly on ground, wall, roof of trees Maintain atleast 3m distance from HT cables All temporary cables should be laid atleast 750 mm below ground on 100 mm fine sand overlying by brick soling Provide proper sleeves at crossings/ inter-sections Provide cable route markers indicating the type and depth of cables at intervals not exceeding 30m and at the diversions/termination
(G) FIRE PREVENTION AND PROTECTION	Small fires can become big ones and may spread to the surrounding areas	Cause burn injuries and may prove fatal	In case a fire breaks out, press fire alarm system and shout "Fire, Fire". Keep buckets full of sand & water/ fire extinguishing equipment near hazardous locations. Confine smoking to 'Smoking Zones' only. Train people for using specific type of fire fighting equipments under different classes of fire. Keep fire doors/shutters, passages and exit doors unobstructed. Maintain good housekeeping and first-aid boxes (for details refer Appendix-B). Don't obstruct assess to Fire extinguishers. Do not use elevators for evacuation during fire. Maintain lightening arrestors for elevated structures. Stop all electrical motors with internal combustion.

APPENDIX-E : (Sheet 7 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Move the vehicles from dangerous locations. Remove the load hanging from the crane booms Remain out of the danger areas.
	Improper selection of Fire extinguisher	It may not extinguish the fire	Ensure usage of correct fire extinguisher meant for the specified fire (for details refer Appendix-C). Do not attempt to extinguish Oil and electric fires with water. Use foam cylinders/CO_2/sand or earth.
	Improper storage of highly inflammable substances	Same as above	Maintain safe distance of flammable substances from source of ignition. Restrict the distribution of flammable materials to only min. necessary amount. Construct specifically designed fuel storage facilities. Keep chemicals in cool and dry place away from heat. Ensure adequate ventilation. Before welding operation, remove or shield the flammable material properly. Store flammable materials in stable racks, correctly labeled preferably with catchment trays. Wipe off the spills immediately
	Short circuiting of electrical system	Same as above Can cause Electrocution	Don't lay wires under carpets, mats or door ways Use one socket for one appliance. Use only fully insulated wires or cables. Do not allow open/bare connections. Provide all connections through 30mAELCB. Ensure earthing of machineries and equipments.
(H) VEHICULAR MOVEMENT	Crossing the Speed Limits (Rash driving)	Personal injury	Obey speed limits and traffic rules strictly. Always expect the unexpected and be a defensive driver. Use seat belts/helmets. Blow horn at intersections and during overtaking operations. Maintain the vehicle in good condition. Do not overtake on curves, bridges and slopes.
	Adverse weather condition	Same as Above	Read the road ahead and ride to the left. Keep the wind screen and lights clean. Do not turn at speed. Recognize the hazard, understand the defense and act correctly in time.

APPENDIX-E : (Sheet 8 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Consuming alcohol before and during the driving operation	Same as above	Alcohol and driving do not mix well. Either choose alcohol or driving. If you have a choice between hitting a fixed object or an on-coming vehicle, hit the fixed object Quit the steering at once and become a passenger. Otherwise take sufficient rest and then drive. Do not force the driver to drive fast and round the clock. Do not day dream while driving
	Falling objects/ Mechanical failure	May prove fatal	Ensure effective braking system, adequate visibility for the drives, reverse warning alarm. Proper maintenance of the vehicle as per manufacturer instructions
(I) PROOF TESTING (HYDROSTATIC/ PNEUMATIC TESTING)	Bursting of piping Collapse of tanks Tanks flying off	May cause injury and prove fatal	Prepare test procedure & obtain EIL/owner's approval. Provide separate gauge for pressurizing pump and piping/equipment. Check the calibration status of all pressure gauges, dead weight testers and temperature recorders. Take dial readings at suitable defined intervals and ensure most of them fall between 40-60% of the gauge scale range. Provide safety relief valve (set at pressure slightly higher than test pressure) while testing with air/ nitrogen. Ensure necessary precautions, stepwise increase in pressure, tightening of bolts/nuts, grouting, etc. before and during testing. Keep the vents open before opening any valve while draining out of water used for hydro-testing of tanks. Pneumatic testing involves the hazard of released energy stored in compressed gas. Specific care must therefore be taken to minimize the chance of brittle failure during a pneumatic leak test. Test temperature is important in this regard and must be considered when the designer chooses the material of construction.

APPENDIX-E : (Sheet 9 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			A pressure relief device shall be provided, having a set pressure not higher than the test pressure plus the lesser of 345 KPa (50 psi) or 10% of the test pressure. The gas used as test fluid, if not air, shall be nonflammable and nontoxic.
(J) WORKING AT HEIGHTS	Person can fall down	May sustain severe injuries or prove fatal	Provide guard rails/barricade at the work place Use PPE like full body harness, life line, helmets, safety shoes, etc. Obtain a permit before starting the work at height above 3 meters Fall arrest and safety nets, etc. must be installed Provide adequate working space(min. 0.6 m) Tie/weld working platform with fixed support Use roof top walk ladder while working on a slopping roofs Avoid movement on beams
		May hit the scrap/material stacked at the ground or in between	Keep the work place neat and clean Remove the scrap immediately
	Material can fall down	May hit the workers working at lower levels and prove fatal	Same as above plus Do not throw or drop materials or equipment from height. i.e. do not *bomb* materials All tools to be carried in a tool-kit Bag or on working uniform Remove scrap from the planks Ensure wearing of helmet by the workers working at lower levels
(K) CONFINED SPACES	Suffocation/ drowning	Unconsciousness, death	Use respiratory devices, if reqd. Avoid overcrowding inside a confined space Provide Exhaust fans for ventilation Do not wear loose clothes, neck ties, etc. Fulfill conditions of the permit

APPENDIX-E: (Sheet 10 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
			Check for presence of hydrocarbons, O_2 level Obtain work permit before entering a confined space Ensure that the connected piping of the equipment which is to be opened is pressure free, fluid has been drained, vents are open and piping is positively isolated by a blind flange
	Presence of foul smell and toxic substances	Inhalation can pose threat to life	Same as above plus Check for hydrocarbon and Aromatic compounds before entering a confined space Depute one person outside the confined space for continuous monitoring and for extending help in case of an emergency
	Ignition/ flame can cause fire	Person may sustain burn injuries or explosion may occur	Keep fire extinguishers at a hand distance Remove surplus material and scrap immediately Do not smoke inside a confined space Do not allow gas cylinders inside a confined space Use low voltage (24V) lamps for lighting Use tools with air motors or electric tools with max. voltage of 24V Remove all equipments at the end of the day
(L) HANDLING AND LIFTING EQUIPMENTS	Failure of load lifting and moving equipments	Can cause accident and prove fatal	Avoid standing under the lifted load and within the operating radius of cranes. Check periodically oil, brakes, gears, horns and tyre pressure of all moving machinery. Check quality, size and condition of all chain pulley blocks, slings, U-clamps, D-shackles, wire ropes, etc. Allow crane to move only on hard, firm and leveled ground. Allow lifting slings as short as possible and check gunny packings at the friction points. Do not allow crane to tilt its boom while moving Install Safe Load Indicator. Ensure certification by applicable authority.

APPENDIX-E : (Sheet 11 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
	Overloading of lifting equipments	Same as above	Safe lifting capacity of derricks and winches written on them shall be got verified The max. safe working load shall be marked on all lifting equipments Check the weight of columns and other heavy items painted on them and accordingly decide about the crane capacity, boom and angle of erection Allow only trained operators and riggers during crane operation.
	Overhead electrical wires	Can cause electrocution and fire	Do not allow boom or other parts of crane to come within 3m reach of overhead HT cables Hook and load being lifted shall preferably remain in full visibility of crane operators.
(M) SCAFFOLDING, FORMWORK AND LADDERS	Person can fall down	Person May sustain severe injuries and prove fatal	Provide guard rails for working at height. Face ladder while climbing and use both hands. Ladders shall extend about 1m above landing for easy access and tying up purpose. Do not place ladders against movable objects and maintain base at 1/4 unit of the working length of the ladder. Suspended scaffolds shall not be less than 500 mm wide and tied properly with ropes. No loose planks shall be allowed. Use PPE, like helmets, safety shoes etc.
	Failure of scaffolding material	Same as above	Inspect visually all scaffolding materials for stability and anchoring with permanent structures. Design scaffolding for max. load carrying capacity. Scaffolding planks shall not be less than 50X250 mm full thickness lumber or equivalent. These shall be cleated or secured and must extend over the end supports by at least 150mm and not more than 300mm. Don't overload the scaffolds. Do not splice short ladders to make a longer one. Vertical ladders shall not exceed 6m.
	Material can fall down	Persons working at lower level gets injured	Remove excess material and scrap immediately. Carry the tools in a tool-kit bag only. Provide safety nets.

APPENDIX-E: (Sheet 12 of 12)

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

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(N) STRUC-TURAL WORKS	Personal negligence and danger of fall	Can cause injury or casualty	Do not take rest inside rooms built for welding machines or electrical distribution system. Avoid walking on beams at height. Wear helmet with chin strap and full body harness while working at height. Use hand gloves and goggles during grinding operations. Cover or mark the sharp and projected edges. Do not stand within the operating radius of cranes.
	Lifting/ slipping of material	Same as above	Do not stand under the lifted load. Stack properly all the materials. Avoid slippage during handling. Control longer pieces lifted up by cranes from both ends. Remove loose materials from height. Ensure tightening of all nuts & bolts.
(O)PIPELIN E WORKS	Erection/ lowering failure	Can cause injury	Do not stand under the lifted load. Do not allow any person to come within the radii of the side boom handling pipes. Check the load carrying capacity of the lifting tools & tackles. Use safe Load Indicators (SLI). Use appropriate PPEs.
	Other	Same as above	Wear gum boots in marshy areas. Allow only one person to perform signaling operations while lowering of pipes. Provide night caps on pipes. Provide end covers on pipes for stoppage of pigs while testing/ cleaning operations.
(P) GRIT BLASTING	Pollution in neighboring area, hit by grits and high pressure air	Can cause personal injury	Ensure the blasting is done in enclosed shed. Keep safe distance while blasting operations. Wear positive pressure blast hood or helmet with view-window, ear-muff/plug, gloves, overall or leather coat /apron, rubber shoes.

APPENDIX-F

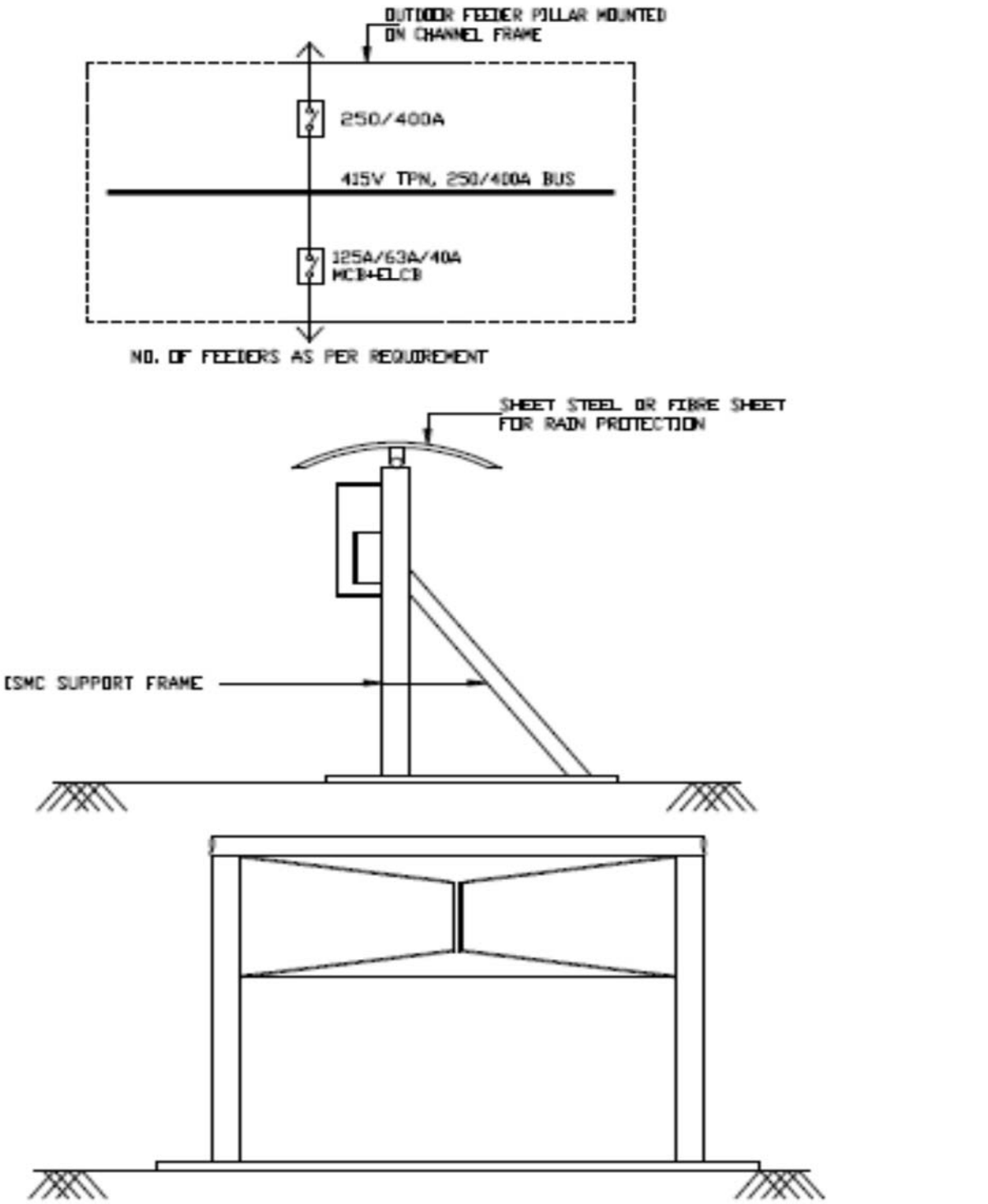
TRAINING SUBJECTS / TOPICS

(For contractors' personnel)

1. The Law & Safety – Statutory Requirement / Applicable statutes / Duties of employer / employee.
2. Policy & Administration – Why HSE? / Duties & Responsibilities of Safety Personnel at project site / Effect of incentive on accident prevention.
3. HSE & Supervision – Duties of Supervisor / HSE integrated supervision / Who should be held responsible for site accidents?
4. Safety Budget / Cost of Accidents – Direct costs / Indirect costs.
5. Hazard Identification / Type of hazards / HIRAC.
6. Behavioral Safety & Motivation.
7. Housekeeping – Storage / Stacking / Handling of materials / Hydra handling.
8. Occupational Health in Construction sector.
9. Personal Protective Equipments – Respiratory & Non- respiratory.
10. Electricity & Safety – ELCB / Fuse / Powered tools / Project illumination.
11. Handling of Compressed Gas – Transportation / Storage / FBAs / Fire prevention.
12. Machine Safety – Machine guarding / Maintenance.
13. Transportation – Hazards & risks in transp. of materials / ODC consignments.
14. Cranes & Other Lifting machinery – Legal requirements vis-à-vis essential safety requirements.
15. Communication – HSE Induction / TBTs / Safety Committee / Safety meeting / Safety propaganda / Publicity.
16. Excavation – Risks & Dangers / Safety measures.
17. Working at Heights – Use of ladder / Work on roofs / Scaffolds / Double harness lanyards / Life-line / Fall arrester / Safety Nets / Floor openings.
18. Hazards in Welding & important safety precautions.
19. Gas Cutting – Hazards & safety measures.
20. Fire prevention & fire protection.

APPENDIX - G

CONSTRUCTION POWER BOARD (typ)



NOTES:-

1. CONTRACTOR TO INSTALL TEMPORARY CONST. POWER BOARD AS SHOWN IN THE DRG. ITS LOCATION SHALL BE EASILY ACCESABALE.
2. POWER DISTRIBUTION BOARD SHALL BE EARTHED AT TWO POINTS BY MINIMUM 40X5MM GI STRIP FROM THE AVILABLE GRID ORDIRECTLY CONNECTED TO TWO DIRECTLY DRIVEN EARTH ELECTRODES.
3. DISTRIBUTION BOARD SHALL BE FABRICATED BY USING 14MM CRCA SHEET STEELWITH HINGED DOORSAND ALL COMPONENT MOUNTED IN IT.
4. ALL INCOMING AND OUTGOING CABLESSHALL HAVE BOTTOM ENTRY.

APPENDIX-H

LIST OF PROCEDURES (MINIMUM) TO BE FORMING PART OF HSE PLAN:-

A. HSE Management Procedures:

- HSE Risk Management (including HIRA)
- HSE Legal Compliance and Other Requirements
- HSE Objectives & Performance
- HSE Training and Competence (including Induction)
- HSE Motivation &Award Scheme
- HSE Audits
- HSE Sub Contractor Management
- HSE Emergency Management
- HSE Incidents Reporting and Management
- HSE procedure for Behaviour based Safety
- First Aid & Management
- Roles, Responsibility, accountabilities and Authorities

B. Job procedures/Safe Operating procedures

- Setting Up Site & Signages
- Working at Height
- Confined Space Entry
- Permit to Work (including hot works)
- Housekeeping
- Transportation of materials including Manual Handling
- Earthmoving Operations & excavation
- Scaffolding
- Fire Prevention/Protection
- Hazardous Substance handling & Storage
- Personal Protective Equipment

FORMAT NO. : HSE-1 REV 0

(Sheet 1 of 6)

SAFETY WALK-THROUGH REPORT

(Name & signature of walk through performer to be inserted at the bottom of each page)

Project : _____ Report no. : _____

Date : _____ Ccontractor : _____

Inspection by :_____ Owner : _____

Frequency : Monthly Job no. : _____

Note : Write 'NA' wherever the item is not applicable

SL. NO.	ITEM	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
1.	HOUSEKEEPING				
a)	Waste containers provided and used				
b)	Sanitary facilities adequate and Clean				
c)	Passageways and Walkways Clear				
d)	General neatness of working areas				
e)	Other				
2.	PERSONNEL PROTECTIVE EQUIPMENT				
a)	Goggles; Shields				
b)	Face protection				
c)	Hearing protection				
d)	Foot protection				
e)	Hand protection				
f)	Respiratory Masks etc.				
g)	Full body harness conforming to CE, EN 361				
h)	Hard hat (HDPE)				
i)	Other				
3.	EXCAVATIONS/OPENINGS				
a)	Openings properly covered or barricaded				
b)	Excavations shored				
c)	Excavations barricaded				
d)	Overnight lighting provided				
e)	Other				

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

FORMAT NO. : HSE-1 REV 0

(Sheet 2 of 6)

SL. NO.	ITEM	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
4.	WELDING & GAS CUTTING				
a)	Gas cylinders chained upright				
b)	Cables and hoses not obstructing				
c)	Screens or shields used				
d)	Flammable materials protected				
e)	Live electrode bits contained properly				
f)	Fire extinguisher (s) accessible				
g)	Other				
5.	SCAFFOLDING & BARRICADING				
a)	Fully decked platforms				
b)	Guard and intermediate rails in place				
c)	Toe boards in place				
d)	Adequate shoring				
e)	Adequate access				
f)	Positive barricading for critical activities				
g)	Installation of warning signs				
h)	Other				
6.	LADDERS				
a)	Extension side rails 1 m above				
b)	Top of landing				
c)	Properly secured				
d)	Angle + 70^0 from horizontal				
e)	Other				

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

FORMAT NO. : HSE-1 REV 0

(Sheet 3 of 6)

SL. NO.	ITEM	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
7.	HOISTS, CRANES AND DERRICKS				
a)	Condition of cables and sheaves OK				
b)	Condition of slings, chains, hooks and eyes O.K.				
c)	Inspection and maintenance log-books maintained				
d)	Outriggers used				
e)	Reverse horn installed / active / coupled with gear				
f)	Signs/barricades provided				
g)	Signals observed and understood				
h)	Qualified operators				
i)	Other				
8.	MACHINERY, TOOLS AND EQUIPMENT				
a)	Proper instruction				
b)	Safety devices				
c)	Proper cords				
d)	Inspection and maintenance				
e)	Other				
9.	VEHICLE AND TRAFFIC				
a)	Rules and regulations observed				
b)	Inspection and maintenance				
c)	Licensed drivers				
d)	Other				

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

FORMAT NO. : HSE-1 REV 0

(Sheet 4 of 6)

SL. NO.	ITEM	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
10.	TEMPORARY FACILITIES				
a)	Emergency instructions posted				
b)	Fire extinguishers provided				
c)	Fire-aid equipment available				
d)	Secured against storm damage				
e)	General neatness				
f)	In accordance with electrical requirements				
g)	Other				
11.	FIRE PREVENTION				
a)	Personnel trained & instructed to make use of facility				
b)	Fire extinguishers checked periodically & record maintained				
c)	No smoking in Prohibited areas.				
d)	Fire Hydrants not obstructed				
e)	Regular fire drill conducted				
12.	ELECTRICAL				
a)	Use of 3-core armored cables everywhere				
b)	Usage of 'All insulated' or 'double-insulated' electrical tools				
c)	All electrical connection are routed through ELCB				
d)	Natural Earthing at the source of power (Main DB)				
e)	Continuity and tightness of earth conductor				
f)	Effective covering of junction boxes, panels and other energized wiring places				
g)	Ground fault circuit interrupters provided				
h)	Prevention of tripping hazards maintained				
f)	DCP extinguishers arranged & licensed electrician engaged at site				

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

FORMAT NO. : HSE-1 REV 0

(Sheet 5 of 6)

SL. NO.	ITEM	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
13.	HANDLING AND STORAGE OF MATERIALS				
a)	Safely stored or stacked				
b)	Passageways clear / free from obstructions				
c)	Fire fighting facility in place				
14.	FLAMMABLE GASES AND LIQUIDS				
a)	Containers clearly identified / protected from fire				
b)	Safe storage & transportation arrangement made				
c)	Fire extinguishers positioned nearby				
d)	Facilities kept away from electric spark, hot spatters & ignition source.				
15.	WORKING AT HEIGHT				
a)	Approved Erection plan and work permit in place				
b)	Safe access, Safe work platform & Safety nets provided				
c)	Life lines, Fall arrester, Full body harness with double lanyards used;				
d)	Health Check record available for workers going up?				
e)	Protective handrails arranged around floor openings				
16.	CONFINED SPACE				
a)	Work Permit obtained from requisite authority				
b)	Test for toxic gas and sufficient availability of oxygen conducted & status				
c)	Supervisor present at site & at least one person outside the confined space for monitoring deputed				
d)	Availability of safe means of entry, exit and ventilation (register for entry & exit maintained)				
e)	Fire extinguisher and first-aid facility ensured				
f)	Lighting provision made by using 24V Lamp				
g)	Proper usage of PPEs ensured				
17.	RADIOGRAPHY				
a)	Proper storage and handling of source as per BARC/ AERB guidelines (authorized radiographer available)				
b)	Work permit obtained				

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

FORMAT NO. : HSE-1 REV 0

(Sheet 6 of 6)

SL. NO.	ITEM	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
c)	Cordoning of the area done				
d)	Use of appropriate PPE's ensured				
e)	HSE training to workers/supervisors imparted during the fortnight (indicate topic)				
f)	Minimum occupancy of workplace ensured				
18.	HEALTH CHECKS				
a)	All Workers medically examined and found be fit for working at heights (slinging, rigging, painting etc.) in confined space in excavation / trenching in shot blasting				
b)	Availability of First Aid box with contents				
c)	Proper sanitation at site, office and labour camps				
d)	Arrangement of medical facilities.				
e)	Measures for dealing with illness at site & labour camps.				
f)	Availability of Potable drinking water for workmen & staff.				
g)	Provision of crèches for children.				
h)	Stand by vehicle / ambulance available for evacuation of injured				
19.	ENVIRONMENT				
a)	Chemical and Other Effluents properly disposed				
b)	Cleaning liquid of pipes disposed off properly				
c)	Seawater used for hydro-testing disposed off as per agreed procedure				
d)	Lubricant Waste/Engine oils properly disposed				
e)	Waste from Canteen, offices, sanitation etc. disposed properly				
f)	Disposal of surplus earth, stripping materials, Oily rags and combustible materials done properly				
g)	Green belt protection				

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

FORMAT NO. : HSE-2 REV 0

(Sheet 1 of 3)

ACCIDENT / INCIDENT REPORT

(To be submitted by Contractor after every Incident / Accident within 24 hours to EIL/ Owner)

Report No.: _____ **Date**: _____

Project site: _____ **Name of work:** _____

Contractor's name: _____ Contractor's Job Engineer (name) _____

Non-disabling injury (Non-LTA)	Hospitalized but resumed duty before end of 48 hrs	
Disabling injury (other LTA)	Hospitalized & failed to resume duty within next 48 hrs	
Fatal (LTA):	Death / Expiry	
First Aid case (non LTA)	Resume duty after first aid	

Name of the injured:_____ Father's name of victim: _____

Sub Contractor's Name: …….

Gate Pass No.:……..Age: _____Yrs. Victim's medical fitness exam. (Pre-empl.) date: - _____

Date & time of Accident / Incident: _____

Names of Witnesses: (1_____ (2)_____ (3) _____

Profession of victim:

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c. operator	
Engineer		Manager		Other/specify	

Qualification

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

Job Experience

NIL		Less than 2 yrs		2-5 yrs	
5-10 yrs		11-15 yrs		15 years and above	

Location where the incident happened: _____

_____

FORMAT NO. : HSE-2 REV 0

(Sheet 2 of 3)

Activity / Works that were continuing during incident / accident: -

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

What exactly the victim was doing just before the incident / accident? .....

.....

.....

Nature of injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			

Parts of body involved in incident / accident

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

Accident type:

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

FORMAT NO. : HSE-2 REV 0

(Sheet 3 of 3)

Medical Aid provided:- (indicate specific aids / treatment etc.)-

……

……..

Actions taken to prevent recurrence of similar incident / accident: ……

……

……

……

……

……

……...

_____

Intimation to local authorities (Dist. Collector / Local Police Station / ESI authority): Yes / No / NA.

If yes, to whom ……..

Safety Officer
(Signature and Name)
Stamp of Contractor

Site Head / Resident Construction Manager
(Signature and Name)

To : Owner
: RCM/Site-in-charge EIL (3 copies)
→Divisional Head (Constn) through RCM
→Project Manager, EIL, through RCM

FORMAT NO. : HSE-3 REV 0

(Sheet 1 of 5)

SUPPLEMENTARY INCIDENT / ACCIDENT INVESTIGATION REPORT
TICK THE APPROPRIATE ONE AS APPLICABLE (furnish within 72 hours)

Supplementary to Incident / Accident Report No: _____ (Copy enclosed)

Report No.: _____ **Date**: _____

Project site: _____ **Name of work:** _____

Contractor's name: _____ Contractor's Job Engineer (name) _____

Non-disabling injury (Non-LTA)	Hospitalized but resumed duty before end of 48 hrs.	
Disabling injury (other LTA)	Hospitalized & failed to resume duty within next 48 hrs.	
Fatal (LTA):	Death / Expiry	
First Aid case (non LTA)	Resume duty after first aid	

Name of the injured: _____ Father's name of victim: _____

Sub Contractor's Name: …….

Gate Pass No.:…….. Age: _____Yrs. Victim's medical fitness exam. (Pre-empl.) date: - _____

Date & time of Accident / Incident: _____

Names of Witnesses: (1_____ (2)_____ (3) _____

Profession of victim:

Bar bender		Carpenter		Meson	
Fitter		Helper		Gas cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c. operator	
Engineer		Manager		Other/specify	

Qualification

No formal education		Non-Matriculate		Matriculate	
Graduate		Post- grad		Other/specify	

Job Experience

NIL		Less than 2 yrs.		2-5 yrs.	
5-10 yrs.		11-15 yrs.		15 years and above	

Location where the incident happened: _____

_____

FORMAT NO. : HSE-3 REV 0

(Sheet 2 of 5)

Activity / Works that were continuing during incident / accident: -

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas-cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Other/specify	

What exactly the victim was doing just before the incident / accident? .....

……

……

Particular of tools & tackles being used and condition of the same after incident/accident:

……

……

Description of Incident/Accident (How the incident was caused) : ……...

……

……

……

Nature of injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Other/specify			

Parts of body involved in incident / accident

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen / Back / Chest / Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Other/specify	

FORMAT NO. : HSE-3 REV 0

(Sheet 3 of 5)

Accident type:

Struck against		Struck by		Fall from Elevation	
Fall on same level		caught in		caught under	
caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./ extremes)		Contact with chemicals or oils		Vehicle accident	
Other/specify					

Name & Designation of person who provided First-Aid to the victim: _____

Name & Telephone number of Hospital where the victim was treated _____

Mode of transport used for transporting victim – Ambulance / Private car / Tempo / Truck / Others

How much time taken to shift the injured person to Hospital_____

In case of FATAL incident, indicate clearly the BOCW Registration No. of the victim/Company……
…

Comments of Medical Practitioner, who treated / attended the victim/injured (attached / described here) _____

What actions are taken for investigation of the incident, please indicate clearly – (Video film / Photography / Measurements taken etc. ……..)

Immediate cause (Please tick the right applicable) –

Hazardous methods or procedures inadequately guarded		Poor housekeeping		Inadequate or improper PPE	
Environmental hazards (excess noise/ space constraint/ inadequate ventilation		improper illumination/Moving on oval surface		Working on dangerous equipment	

FORMAT NO.: HSE-3 REV 0

(Sheet 4 of 5)

Failure to secure		Horse-play		Failure to use PPE	
Inattention to surroundings		Improper use of hands & body-parts		By-passing safety devices	
Unsafe mixing or placement of tools & tackles		Bypassing standard procedures		Failure in communication	
Operating without authority		Improper use of equipment or tools & tackles		drug or alcoholic influence	
excessive haste		Others(specify)			

Basic cause

Over confidence		Impulsiveness		over-exertion	
Faulty judgement or poor understanding		Failing to keep attention constantly		Nervousness & Fear	
Fatigue		Defective vision		Ill health or sickness	
Slow reaction		Others (specify)			

Root cause

Inadequate Engg		Improper Design		Inadequate Planning & organization	
Inadequate knowledge		Inadequate skill		Inadequate training	
Inadequate supervision		Improper work procedure		Inadequate compliance with standard	
Substandard performance		Inadequate maintenance		Improper inspection	
Others (specify)					

Loss of man days and impact on site works, (if any) –

_____

Remarks from Contractor's Safety Officer/ Engineer –

Was the victim performing relevant tasks for which he was engaged /employed? Yes / No
Was the Supervisor present on work-site during the incident? Yes / No
Have the causes of incident rightly identified? Yes / No
Cause of Accident was_____

FORMAT NO. : HSE-3 REV 0

(Sheet 5 of 5)

Remedial measures recommended by **Safety Officer of Contractor** for avoiding similar incident in future

: ……

……

……

……

……

……

……...

Intimation to local authorities (Dist. Collector / Local Police Station / ESI authority): Yes / No / NA.

If yes, to whom ……..

_____

Safety Officer
(Signature and Name)

Site Head / Resident Construction Manager
(Signature and Name)
Stamp of Contractor

To : Owner
: RCM/ Site-in-charge of EIL (3 copies)
→ Divisional Head (Constn) through RCM
→ Project Manager EIL, through RCM

FORMAT NO. : HSE-4 REV 1

NEAR MISS INCIDENT/ DANGEROUS OCCURRENCE SUGGESTED PROFORMA
(to be submitted within 24 hours)

- **Near Miss** : Human injury escaped & no damage to property, equipment or interruption to work.
- **Dangerous Occurrence**: Damage to property, equipment or interruption of work, but not resulting in personal injury/ illness, e.g. Fire incident, collapse of structure, crane failure, etc.

Report No.: _____

Name of Site: _____ Date: _____

Name of work: _____ Contractor: _____

Incident reported by :

Date & Time of Incident :

Location :

Brief description of incident

Probable cause of incident

Suggested corrective action

Steps taken to avoid recurrence Yes ☐ No ☐

Safety Officer
(Signature and Name)
Stamp of Contractor

Site Head / Resident Construction Manager
(Signature and Name)

To : Owner
: RCM/Site-in-charge EIL (3 copies)
→ Divisional Head (Constn) through RCM
→ Project Manager EIL, through RCM

FORMAT NO. : HSE-5 REV 1

MONTHLY HEALTH, SAFETY & ENVIRONMENTAL (HSE) REPORT

(To be submitted by each Contractor)

Actual work start Date: _____ For the Month of: _____
Project: _____ Report No: _____
Name of the Contractor: _____ Status as on : _____
Name of Work : _____ Job No : _____
(Contractor in consultation with EIL shall generate the reports through web based package (www3.eil.co.in/eilhse) only.

ITEM		UPTO PREVIOUS MONTH	THIS MONTH	CUMULATIVE
1) Average number of Staff & Workmen (average daily headcount, not man days)				
2)Total Man-hours worked				
3) Number of Induction programmes conducted				
4) Number of HSE meetings organized at site				
5) Number of HSE awareness programmes conducted at site				
6) Number of Tool Box Talks conducted				
7) Number of Lost Time Accidents (LTA)	Fatal			
	Other LTA			
8) Number of Loss Time Injuries (LTI)	Fatalities			
	Other LTI			
9) Number of Non-Loss Time Accidents				
10) Number of First Aid Cases				
11) Number of Near Miss Incidents				
12) No. of unsafe acts/ practices detected				
13) No. of disciplinary actions taken against staff/ workmen				
14) Man-days lost due to accidents				
15) LTA Free man-hours i.e. LTA free man-hours counted from the Last LTA (enter date: …….)				
16) Frequency Rate (No. of LTA per 2 lacs man-hours worked)				
17) Severity Rate (No. of man days lost per 2 lacs man-hours worked)				
18) Loss Time Injury Frequency (No. of LTI per 2 lacs man-hours worked)				
19) No. of activities for which HIRAC completed				
20) No. of incentives/ awards given				
21) No. of occasions on which penalty imposed by EIL/ Owner				
22) No. of Audits conducted				
23) No. of pending NCs in above Audits				
24) Compensation cases raised with Insurance				
25) Compensation cases resolved and paid to workmen				
26) No of Vehicular Accident cases				
27) No of fire/Explosion cases				

28) Whether workmen compensation policy taken			Yes		No
29) Whether workmen compensation policy is valid			Yes		No
30) Whether workmen registered under ESI Act, as applicable			Yes		No
31) Whether HIRAC Register prepared and updated			Yes		No
32) Whether Environment Aspect Impact Register prepared and updated			Yes		No
33) Whether Legal Register prepared and updated			Yes		No

Remarks, if any

Date:
Prepared by Safety Officer — Approved by Site Head / Resident Construction Manager

(Signature and Name) — (Signature and Name)

To : - OWNER
- RCM EIL (2 copies)

FORMAT NO. : HSE-6 REV 0

PERMIT FOR WORKING AT HEIGHTS (ABOVE 2.0 METER)
(In duplicate to be issued daily for site and for office)

Permit No. …….. Name of Main Contractor …..…….……
Name of work executing agency / sub agency / vendor: ……..…….……....
Date …… Exact Location of work ……..…….……
Nature of work ……..Duration of work (from) ……..…… (to) …….....
Number of workers covered within this permit ……..…….……
(*List enclosed with name & gate pass numbers*.)

Sl. No.	Items / Subjects	Status of compliance (Yes / No)	
1	Work areas / Equipments inspected		
2	Work area cordoned off		
3	Adequate lighting is provided		
4	Precautions against public traffic taken		
5	Concerned persons in & around have been alerted & cautioned		
6	Hazards / risks involved in routine / non-routine task assessed and control measures have been implemented at specific task		
7	ELCB provided for electrical connection & found working		
8	Ladder safely attached / fixed		
9	Scaffoldings are checked and TAGs are found used correctly		
10	Working platforms are provided and are found sound /safe for use		
11	Safe access & egress arrangements (e.g. ladders, fall arresters, life-lines etc.) are satisfactorily incorporated		
12	a. Openings on platform / floors are effectively cordoned / covered		
	b. Safety Nets are provided wherever required		
13	Use of following safety gadgets by people working at area under this permit, is checked and found satisfactory - Safety helmet Safety harness (full body) with double lanyard Safety Shoes Safety gloves Safety goggles		
14	Housekeeping of work area found satisfactorily tidy / clean & clear		
15	Adequate measures have been taken for works being continued at the ground level, when simultaneous works are permitted overhead at that very location.		
16	Materials are not thrown from heights on to ground		
17	Medical examination of workers are made & found satisfactory		
18	Responsible job engineer / supervisor found physically present at work spot for overall administration of work as well as safety of people.		

Above items have been checked & compliance has been found in place. Hence work is permitted to start / continue at the above-mentioned location. Work shall not start till identified lapses are rectified.

Additional Precautions, if any …….
……..

Work Permit issued by
Contractor Engineer/RCM

Verification By
Contractor Safety Officer

AT THE END OF THE DAY/WORK:
All works at height are completed & workmen have returned safely from work location at (time)…….. (date) ……

(Sig. Contractor Engineer)

FORMAT NO. : HSE-7 REV 0

CONFINED SPACE ENTRY PERMIT

Project site _____ Sr. No. _____
Name of the work _____ Date _____
Name of Contractor _____ Nature of work _____
Exact location of work _____

Safety Requirements POSITIVE ISOLATION OF THE VESSEL IS MANDATORY

(A) Has the equipment been ?

Y	NR		Y	NR		Y	NR	
☐	☐	Isolated from power/steam/air	☐	☐	water flushed &/or steamed	☐	☐	radiation sources removed
☐	☐	isolated from liquid or gases	☐	☐	Man ways open & ventilated	☐	☐	proper lighting provided
☐	☐	depressurized &/or drained	☐	☐	cont. inert gas flow arranged	☐	☐	
☐	☐	blanked/ blinded/ disconnected	☐	☐	adequately cooled	☐	☐	

(B) Expected Residual Hazards

☐☐	lack of O_2	☐☐	combustible gas/ liquid	☐☐	H_2S / toxic gases
☐☐	corrosive chemicals	☐☐	pyrophoric iron / scales	☐☐	electricity / static
☐☐	heat/ steam / frost	☐☐	high humidity	☐☐	ionizing radiation
☐☐		☐☐		☐☐	

(C) Protection Measures

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

Authorization / Renewal (It is safe to enter the confined space)

	No. of persons allowed	Name of persons allowed	Signature		Time		Signature
			Contractor's Supervisor	Contractor's Safety Officer	From	To	Workman

Permit Closure :

(A) Entry ☐ was closed ☐ stopped ☐ will continue on ...

(B) ☐ Site left in a safe condition ☐ Housekeeping done

(C) Multilock ☐ removed ☐ key transferred

☐ Ensured all men have come out ☐ Man-ways barricaded

Remarks, if any:

FORMAT NO. : HSE-8 REV 1

RADIATION WORK PERMIT

Project :
Name of the work :
Name of site contractor :

Sr. No. :
Date :
Job No. :

Location of work :

Source strength :

Cordoned distance (m) :

Name of Radiography agency :

Approved by Owner/EIL ☐

No. of workers engaged :
(*List enclosed with name & gate pass numbers.*)

The following items have been checked &compliance shall be ensured during currency of the permit:

S. No.	Item description	Done
	Safety regulations as per BARC/AERB ensured while source in use/in transit & during storage	
	Area cordoned off / safe working platform provided	
	Lighting arrangements for working during nights ensured	
	Warning signs/ flash lights installed	
	Cold work permit taken (if applicable)	
	PPEs like film badges, dosimeters used	

Additional precautions, if any _____

(Radiography Agency's BARC/AERB authorized Supervisor)

Permission is granted.

Permit is valid from _____ AM/PM _____ Date to _____ AM/PM _____ Date

(Signature of permit issuing authority-RCM of contractor)
Name : Designation: Date:

Permit renewal:

Permit extended up to		Additional precautions required, if any	Sign of issuing authority with date (of site contractor)	
Date	Time			

Work completed/ stopped/ area cleared at _____ Hrs of Date _____
(Sign. of permit issuing authority)
Name & Signature of site contractor:

FORMAT NO. : HSE-9 REV 1

DEMOLISHING/DISMANTLING WORK PERMIT

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

Name of sub-contractor : No. of workers to be engaged:
(*List enclosed with name & gate pass numbers.*)

Line No./ Equipment No./ Structure to be dismantled :

Location details of dismantling/ demolition with sketch : (clearly indicate the area)

The following items have been checked &compliance shall be ensured during currency of the permit:

S. No.	Item description	Done	Not Applicable
	Services like power, gas supply, water, etc. disconnected	☐	☐
	Dismantling/ Demolishing method reviewed & approved	☐	☐
	Usage of appropriate PPEs ensured	☐	☐
	Precautions taken for neighboring structures	☐	☐
	First-Aid arrangements made	☐	☐
	Fire fighting arrangements ensured	☐	☐
	Precautions taken for blasting	☐	☐

(Contractor's Supervisor) (Contractor's Safety Officer)

Permission is granted.

(Permit issuing authority-Client)

Name :
Date :

Completion report:

Dismantling/ Demolishing is completed on _____ Date at _____ Hrs.

Materials/ debris transported to identified location ☐ Tagging completed (as applicable) ☐

Services like power, gas supply, water, etc. restored ☐

(Permit issuing authority-Client)

CONTRACTOR's NAME

FORMAT NO. : HSE-10 REV 1

DAILY SAFETY CHECKLIST

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

Project :
Name of the work :
Name of contractor :

Sr. No. :
Date :
Job No. :

Description of Job decided to perform : -

- **Use of PPE / Safety Gadgets**

Sl. No	PPEs	Compliance (Yes / No)	Sl. No	PPEs	Compliance (Yes / No)
1	Safety Helmets		6	Face Shield	
2	Safety Shoes		7	Full body harness	
3	Hand Gloves		8	Fall Arrest System	
4	Dust Musk		9	Safety net	
5	Safety Goggles		10	Horizontal life-line made of steel wire, (dia not less than 8.0 mm.)	

(Serial No. 1 & 2 are compulsory for everyone. Specify & ensure use of other safety gadgets as required for the job)

- **Identify following important unsafe conditions: -**

Sl. No	Conditions	Yes / No
1	Access to work site / emergency escape clear	
2	Soil / Loose earth kept away from excavated pit / slope / ladder provided	
3	Electrical wire / welding lead lying entangled on ground / welding m/c. booth accessible	
4	Elevated work platform / open ends are protected	
5	Ground area cordoned off before lifting works or erection at height / ground area checked & cordoned-off before start of height works	
6	Structural members / erected pipes / wooden boards/pieces etc. are safely anchored at heights and are not likely to fall down on people when working beneath	
7	Ladders tied-up on tall steel structures, long before are removed to get rid of their use	
8	Any Other	

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

- **Specific Safety guidelines / precautions, if any** (communicated thro' TBT)
  ……..
  ……

- **Above conditions and PPE compliances are checked by undersigned and correct status are indicated after verification**

Prepared by
Contractor Site Engineer

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-11 REV 0

(Sheet 1 of 2)

HOUSEKEEPING ASSESSMENT& COMPLIANCE

Project :
Name of the work :
Name of contractor :
Name of contractor : Fortnightly

Sr. No. :
Date :
Job No. :

Sl. No.	Subjects of Review	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
1.	Cleanliness at the Main entry / access of site				
2.	Ground condition / floor areas free from water-logging / oil spillage				
3.	Ground & elevated floors free from rubbish / wastes / accumulated debris / scraps.				
4.	Manholes / openings are covered / fenced				
5.	Trenches are barricaded / walkways are in place				
6.	Drains are cleaned / not choked / not occupied by dumped materials				
7.	Sufficient CAUTION boards / instructions displayed				
8.	Construction machinery are maintained & parked in orderly manner.				
9.	Movement of site people are not obstructed because of dumping / storing of construction materials				
10.	Access / egress to Electrical Distribution Boards / Panels clear from wires / cables / earth-strips etc.				
11.	Electrical panel rooms / sheds / MCC / Control rooms / Substations etc. are clean & tidy and not used for storing dress / clothes, tiffin-box or bicycles.				
12.	Passage behind Elec. panels are free for access				
13.	Fire extinguishers / fire-buckets are accessible without any difficulty.				
14.	Stair-steps, platforms & landings are clear & tidy				
15.	Sheds / rooms & work areas have got sufficient illumination as well as ventilation				
16.	Cables / Wires / welding leads are routed / hanged appropriately & are not creating unsafe condition.				
17.	Stacking / storing of insulation materials or their packing.				
18.	Removal or cleanliness of left-over sand, concrete, brick-bats, insulation-materials, excess earth, wastes etc.				
19.	Storing / stacking of sand, metal chips, re-bars, steel pipes, valves, fittings etc.				
20.	One escape route at ground & minimum two escape routes at elevation available,				

FORMAT NO. : HSE-11 REV 0

(Sheet 2 of 2)

Sl. No.	Subjects of Review	Satisfactory/ Yes	Non satisfactory/ No	Remarks	Action
21.	Captions / Posters / Slogans on various safety instructions are displayed legibly in local language				
22.	Cable trenches are water-free or regular arrangement for taking out accumulated water exists.				
23.	Windows of rooms / offices are regularly cleaned				
24.	Facilities for cycle sheds, drinking water, washing, rest-rooms etc. are maintained in tidy manner.				
25.	Toilet, Urinals, Canteen / kitchen / pantry etc. are maintained & free from obnoxious smell.				
26.	Construction tools / tackles are stored systematically - the items are tagged / tested / certified by competent third party.				
27.	Sufficient numbers of Dust-bins / Waste-bins found at site and are regularly emptied.				

Additional remarks, if any -

……

……

……

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-12 REV 0

INSPECTION OF TEMPORARY ELECTRICAL BOOTH / INSTALLATION

Project :
Name of the work :
Name of contractor :
Sub Station No:/Booth No

Sr. No. :
Date :
Job No. :
Location:

SL NO	SUBJECTS	OBSERVATION (YES /NO)	ACTION TAKEN
1	Switchboards installed properly are in order and protected from rain & water-logging.		
2	Adequate illumination provided for switchboard operation during night hours & the lamps are protected from direct human contact.		
3	Voltage ratings, DANGER signs, Shock-Treatment-Chart displayed in the installation / booth		
4	Fire extinguisher (DCP or CO_2) & Sand Bucket kept in close vicinity of Switchboards		
5	Valid License & Competent Electrician / Wireman available & name/ license no. displayed at booth / installation.		
6	General housekeeping in & around booth / installation found in order.		
7	Cable-route-markers for U/G cables provided.		
8	Monthly inspection report of Electrical hand tools available in booth / installation.		
9	Insulated Mat provided in front of Elec. Panels.		
10	Rubber hand gloves available/ used by Electricians		
11	Availability of CAUTION boards for shutdown & / or repairing works.		
12	All incoming & outgoing feeders have proper MCCB / HRC fuses / Switches.		
13	Switchboards "earthed" at two distinctly isolated locations.		
14	Switchboards have adequate operating space at the front face & at the rear face too.		
15	All connections provided through 30mA ELCB.		
16	Testing records of all ELCBs available at site		
17	Only industrial type plugs & sockets are used.		
18	Temporary connections are 3-core double insulated & free from cuts & joints and 3rd core is earthed at both ends		
19	Socket boards are properly mounted on stand & protected from water ingress.		
20	Electrical equipments operating above 250V have two earthing / double earthing.		
21	All incoming / outgoing cables are properly glanded & terminated with "lugs".		
22	Switch-boards are of industrial variety / type.		
23	Sketch for installation / connection (SLD) made & pasted& other safety labels/display boards		
24	Labeling of incoming / outgoing feeders made.		
25	All hand lamps are protected from direct contact.		
26	All electrical cable / joints are in safe condition		

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-13 REV 0

(Sheet 1 of 2)

INSPECTION FOR SCAFFOLDING

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

Sl. No	Description	Yes	No	N.A.	Actions taken
1	Whether work permit is obtained to take up work at height above 1.5 Mts?				
2	Whether atmospheric condition is "stormy" or "raining" and works at heights have been permitted?				
3	Whether steel pipes scaffoldings are used for units /off-site areas?				
4	Whether scaffolding has been erected on rigid/firm/leveled surfaces / ground? Whether "foot-seals" or "base-plates" are used beneath the up-rights (vertical steel pipes)				
5	Whether scaffold construction is as per IS specification with toe-board and hand-rails (top-rail as well as mid-rail)?				
6	Whether distance between two successive up-rights are less than 2.5 Mts (height of scaffold & load carrying capacity governs the distance between two uprights)				
7	Whether all uprights are extended at least 900 mm above the top most working platform (to enable fitting of handrails)?				
8	Whether vertical distance of two successive ledgers is satisfactory? (*varying between 1.3 Mts. To 2.1 Mts)*				
9	Whether the peripheral areas of working at height are cordoned-off? (for avoiding accident to people arising out of dropped / deflected materials)				
10	Whether platform is provided? Is it safely approachable?				
11	Whether end of scaffold platform / board are extended beyond transoms? (125mm to 150 mm)				
12	Whether CE / IS approved quality and worthy conditioned full-body safety harness (with double lanyard & karabiners) are used while working at heights?				
13	Whether life-line of safety harness is anchored to an independent secured support capable of withstanding load of a falling person?				
14	Whether the area around the scaffold is cordoned off to prohibit the entry of unauthorized person / vehicle?				
15	Whether clamps used are of good condition, of adequate strength and free from defects?				
16	Whether ladder is placed at secured and leveled surface?				
17	Whether water-pass and oil-spills are avoided around the scaffold structure?				
18	Whether ladder is extended 1.5mts. above the landing point at height?				
19	Whether more than one access/egress provided to the scaffold?				
20	Whether ladder used are of adequate length and overlapping of short ladders avoided?				
21	Whether metallic ladders are placed much away from near-by electrical transmission line?				
22	Whether rungs of ladder are inspected and found in good order?				
23	Whether fall-arresters provided on both the access/egress routes?				
24	Whether diagonal (cross) bracings are provided at regular interval on the scaffold?				
25	Whether working platform on the scaffold has been made free from "jolt" or "gap"?				
26	Whether tools or materials are removed after completion of the day's job at heights?				
27	Whether a valid Permit for Work (PFW) is obtained before taking up work over asbestos or fragile roof?				
28	Whether sufficient precaution is taken while working on fragile roof?				

FORMAT NO. : HSE-13 REV 0

(Sheet 2 of 2)

Sl. No	Description	Yes	No	N. A	Actions taken
29	Whether provision is made to arrange duck ladder, crawling board for working on fragile roof?				
30	Whether scaffold has been inspected by qualified civil engineers prior to their use?				
31	Whether the scaffolding has been designed for the load to be borne by the same?				
32	Whether the erection and dismantling of the scaffolding is being done by trained persons and under adequate supervision?				
33	Whether safety net with proper working arrangement and life-line has been provided?				
34	Whether TAGS (Green for acceptable and Red for incomplete/unsafe scaffolds) are used on scaffolds?				
35	Whether sufficient illumination is provided in and around the scaffold and access?				
36	Whether emergency rescue / response arrangements are made in place				

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-14 REV 0

(sheet 1 of 2)

PERMIT FOR ERECTION / MODIFICATION & DISMANTLING OF SCAFFOLDING

Project :
Name of the work :
Name of contractor :
Nature of activities :

Sr. No. :
Date :
Job No. :
Duration: From……To……

SL. No.	SUBJECTS / ITEMS	DONE	NOT DONE	REMARKS
1	Specific task of Erection / Modification / Dismantling of scaffolds, identified & TAGGED accordingly (before as well as after carrying-out jobs).			
2	People engaged in doing the job are identified & are certified by Job Engineer of Main Contractor as experienced / trained.			Names to be noted
3	Concerned persons are alerted by the Job Engineer of Main Contractor in connection with possible hazards & what the workmen MUST do / MUST not do.			
4	Verification by Job Engineer of Main Contractor made for confirming that all persons permitted to carry-out the jobs are making use of Helmet, Safety Shoes, Goggles, Gloves & Double lanyard safety harness and other relevant PPEs.			
5	Area of work is effectively cordoned-off / barricaded / illuminated.			
6	For taking-up / lowering down Scaffolding members / clamps / couplings etc. appropriate ropes / pulleys/ chains etc. have been arranged for use (not to throw any item) & the same have been verified as "fit for purpose".			
7	Items / members of scaffold, being lowered are removed from the area & stacked correctly.			
8	Ropes, chains, pulley blocks etc. being used for lifting or lowering scaffold items, are inspected by the Job Engineer & their certifications as well as physical conditions have been found O.K, before signing this PERMIT.			
9	Safety Net / Life-line / Fall Arresters etc. are arranged in position and Job Engineer has found working conditions favorable for activities to start.			
10	Scaffold erection or dismantling tasks are being supervised by Experienced Engineer / Competent person.			
11	Only competent & experienced people have been selected / engaged in Scaffolding erection, modification or dismantling tasks.			
12	Adequate & effective actions for traffic and movement of people around the cordoned-off area taken to avoid inadvertent incident			
13	Working platforms are protected with handrails & toe-boards.			
14	Access & Exit (for reach & escape) are safe for use by people.			
15	Tools, tackles to be used for above jobs are verified by job Engineers of Main contractor as genuinely good and tied-up at height (to prevent their fall).			
16	Site important Telephone Nos. are made known to everyone			
17	SOP (Safe Operating Procedure) for the specific task is made & followed too.			
18	Emergency vehicle has been arranged at work locations.			

- This permit for work shall be available at specific work location all the time.
- After completion of work, permit shall be returned to safety cell of main contractor, without fail.
- This Permit shall be issued maximum upto (Monday to Sunday).
- Additional Precautions, if any

  ……
- **ACCORD OF PERMISSION** (to be ticked) - **YES** ( ) / **NO** ( )

Inspected by
Contractor Engineer

Verification By
Contractor Safety Officer]

FORMAT NO. : HSE-14 REV 0

(sheet 2 of 2)

Everyday Site working conditions & performance of workmen shall be assessed / checked by Contractor Site Engr. and Safety Officer shall verify the same.

	Name / Sign.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Site Engr.								
Safety Off.								

FORMAT NO. : HSE-15 REV 0

PERMIT FOR HEAVY LIFT/ CRITICAL ERECTION

Project :
Name of the work :
Name of contractor :
Nature of activities :
Location of work :
Equipment/Structure to be erected:

Sr. No. :
Date :
Job No. :
Duration: From……To……
Name /Type of crane :
Wt. of equipment/ structure to be erected

SL. NO.	Description of Item	COMPLIANCE STATUS			Remarks
		Yes	No	Not applicable	
1)	Is the crane type suitable for lift or as per erection procedure?				
2)	Is the crane have the correct number of counterweights fitted?				
3)	Availability of Load Certification of crane from authorized agency.				
4)	Is the load chart of crane available in carne cabin/or with Crane operator?				
5)	Is the device to check the Wind speed in crane is working? Is the safety features in crane are working?				
6)	Availability of Load certification of slings and other accessories from authorized agency				
7)	Availability of Licensee/certificate for crane operator from authorized agency.				
8)	Availability of approved HIRAC for the subject activities.				
9)	Availability of approved erection/rigging procedures.				
10)	Availability of temporary gratings/ platforms for critical lifting(as applicable)				
11)	Tool Box conducted before erection?				
12)	Has the area been cordoned off?				
13)	Are the authorized persons during erection are identified?				
14)	Does each person identified for erection understand their roles and responsibilities?				
15)	Is the ground on which crane will rest or outrigger support are correct?				
16)	Is hard stand requirement (if any) complied?				
17)	Is the communication system (viz walkie-talkies, etc. are working properly?				
18)	If more than one crane is lifting the load, is an Intermediate rigger will supervise the lift?				
19)	If there is other obstruction within the operating radius of the crane, have correct precautions been taken to prevent collision?				
20)	All the persons are wearing the requisite PPE?				

Inspected & Issued by
Contractor Engineer/RCM

Verification By
Contractor Safety Officer

FORMAT NO. : HSE-16 REV 0

PERMIT FOR ENERGY ISOLATION & DE-ISOLATION

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

ENERGY ISOLATION PERMIT

- Clearance required from:….. Hrs ……Date To …….. Hrs ….Date
- Name of equipment/ energy source etc. …….
- Nature of job to be done: …….
- Area……Location: ……..

PERMIT VALIDATION	PERFORMING AUTHORITY
I hereby authorize the ……..personnel(performer) to isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for maintenance/repair. Issuing authority Area –Incharge/ RCM Signature: Date: Name:	The work and precautions will be carried out under my overall responsibility.(Testing/execution engineer) Signature: Date: Name:

SAFETY PRECAUTIONS FOR CLEARANCE	NORMALISING AFTER CLEARANCE
1. Notify workers of intent to de- energize ☐ 2. Obtain lock, tag or locking/tagging devices ☐ 3. Shut down, de energize, dissipate any residual energies. ☐ 4. Apply lock ,tag and locking and/or tagging devices ☐ 5. *Any other job specific precautions ☐ 6. Verify effectiveness of lockout by attempting to restart. ☐ 7. Proper PPE is ensured ☐ I certify that the energy source mentioned above is isolated from all sources and is safe to start the work. Tag No:…… Lock No:……. Issuing authority Area –Incharge/ RCM Signature: Date: Name: **(*to be included by contractor in consultation with EIL/owner)**	1. Notify workers of intent to re- energize ☐ 2. Conduct visual inspection to confirm that the danger zone is clear of workers ☐ 3. Conduct visual inspection to confirm that tools , equipments danger zone is clear of workers ☐ 4. Reposition the safety devices(interlocks, valves, guards, covers ,sensors, as applicable, etc) ☐ 5. *Any other job specific normalizing details ☐ 6. Remove lock, tag and locking and/or tagging devices. ☐ 7. Re-energize. ☐ 8. Confirm system is operating properly& safely I certify that the energy source mentioned above is isolated from all sources and is safe to start the work. Tag No:…… Lock No:……. Issuing authority Area –Incharge/ RCM Signature: Date: Name: **(*to be included by contractor in consultation with EIL/owner)**

ENERGY DE-ISOLATION PERMIT

PERMIT VALIDATION	PERFORMING AUTHORITY
I hereby authorize the ……..personnel(performer) to de- isolate the above equipment/energy source from all sources of power and handover the equipment/energy source for normal operation.. Issuing authority Area –Incharge/ RCM Signature: Date: Name:	I hereby certify that the equipment/energy source mentioned above has been de-isolated and is ready for normal operation.(Testing/execution engineer) Signature: Date: Name: Countersigned by Issuing authority

FORMAT NO. : HSE-17 REV 1

PERMIT FOR EXCAVATION (depth 2m and above)

(Sheet 1of 2)

Project :
Name of the work :
Name of contractor :
Job Description :
Size of excavation :

Sr. No. :
Date :
Job No. :
Location:

SL. NO.	Description of Item	COMPLIANCE STATUS			Remarks
		Yes	No	Not applicable	
1)	Suitable and sufficient risk assessments and method statements has been carried to ensure that the work shall be undertaken in accordance with specification and standard.				
2)	Are plans/details of underground services available and the same has been reviewed?				
3)	Has survey done to locate the services/obstacles etc.				
4)	Has the live services (electrical, water line, air line, telephone line, etc.) has been disabled for carrying out the job.				
5)	Is adequate barriers/fences to protect the excavation are in place?				
6)	Is Adequate warning signs are in place?				
7)	Is Assessment of ground conditions done and remedial action (if any) taken?				
8)	Safe access / egress (e.g. ramp / steps / ladders etc.) provided for site workmen & supervisors.				
9)	Is the excavation work being undertaken in proximity of structure, etc.? If Yes, its effect is considered?				
10)	Availability of competent person for supervising the excavation work?				
11)	Adequate safe arrangement to prevent collapse of edges (e.g. shoring / strutting / benching / sloping etc.) made at site.				
12)	Hard barricades (at least 1.0M away from edge & for excavation near site access roads) with warning signs/caution boards are provided				
13)	Accumulation / passage-ways of water at periphery of excavation / trench stopped/ restricted.				
14)	Is the equipment being used for excavation has been checked for adequacy and is in good working condition having all the safety features?				
15)	Age & fitness of workmen ensured by medical test before engagement in job ?				
16)	Arrangement of Monitoring of possible oxygen deficiency or obnoxious gases done & action taken?				

PERMIT GRANTED - Yes / No

(*List enclosed with name & gate pass numbers.*)

Name & Signature of Site Engr.

Name & Signature of Area – In charge/RCM of Contractor (Initiator)

Contractor (Issuing authority)

Verification by Contractor Safety Officer

FORMAT NO. : HSE-17 REV 1

PERMIT FOR EXCAVATION

(Sheet 2of 2)

NOTES: -

1. Slopes or benches for excavation beyond 2.0M depth shall be designed & approved by Contractor's site head.
2. Excavated earth to be kept at least 1.5M away from edges
3. Safety helmets, Safety shoes or gum-boots, gloves, goggles, Face shield, Safety Harness shall be essential PPEs.
4. Permit shall be made in **duplicate** and original shall be available at site of work.
5. Permit shall be issued for maximum **one week** only (Monday to Sunday)
6. After completion of works, permit shall be closed & preserved for record purpose

GRANT OF PERMIT AND EXTENSIONS

Sl. No.	Validity period From ____To ____	Working Time From _____To _____	Initiator (site Engr. of Main Contractor)	Issuing authority (Area In charge/RCM of Main Contractor)	Review by EIL / Owner (Remarks with date
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Additional safety instructions if any: -

1.

2.

3.

FORMAT NO. : HSE-18 REV 0 **(Sheet 1of 2)**

IDENTIFICATION OF ENVIRONMENTAL ASPECTS, IMPACT ASSESSMENT AND CONTROL MEASURES

S. No	Activity	Environmental Aspect	N/A/E	Environment Impact	Control Measures	Consequences						Risk Level	Significant	Gaps/ Recommendations
						A	B	C	D	E	F	G	Yes/No	

(Sheet 2 of 2)

INITIAL ENVIRONMENT REVIEW TECHNIQUE

Environmental Impacts	AP = Air Pollution	WP = Water Pollution	LC = Land Contamination	DNR = Depletion of Natural Resources	NP = Noise Pollution

Scale	**Quantity (A)**	**Occurrence (B)**	**Severity of Impact (C)**	**Detection (D)**	**Control (E)**	**Legal and other requirements (F)**
1	Negligible	Very Rare	Negligible visual impact	Immediately	Available & effective at place	In compliance or not applicable
2	Low	Once a month or less	Causes Discomfort or Nuisance	Within 1 hour	Has in-built Secondary control	
3	Moderate	Once a day	Resource Depletion	Within 8 hours	Needs human Intervention	
4	High	Several times a Day	Affects Aquatic Life, flora, fauna or global issue	Within 24 hours	Mechanism in place but not reliable	
5	Excessive	Continuous	Human health effect	More than 24 hours	Absent or no effective control	Not in compliance

Risk Level - G : A x B x C x D x Ex F

Aspects with score of **100 and above** are considered as significant.
Also, Irrespective of the score, all legal noncompliance's to be considered as significant

Condition	
N	NORMAL
A	ABNORMAL
E	EMERGENCY

FORMAT NO. : HSE-19 REV 0 HIRAC

Risk Identification						Desired Controls & Existing Gaps, If Any		Risk Assessment				Recommended Control Actions To Reduce The Risk Level	Action By	Remarks
SN	Activity	Activity Type (R/Nr)	Hazards	Condition(N/An/E)	Associated Risk	Desired Control Measures	Gaps If Any	Probability(P)	Impact (I)	Risk R= P*I	Risk Classification			

Likelihood – Possibility of occurrence of risks based on present gaps (technological / operational / competence / measurement and monitoring);

UL: Unlikely**, L: L**ikely**, VL:** Very Likely**, FR:** Frequent, **C**: Continuous

Impact –

SI: Slight Injury**, MI:** Minor Injury**, MJ:** Major Injury**, SF:** Single Fatality, **MF:** Multiple Fatalities

Level of consequence – Refer Guidance criteria for this i.e. possible degree of damage;

Condition- N: Normal, **AN**: Abnormal, **E**-Emergency

Activity Type: R- Routine, NR- Non Routine

RISK –

L: Low Risk, **M:** Moderate Risk, **H:** High Risk

FORMAT NO.: **HSE-20 REV 0**

Inspection of Tower Crane

Name of Contractor: **Project:**

Name of Work: **Job No:**

Vehicle Identification/Registration No: **Date:**

Sr. No.	Description	Observation	Remarks & Suggestions
1	Serial number plate & SWL marking		
2	Valid TPI Certificate		
3	Valid Insurance		
4	Safe access and egress are provided to the crane operator.		
5	Front glass of Operator cabin		
6	Operator crane cabin is provided with a locking mechanism so as to prevent unauthorised entry.		
7	A safety bar is fitted across the operator's cabin window where there is likelihood of the operator falling through it.		
8	Manufacturer Operating Manual and Maintenance Manual are made available.		
9	An updated Operation and Maintenance log book is available in the operator cabin.		
10	All mounting bolts are in good condition.		
11	Load chart provided		
12	SLI available		
13	Crane hooks have got smooth surface and no dent		
14	Hook-latch / Dog-clamp in hook is effective		
15	Over hoist limit switch		
16	Double body earthing of Tower Crane		
17	Jib angle indicator is provided (For Luffing Jib Tower Crane).		
18	Emergency stop button, which will terminate the operation of the crane engine, is installed in the operator cabin and correctly identified.		
19	Effective braking mechanisms for Hoisting, Derricking, Slewing, Trolley Travelling maintained:		
20	Trolley Travelling limiter to prevent over-travelling of trolley is functional.		
21	Limit switches to prevent over-derricking and over-lowering of jib (For Luffing Jib Tower Crane) is functional.		
22	Slewing limiter to restrict slewing of crane is functional.		
23	Over load Limiter to prevent overloading of crane is functional.		

24	Load Moment Limiter to prevent over-turning moment is functional.		
25	Anti-collision devices are tested to stop the tower crane's operation such that the crane-to-crane interference must be maintained at not less than 3 m.		
26	Condition of boom		
27	Counter weight placement and pins		
28	Winches, pulleys and wire ropes are in good working condition.		
29	Colour coding		
30	Leakage in hydraulic cylinder		
31	Fire Extinguisher		
32	Tower crane is adequately grounded or protected against lightning.		
33	Wind anemometer is installed and is in good working condition.		
34	Aviation lamp is functional (Reqd. for 30mt and above)		
35	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
36	Safety Induction for Operator		
37	Others		

Signature & Name of Operator:

Signature and name of Job Engineer

Signature & Name of Contractor's Safety Officer

FORMAT NO. : HSE-21 REV 0

Crane Inspection Checklist

Name of Contractor: **Project:**

Name of Work: **Job No:**

Vehicle Identification/Registration No: **Date:**

Sr. No.	Description	Observation	Remarks & Suggestions
1	Crane hooks have got smooth surface and no dent		
2	Hook-latch / Dog-clamp in hook is effective		
3	Over hoist limit switch		
4	Over Load Indicator		
5	Over Boom limit switch		
6	Boom angle indicator		
7	Colour coding		
8	Condition of boom		
9	Condition of wire rope		
10	Rope drum / sheaves are in good working condition		
11	Swing break & lock		
12	Swing Alarm		
13	Over hoist break & lock		
14	Boom break & lock (For Telescopic Boom)		
15	Leakage in hydraulic cylinder		
16	Condition of Outrigger (For Tyre Mounted Crane)		
17	Outrigger fully extended Marking (For Tyre Mounted Crane)		
18	Condition of Tyre (For Tyre Mounted Crane)		
19	Wheel chokes are present and are used whenever required (For Tyre mounted)		
20	Battery & lamps		
21	Moving & rotating parts guarded		
22	Load chart provided		
23	Reverse horn (For Tyre Mounted Crane)		
24	Body Condition of crane		
25	Front glass of Operator cabin		

26	Both side Mirror		
27	Number Plate (For Tyre Mounted Crane)		
28	Fire Extinguisher		
29	Horn		
30	Windshield and wipers		
31	Working of light & Indicator		
32	SLI		
33	Spark Arrestor(For Running Refinery/ Petrochemical/Chemical Plant)		
34	Foot-steps and hand-holds are in good working condition for exit /enter in to cabin		
35	TPI Certificate		
36	RC Document (For Tyre Mounted Crane)		
37	Fitness Certificate of Vehicle by authority		
38	Insurance		
39	PUC		
40	HMV License for Operator		
41	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
42	Safety Induction for Operator		
43	Others		

Signature & Name of Operator:

Signature & Name of Contractor's Concern Engineer

Signature & Name of Contractor's Safety Officer

FORMAT NO. : HSE-22 REV 0

Hydra Crane Inspection Checklist

Name of Contractor: **Project:**

Name of Work: **Job No:**

Vehicle Identification/Registration No: **Date:**

Sr. No.	Description	Observation	Remarks & Suggestions
1	Identification number of Hydra crane boldly scribed in front and rear end of machine		
2	Hydra Operator has got adequate document in support of his competency (i.e. HMV driving license, knowledge & training)		
3	Marking of SWL on hook position is clearly visible		
4	Test & examination of Hydra crane by statutory / competent authority is carried out & document is valid		
5	Colour Coding		
6	RC Document		
7	Fitness Certificate of Vehicle by authority		
8	Valid Insurance		
9	Valid PUC		
10	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
11	Safety Induction for Operator		
12	Crane hooks have got smooth surface and no dent		
13	Hook-latch / Dog-clamp in hook is effective		
14	Over hoist limit switch		
15	Over Load Indicator		
16	SLI		
17	Condition of boom		
18	Condition of wire rope		
19	Rope drum / sheaves are in good working condition		
20	Leakage in hydraulic cylinder		
21	Tyre condition		
22	Battery		

23	Moving & rotating parts guarded		
24	Break		
25	Parking Break		
26	Front horn		
27	Reverse horn		
28	Hydra cabin body and frame of machine is in good order		
29	Both side Mirror		
30	Fire Extinguisher		
31	Front glass pane of the Hydra operator's cabin is clean & clear (i.e. not cracked / damaged / broken)		
32	Windshield and wipers condition		
33	Working of front & back lights, turn Indicators, parking lights & fog lamps		
34	Spark Arrestor (For Running Refinery/ Petrochemical/ Chemical Plant)		
35	Wheel chokes are present and are used whenever required		
36	Foot-steps and hand-holds are in good working condition for exit /enter in to cabin		
37	Others		

Signature & Name of Operator

Signature & Name of Contractor's Concern Engineer

Signature & Name of Contractor's Safety Officer

FORMAT NO. : HSE-23 REV 0

Hydraulic Rig Inspection Checklist

Name of Contractor: **Project:**

Name of Work: **Job No:**

Vehicle Identification/Registration No: **Date:**

Sr. No.	Description	Observation	Remarks & Suggestions
1	Control panel is clean & all buttons/switches are clearly visible (no paint over spray, etc.)		
2	All switch & mechanical guards are in good condition and properly installed		
3	All Safety Indicator lights work		
4	Drive controls function properly & accurately labelled (up, down, right, left, forward, back)		
5	Motion alarms are functional		
6	Safety decals are in place and readable		
7	Any defects such as cracked welds, fuel leaks, hydraulic leaks, damaged control cables or wire harness, etc.		
8	Braking devices are operating properly		
9	Winches, pulleys and wire ropes are in good working condition.		
10	Function of interlocks and limit switch		
11	The manufacturer's operations manual (in all languages of the operators)		
12	Oil level, Hydraulic Oil Level, Fuel Level, Coolant Level		
13	Battery Charge		
14	Outriggers in place or functioning. Associated alarms working		
15	Moving & rotating parts guarded		
16	Load chart provided		
17	Fire Extinguisher		
18	Spark Arrestor, if operated by using fuel (For Running Refinery/ Petrochemical/ Chemical Plant)		
19	Serial number plate		
20	SLI		
21	TPI Certificate		
22	Colour Coding		

23	Insurance		
24	Pre Medical Check-up & Periodic Medical check-up (every 6 months) including vision test for Operator		
25	Safety Induction for Operator		
26	Others		

Signature & Name of Operator:

Signature & Name of Contractor's Concern Engineer

Signature & Name of Contractor's Safety Officer

FORMAT NO. : HSE-24 REV 0

Boom Lift Inspection Checklist

Name of Contractor: **Project:**

Name of Work: **Job No:**

Vehicle Identification/Registration No: **Date:**

Sr. No.	Description	Observation	Remarks & Suggestions
1	Operating and emergency controls are in proper working condition, EMO button or Emergency Stop Device		
2	Functional upper drive control interlock (i.e. foot pedal, spring lock, or two hand controls)		
3	Emergency Lowering function operates properly		
4	Lower operating controls successfully override the upper controls		
5	Both upper and lower controls are adequately protected from inadvertent operation.		
6	Control panel is clean & all buttons/switches are clearly visible (no paint over spray, etc.)		
7	All switch & mechanical guards are in good condition and properly installed		
8	All Safety Indicator lights work		
9	Drive controls function properly & accurately labelled (up, down, right, left, forward, back)		
10	Motion alarms are functional		
11	Safety decals are in place and readable		
12	Guardrails and anchor points are in place, and in good condition		
13	Work platform & extension slides are clean, dry, & clear of debris		
14	Work platform extension slides in and out freely with safety locking pins in place to lock setting on models with extension platforms.		
15	Any defects such as cracked welds, fuel leaks, hydraulic leaks, damaged control cables or wire harness, etc.		
16	Braking devices are operating properly		
17	The manufacturer's operations manual is stored on AWP (in all languages of the operators)		
18	Oil level, Hydraulic Oil Level, Fuel Level, Coolant Level		
19	Battery Charge		
20	Outriggers in place or functioning. Associated alarms working		

21	Tyres and wheels are in good condition, with adequate air pressure if pneumatic		
22	Wheel chokes are present and are used whenever required		
23	Moving & rotating parts guarded		
24	Load chart provided		
25	Fire Extinguisher		
26	Spark Arrestor, if operated by using fuel (For Running Refinery/ Petrochemical/ Chemical Plant)		
27	Serial number plate with Load capacity		
28	TPI Certificate		
29	Colour Coding		
30	Insurance		
31	Pre Medical Check-up& Periodic Medical check-up (every 6 months) including vision test for Operator		
32	Safety Induction for Operator		
33	Others		

Signature & Name of Operator:

Signature & Name of Contractor's Concern Engineer

Signature & Name of Contractor's Safety Officer

INTEGRITY PACT

[ANNEXURE – IX TO SPECIAL CONDITIONS OF CONTRACT]

INTEGRITY PACT

NOTE TO BIDDER:

a. Proforma of Integrity Pact(enclosed) shall be returned by the Bidder(s) along with the bid documents (technical bid in case of 2 part bids), duly signed by the same Signatory who is authorised to sign the bid documents. All the pages of the Integrity Pact shall be duly signed. Bidder's failure to return the IP duly signed shall result in the bid not being considered for further evaluation.

b. If the Bidder has been disqualified from the tender process prior to the award of the contract in accordance with the provisions of the Integrity Pact, NRL shall be entitled to demand and recover from Bidder Liquidated Damages amount by forfeiting the EMD / Bid Security as per provisions of the Integrity Pact.

c. If the contract has been terminated according to the provisions of the Integrity Pact, or if NRL is entitled to terminate the contract according to the provisions of the Integrity Pact, NRL shall be entitled to demand and recover from Contractor / Supplier Liquidated Damages amount by forfeiting the Security Deposit / Performance Bank Guarantee as per provisions of the Integrity Pact.

d. Bidders may raise disputes / complaints, if any, with the Independent External Monitor(s) through telephone and email followed by written document or telephone and written document. However date of receipt of complaint shall be the date of receipt of signed written document only.

Name / address / e-mail ID / contact number(s) of Independent External Monitors appointed to oversee implementation of Integrity Pact Programme at NRL are mentioned below.

Name & Address of Independent External Monitors for
Monitoring / Implementation of Integrity Pact.

Shri Ajit Mohan Sharan, IAS (Retd.)
House No A1/ 88 (GF)
Safdarjung Enclave
New Delhi – 110029
Mobile + 91 9810701876
e-mail: ams057@gmail.com

Shri Vijender Kumar Jain, IRSS (Retd.)
Flat No - 2, Building No - 1
Park View Apartment, Mandigaon Road
New Delhi – 110030
Mobile + 91 98188 34729
e-mail: vijender126@yahoo.com

ध्रुब ज्योति दास / Dhrubajyoti Das
मुख्य-प्रबंधक(वाणिज्यिक) / Chief Manager (Commercial)
नुमलीगढ़ रिफाइनरी लिमिटेड / Numaligarh Refinery Limited
गोलाघाट, असम-७८५६९९ / Golaghat, Assam-785699

INTEGRITY PACT

Between

Numaligarh Refinery Limited (NRL) hereinafter referred to as "The Principal",

And

.....hereinafter referred to as "The Bidder/Contractor/Supplier"

Preamble

The Principal intends to award, under laid down organization procedures, contract/s for .....

The Principal values full compliance with all relevant laws and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder/s, Contractor/s and Supplier/s.

In order to achieve these goals, the Principal cooperates with the renowned international Non-Governmental Organisation "Transparency International" (TI). Following TI's national and international experience, the Principal will appoint an Independent External Monitor who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 - Commitments of the Principal

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

a) No employee of the Principal, personally or through family members, will in connection with the tender, or the execution of the contract, demand, take a promise for or accept, for himself/herself or third person, any material or immaterial benefit which he/she is not legally entitled to.

b) The Principal will, during the tender process, treat all Bidders with equity and reason. The Principal will, in particular, before and during the tender process, provide to all Bidders the same information and will not provide to any Bidder confidential / additional information through which the Bidder could obtain an advantage in relation to the tender process or the contract execution.

c) The Principal will exclude from the process all known prejudiced persons.

(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the relevant Anti-Corruption Laws of India, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder / Contractor/Supplier

(1) The Bidder / Contractor/Supplier commits itself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

a) The Bidder / Contractor/Supplier will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person, any material or immaterial benefit which he/she is not legally entitled to, in order to obtain in exchange, any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b) The Bidder / Contractor/Supplier will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.

ध्रुव ज्योति दास / Dhrubajyoti Das
मुख्य-प्रबंधक(वाणिज्यिक) / Chief Manager (Commercial)
नुमलीगढ़ रिफाइनरी लिमिटेड / Numaligarh Refinery Limited
गोलाघाट, असम-785699 / Golaghat, Assam-785699

c) The Bidder / Contractor/Supplier will not commit any offence under the relevant Anti-Corruption Laws of India; further the Bidder / Contractor/Supplier will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d) The Bidder / Contractor/Supplier will, when presenting his bid, disclose any and all payments he has made, is committed to, or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

(2) The Bidder / Contractor/Supplier will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder, before contract award, has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or credibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

(1) If the Bidder/Contractor/Supplier has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is also entitled to exclude the Bidder / Contractor/Supplier from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.

(2) A transgression is considered to have occurred if the Principal after due consideration of the available evidences, concludes that no reasonable doubt is possible.

(3) The Bidder accepts and undertakes to respect and uphold the Principal's absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.

(4) If the Bidder / Contractor/Supplier can prove that he has restored / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely.

Section 4 - Compensation for Damages

(1) If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from the Bidder liquidated damages equivalent to Earnest Money Deposit/Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor/Supplier liquidated damages equivalent to Security Deposit / Performance Bank Guarantee.

(3) The Bidder agrees and undertakes to pay the said amounts without protest or demur subject only to condition that if the Bidder / Contractor/Supplier can prove and establish that the exclusion of the Bidder from the tender process or the termination of the contract after the contract award has caused no damage or less damage than the amount of the liquidated damages, the Bidder / Contractor/Supplier shall compensate the Principal only to the extent of the damage in the amount proved.

ध्रुब ज्योति दास / Dhrubajyoti Das
मुख्य-प्रबंधक(वाणिज्यिक) / Chief Manager (Commercial)
नुमलीगढ़ रिफाइनरी लिमिटेड / Numaligarh Refinery Limited
गोलाघाट, असम-७८५६९९ / Golaghat, Assam-785699

Section 5 - Previous Transgression

(1) The Bidder declares that no previous transgression occurred in the last 3 years with any other Company in any country conforming to the TI approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders / Contractors /Suppliers/ Subcontractors

(1) The Bidder/Contractor/Supplier undertakes to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.

(2) The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors/Suppliers and Subcontractors.

(3) The Principal will disqualify from the tender process all Bidders who do not sign this Pact or violate its provisions.

Section 7 – Punitive Action against violating Bidders / Contractors / Suppliers/Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor, Supplier or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor, Supplier or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 - Independent External Monitors

(1) The Principal has appointed competent and credible Independent External Monitors for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Chairperson of the Board of the Principal.

(3) The Bidder/Contractor/Supplier accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Bidder/Contractor/Supplier. The Bidder/Contractor/Supplier will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to this project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder/Contractor/Supplier/ Subcontractor with confidentially.

(4) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Bidder/Contractor/Supplier. The parties offer to the Monitor the option to participate in such meetings.

(5) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or heal the violation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendation. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action. However, the Independent External Monitor shall give an opportunity to the Bidder/Contractor/Supplier to present its case before making its recommendations to the Principal.

(6) The Monitor will submit a written report to the Chairperson of the Board of the Principal within 8 to 10 weeks from the date of reference or intimation to him by the 'Principal' and, should the occasion arise, submit proposals for correcting problematic situations.

ध्रुब ज्योति दास / Dhrubajyoti Das
मुख्य-प्रबंधक(वाणिज्यिक) / Chief Manager (Commercial)
नुमलीगढ़ रिफाइनरी लिमिटेड / Numaligarh Refinery Limited
गोलाघाट, असम-७८५६९९ / Golaghat, Assam-785699

(7) If the Monitor has reported to the Chairperson of the Board a substantiated suspicion of an offence under relevant Anti-Corruption Laws of India, and the Chairperson has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

(8) The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor/Supplier 12 months after the last payment under the respective 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 Chairperson of the Principal.

Section 10 - Other provisions

(1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. Guwahati. The Arbitration clause provided in the main tender document / contract shall not be applicable for any issue / dispute arising under Integrity Pact.

(2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

(3) If the Bidder/Contractor/Supplier is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

(4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

.....
For the Principal
Place .....

Date .....

ध्रुब ज्योति दास / Dhrubajyoti Das
मुख्य-प्रबंधक(वाणिज्यिक) / Chief Manager (Commercial)
नुमलीगढ़ रिफाइनरी लिमिटेड / Numaligarh Refinery Limited
गोलाघाट, असम-७८५६९९ / Golaghat, Assam-785699

.....
For the Bidder/Contractor/ Supplier

Witness 1 : .....
(Signature/Name/Address)

Witness 2 : .....
(Signature/Name/Address)

Affidavit in terms of Integrity Pact

(In case of Indian Bidder, to be submitted in Non-Judicial Stamp paper of INR 100)

I, _____ S/o/D/o of _____, working _____ (indicate, as applicable) in the Company _____ having its registered office at _____ do hereby solemnly affirm and state as under:

1) That I am authorized representative and signatory of M/s _____.

2) Bidding Entity M/s _____is not involved in any case of transgression in terms of Integrity Pact submitted for Tender No. _____for _____(Name of Work).

3) I depose accordingly.

SIGNATURE OF DEPONENT

VERIFICATION

I, _____ the deponent above named, do hereby verify that the factual contents of this Affidavit are true and correct. No part of it is false and nothing material has been concealed there from.

Verified at _____on this _____day of _____20____.

SIGNATURE OF DEPONENT

QUALIFICATION AND EXPERINCE OF KEY SUPERVISORY PERSONANELS

[ANNEXURE – X TO SPECIAL CONDITIONS OF CONTRACT]

प्रमुख निर्माण कार्मिकों के लिए अपेक्षित योग्यता एवं अनुभव और तैनाती न करने पर जुर्माना

QUALIFICATION & EXPERIENCE REQUIREMENT OF KEY CONSTRUCTION PERSONNEL AND PENALTY FOR THEIR NON-MOBILIZATION

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
0	12.06.2015	Issued as Standard	DJ	RK	MD	SC

Abbreviations:

CV	:	Curriculum Vitae
EPC	:	Engineering, Procurement & Construction
EPCC	:	Engineering, Procurement, Construction & Commissioning
ISO	:	International Organization for Standardization
NDT	:	Non Destructive Testing
QA/QC	:	Quality Assurance /Quality Control
RT	:	Radiography Testing
UT	:	Ultrasonic Testing

CONTENTS

1. QUALIFICATION & EXPERIENCE (POST QUALIFICATION)

CATEGORY	QUALIFICATION & EXPERIENCE (POST QUALIFICATION) REQUIRED			
Resident Construction Manager/ Resident Engineer/Site-In-Charge	Degree or Diploma in Engineering with minimum following relevant experience in construction:			
	Contract value (Rs) →	< 5 Cr. works	5-20 Cr. works	> 20 Cr. works
	Degree holders	5 yrs	10 yrs	15 yrs
	Diploma holders	8 yrs	13 yrs	20 yrs
Lead Discipline Engineer (Mechanical, Civil, Electrical, Instrumentation)	Degree or Diploma in relevant Engineering discipline with following minimum experience in Construction:			
	Contract value (Rs) →	≤ 20 Cr. works	> 20 Cr. works	
	Degree holders	5 yrs	10 yrs	
	Diploma holders	8 yrs	13 yrs	
Lead Welding/ NDT Engineer	Degree or Diploma in Mechanical Engineering/ Metallurgy with the following experience in Welding & NDT (Non Destructive Testing) and possessing valid Level-II certificate in the relevant NDT methodology (RT/UT)			
	Contract value (Rs) →	≤ 20 Cr. Works	> 20 Cr. Works	
	Degree holders	5 yrs	10 yrs	
	Diploma holders	8 yrs	13 yrs	
Lead QA/QC Engineer	Degree in Engineering with following experience (refer Note 1 also):			
	Contract value (Rs) →	≤20 Cr. Works	> 20 Cr. Works	
	Experience	5 yrs of construction experience of which 2 years in QA/QC	10 yrs of construction experience of which 3 years in QA/QC.	
Lead Planning Engineer	Degree in Engineering with following experience in Planning & Scheduling:			
	Contract value (Rs) →	≤ 20 Cr. works	> 20 Cr. works	
	Experience	5 yrs.	8 yrs.	
Safety Officer/ Supervisor	As per specification for HSE Management at construction sites enclosed elsewhere in the bid.			
Warehouse- In- Charge/ Materials Manager	Diploma in Engineering or Diploma in Materials Management or Graduate in any stream with min. following experience in Warehousing/ Stores Management:			
	Contract value (Rs) →	≤ 20 Cr. works	> 20 Cr. works	
	Experience	5 yrs.	10 yrs.	
Quantity Surveyor	Degree or Diploma in Engineering with minimum following experience in quantity estimation, field measurement, rate analysis, bill preparation etc. in Construction field:			
	Contract value (Rs) →	≤ 20 Cr. works	> 20 Cr. works	
	Degree holders	2 yrs.	5 yrs.	
	Diploma holders	5 yrs.	10 yrs.	
Discipline Engineer (Including welding/ NDT, QA/QC and Planning)	Degree in relevant Engineering Discipline with minimum 2 years of relevant experience in construction or Diploma in relevant Engineering Discipline with minimum 4 years of relevant experience in Construction. Welding /NDT engineer shall possess valid Level-II certificate in the relevant NDT methodology (RT/UT)			

Notes: (for Table on previous page)

1. For Mechanical, Composite, EPC or EPCC Contracts of value more than Rupees 20 crores, the Lead QA/QC Engineer shall be a qualified internal auditor for ISO 9001.
2. CVs of key construction personnel proposed to be deployed shall be submitted to Owner/Engineer-in-Charge prior to their mobilization at site. The mobilization of key personnel shall be done at site subject to prior approval of their CVs by Owner/Engineer-in-Charge.

2. PENALTY FOR NON - MOBILIZATION OF KEY CONSTRUCTION PERSONNEL

Penalty for non-mobilization per day per person after the contractual mobilisation period / mobilisation schedule agreed during Kick off Meeting / jointly agreed between contractor and PMC / owner based on front availability etc.

- Rs. 5000/- for Resident Construction Manager/ Resident Engineer/ Site-in-Charge;
- Rs. 3000/- for Lead QA/QC Engineer, Lead Planning Engineer, Warehouse In-charge Lead Discipline Engineer, Lead Welding/ NDT Engineer and the Quantity Surveyor
- Safety Officer (As per HSE Specification)

Notes: (for Penalty clauses)

a) All intervening off days (Sundays etc.) and holidays will be counted for levy of penalty

b) Mobilised personnel shall not be demobilised till contractual completion or based on consent of Engineer-in-Charge else penalties as above shall be applied.

c) Total of above penalties shall not exceed 3% of the contract value.

d) The above penalties are over & above all other contractual provisions with respect to penalties.

CONDITIONS FOR ISSUE AND RECONCILIATION OF MATERIALS

[ANNEXURE – XI TO SPECIAL CONDITIONS OF CONTRACT]

सामग्री निर्गम एवं रिकोन्सिलिएशन के लिए शर्तें

CONDITIONS FOR ISSUE AND RECONCILIATION OF MATERIALS

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
1	24.01.2014	Reaffirmed & Issued as Standard	SM	DJ	RKD	SC
0	21.05.2008	Doc. No. 6-10-0001 Rev 0 has been revised and issued as Standard	AS	GKI	SCB	VC

Abbreviations:

MS	:	Mild Steel
OFC	:	Optical Fibre Cable
OTDR	:	Optical Time Domain Report

Construction Standards Committee

Convenor: Sh. RK Das, ED (Construction)

Members : Sh. M Deshpande, GM (Construction)
Sh. M Natarajan, GM (C&P)
Sh. Rakesh Nanda, GM (Piping)
Sh. S Mukherjee, DGM (Construction)
Sh. Janak Kishore, DGM (Projects)
Sh. D Jana, AGM (Construction)

CONTENTS

1.0 CONDITIONS FOR ISSUE OF MATERIALS

Whenever any material is issued by Owner, following conditions for issue of material in addition to other conditions specified in the contract shall be applicable:

1.1 Necessary indents shall be raised by the Contractor as per procedure laid down by the Engineer-in-Charge from time to time, when the materials are required for incorporation in permanent works.

1.2 Materials shall be issued only for permanent works and not for temporary works, enabling works etc. unless specifically approved by the Engineer-in-Charge.

1.3 The Contractor shall bear all other cost including lifting, carting from issue points to work site/Contractor's store, custody and handling etc. and return of surplus/serviceable scrap materials to Owner's storage points to be designated by the Engineer-in-Charge. No separate payment for such expenditure shall be made.

1.4 No material shall be allowed to be taken outside the plant without a gate pass.

1.5 The Contractor shall be responsible for proper storage, preservation and watch & ward of the materials.

2.0 RETURN OF UNUSED MATERIAL/ SCRAP

2.1 All unused/scrap materials shall be the property of the Owner and shall be returned in good and acceptable condition category wise by the Contractor at his own cost to Owner's Store(s).

2.2 No credit shall be given to the Contractor for return of scrap. The Contractor should quote the rates accordingly. Contractor shall make his own arrangements for weighing the cut offs to be returned to Owner's stores.

2.3 In case the Contractor fails to return unused materials/ accountable scrap, then recovery for such quantity of materials, not returned by the Contractor shall be affected at following penal rates from the Contractor's bills or from any other dues of the Contractor to the Owner:

S. No.	Material		Penal Rates
1.	(a)	Penal rate for non return of accountable scrap	Issue Rate + 25% or Landed Rate + 25% (in case issue rate are not indicated in the contract)
	(b)	Penal rate for return of serviceable materials in excess of permitted % allowances	
	(c)	Penal rate for issuance of unplanned OFC jointing kits	
2.	(a)	Penal rates for non return of Unused material and or penal rate for generating scrap in excess of permitted % allowances	Twice the Issue Rates or Twice the Landed Rates (in case Issue Rates are not indicated in the Contract)
	(b)	Penal rate for using excess amount of materials like cement than permitted % allowances	

NOTE : 1) Landed Rate shall be arrived from the latest Purchase Order of respective material received at site by Owner/EIL.

2) In case more stringent penal rates have been indicated elsewhere in the Contract (based on Project requirement), the same shall supersede the above rates.

3.0 CEMENT

3.1 Cement as received from cement Manufacturer/Stockists shall be issued to the Contractor. The theoretical weight of cement in each bag for issue purpose shall be considered as 50 Kg or 20 bags per MT. However, cement bags weighing upto 4% less shall be accepted by the Contractors and charged for as full bag.

3.2 The Contractor is required to submit the design mix for different grades of concrete, keeping in view the requirements stipulated in IS:456 and IS 10262, specifically regarding durability, slump and water cement ratio and specific gravity of materials brought to site as analyzed in the laboratories. The design shall be based upon absolute volume method and theoretical consumption of cement shall be worked out on this basis. For other than concrete items, the coefficients for consumption of cement shall be adopted as per CPWD practice.

3.3 The permissible variation between Cement actually used on the job and theoretical consumption worked out on the basis stipulated in above para 3.2 and as determined by Engineer-in-Charge shall be 3% (Three percent only).

If the actual consumption is more than 103% of the theoretical consumption, then recovery at the penal rates for the quantity of cement beyond the limit of 103% of theoretical consumption shall be affected as per clause 2.3 above.

3.4 Unused quantity of cement shall be returned by the Contractor to the Owner's stores in good condition only.

3.5 The Contractor shall maintain a good store for storing cement issued to him. The flooring of the storage house, the clearances of cement bags from the side walls/ floor & stack height etc. shall be as instructed by the Engineer-in-Charge.

3.6 The contractor shall maintain a Cement Register in prescribed format and update the entries on daily basis.

3.7 The cement store shall be offered for inspection and verification by the Engineer-in-Charge or his authorized representative at any time when the Engineer-in-Charge feels the need to do so.

3.8 Empty cement bags shall be the property of the Contractor and shall have to be disposed off by him.

4.0 REINFORCEMENT BARS / STRUCTURAL STEEL / PLATES

4.1 The scrap allowance for the reinforcement bars/structural steel including steel plate issued by the Owner, shall be total 3% (2.5% accountable and 0.5% unaccountable) of the actual consumption as incorporated in the works.

4.2 All serviceable reinforcement bars/structural steel/steel plates shall be issued in available length/shapes/sizes and no claims for extra payment on account of issue of non-standard lengths/shapes/sizes and bending etc. shall be entertained. Reinforcement bars and structural steel shall be issued on weighment basis as per normal warehousing practice. In exceptional circumstances, the reinforcement bars/ structural steel, if issued on linear measurement, the IS coefficients for unit weight shall be considered. For the purpose of billing and accounting, only linear measurements shall be taken and weight shall be calculated as per IS coefficients in three decimals. The difference in unit weight as per IS and actual as issued, if any, shall be

to Contractor's account and Contractor is deemed to have considered the same at the time of bidding.

4.3 Reinforcement bars/structural steel/steel plates shall be issued only for those items where Owner's supply has been specifically mentioned in Schedule of Rates/ Scope of Supply. The storage of these items shall be done in such a way so as to avoid rusting/ damage to any kind to the materials.

4.4 All reinforcement bars/structural steel (except M.S. Plates) in length of 2 meters and above shall be considered as serviceable materials provided the material is in good and acceptable condition. Reinforcement bars/structural steel section (except M.S. Plates) in lengths less than 2M shall be treated as scrap.

The contractor shall strive to avoid generation of cut pieces of length 2m and above, as far as practicable, by effectively planning & executing the construction works.

4.5 For the purpose of accounting of the plates, all plates measuring not less than 1 Sq.m in area and having any dimensions not less than 200mm when returned to Owner's store, shall be considered as serviceable material. All other pieces shall be treated as wastage/scrap. The Contractor shall prepare a plate cutting diagram in such a way that the minimum scrap is generated. Also the cut plates should be used at proper places to reduce the scrap.

4.6 The serviceable cut pieces as mentioned in 4.4 & 4.5 above shall be considered as unused material for reconciliation purpose.

4.7 Material appropriation shall be done and wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

5.0 PIPING MATERIALS

5.1 All serviceable pipes shall be issued in available lengths/shapes and no claims for extra payments on account of issue of non-standard length & shape shall be entertained. Pipes shall be issued on linear measurement basis. All valves, flanges, fittings etc. shall be issued on number(s) basis. Contractor shall store the materials in such a way so as to avoid mixing of different types of material and shall maintain complete identification and traceability at all times.

5.2 The scrap allowance for pipes issued by the Owner shall be 3% (2.5% accountable + 0.5% unaccountable) of the actual consumption as incorporated in the works.

5.3 All pipes in length of 2 meters and above shall be considered as serviceable material provided the material is in good and acceptable condition and has clear identification and traceability (Manufacturer's name, heat number/batch number and test certificates). Pipes in lengths less than 2M shall be treated as scrap.

The contractor shall strive to avoid generation of cut pieces of length 2m and above, as far as practicable, by effectively planning & executing the construction works.

5.4 All unused/scrap pipes, valves, flanges, forged fittings like elbows, reducers tees shall be returned by the Contractor category wise duly cleaned, greased and spec. marked at his own cost to Owner's stores.

5.5 Material appropriation shall be done and wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

6.0 EQUIPMENTS

Various equipment/materials intended for the installation shall be received by Owner in unpacked, skid mounted, crated, packed or loose condition and shall be stored in the warehouses and open yards. In general, materials shall be issued to the Contractor in 'as received' condition. It shall be the Contractor's responsibility to draw, load and transport all materials from Owner's designated places of issue to the point of installation and return all packing materials like steel frames, wooden boxes/scrap etc. to Owner's stores.

All materials supplied by the Owner shall be duly protected by the Contractor at his own cost with appropriate preservative like primer, lacquer coating, grease etc. as required.

7.0 CABLES

Appropriation of cables shall be done as follows:

7.1 All the surplus and serviceable cables out of the cables quantity(ies) issued by the Owner to the Contractor shall be returned by the Contractor to the Owner's store in good condition and as directed by the Engineer-in-Charge.

7.2 The Contractor shall be allowed a cutting/wastage allowance (accountable scrap) of 1.5% for power cables and 3% for the control cables. This cutting/wastage allowance shall be computed on the length of cables actually laid, measured and accepted.

7.3 All cables being returned to store should carry Aluminium sheet tags indicating the size & type of cable. Cables of less than 15 meters length shall be termed as scrap. Cables of lengths 15M and above shall be termed as serviceable material & shall be returned size wise and category wise to the Owner's store in wooden drums. Cables of serviceable length being returned to stores in drum(s) shall be accepted only after Megger value continuity test and physical measurement is carried out by the Contractor to the satisfaction of Engineer-in-Charge. Empty cable drums and major packing material (as decided by Engineer-in-charge) shall be Owner's property and shall be returned to Owner's Store/designated place without any additional cost.

The contractor shall strive to avoid generation of cut pieces of length 15m and above, as far as practicable, by effectively planning & executing the construction works.

7.4 While carrying out material appropriation with the Contractor, the above points shall be taken into account. All serviceable materials returned by the Contractor (size wise & category wise) shall be deducted from the quantity(ies) issued to the Contractor for the respective sizes. Scrap generated for power cable and control cable shall also be returned to Owner's store on Lot basis. Wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

8.0 LINE PIPES

8.1 All bare/ coated line pipes as per Line Pipe specifications shall be issued on linear measurement basis. The serviceable line pipes shall be issued in available lengths and shapes and no claim for extra payment on account of issue of non-standard length and shape shall be entertained. Contractor shall store and maintain the line pipes in proper manner to avoid mixing of different classes of pipes. Contractor shall maintain complete identification and traceability at all times. All cut pieces when returned to Owner's storage points after beveling, shall be considered as serviceable material provided:

a) Corrosion Protection Coating is intact.

b) Pipe pieces have pipe specifications, manufacturer's logo/name and heat number duly authenticated with hard stamp of the authorized inspector as per approved procedure.

All cut pieces of pipes measuring less than 2 M shall be treated as wastage/scrap.

The contractor shall strive to avoid generation of cut pieces of length 2m and above, as far as practicable, by effectively planning & executing the construction works.

8.2 For the purpose of accounting of bare/ coated line pipes, following allowances shall be permitted:

a)	Unaccountable wastage	
	- upto 100 Km	0.1%
	- 101 to 500 Km	0.07%
	- beyond 500 Km	0.05%
b)	Scrap (All cut pieces of pipes measuring less than 2 Meter)	0.25%
c)	Serviceable materials (All cut pieces of pipe measuring 2 Meter and above)	0.5%

The percentage allowance shall be accounted on the basis of pipe book chainage for main pipeline.

8.3 Material appropriation shall be done and wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

9.0 OPTICAL FIBRE CABLE

9.1 For the purpose of accounting of optical fibre cable, all cut pieces measuring in length of 40 m and above when returned to Owner's storage points shall be treated as serviceable materials. All cut pieces of cable measuring less than 40 M shall be treated as scrap.

For the purpose of accounting of OFC (Optical Fibre Cable) following allowances shall be permitted:

a)	Unaccountable wastage	0.5%
b)	Scrap (All cut pieces of cables measuring less than 40 M)	0.25%
c)	Serviceable material (measuring 40m to 750m)	0.25%

The percentage allowance shall be accounted on the basis of pipe book chainage for main pipeline.

Cables returned in original drum (measuring 750m and above) with Optical Time Domain Report (OTDR) shall be considered as unused material.

9.2 The contractor shall strive to avoid generation of cut pieces of length 40m and above, as far as practicable, by effectively planning & executing the construction works.

9.3 Material appropriation shall be done and wherever applicable, the recovery at penal rates as per clause 2.3 above shall be affected from the contractor.

10.0 OFC JOINTING KITS

The Contractor shall make a schedule for use of Cable jointing kits and get the same approved from Engineer-in-charge. The quantity mentioned in this schedule shall be termed as 'planned' usage quantity which shall be issued to the Contractor. However, any jointing based on site requirements as decided by Engineer-in-charge shall be included in planned quantity.

Any unplanned jointing required to be carried out by the Contractor due to reasons not attributable to Owner/EIL shall be issued from spare quantity, if available with Owner. Such unplanned OFC Jointing Kits shall be charged from the contractor at penal rates as per clause 2.3 above.

SPECIFICATION FOR DOCUMENTATION REQUIRMENTS FROM CONTRACTORS

[ANNEXURE – XII TO SPECIAL CONDITIONS OF CONTRACT]

ठेकेदारों से प्रलेखन अपेक्षाओं हेतु विनिर्देश

SPECIFICATION FOR DOCUMENTATION REQUIREMENTS FROM CONTRACTORS

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convener	Standards Bureau Chairman
					Approved by	
1	12.03.15	General Revision	QMS Standards Committee	QMS Standards Committee	MPJ	SC
0	04.06.09	Issued as Standard Specification	QMS Standards Committee	QMS Standards Committee	SCT	ND

Abbreviations:

DCI	-	Document Control Index
eDMS	-	Electronic Document Management System
FOA	-	Fax of Acceptance
HOD	-	Head of Division / Department
IC	-	Inspection Certificate
IRN	-	Inspection Release Note
ITP	-	Inspection and Test Plan
LOA	-	Letter of Acceptance
MOU	-	Memorandum of Understanding
QMS	-	Quality Management System
URL	-	Universal Resource Locator

QMS Standards Committee

Convener: Mr. M.P. Jain

Members:
Mr. A.K. Chaudhary (Insp.)
Mr. S.K. Kaul (C&P)
Mr. R.K. Trivedi (Engg.)
Mr. Ravindra Kumar (Const.)
Mr. Tilak Raj (Projects)
Mr. Vinod Kumar (CQA)

CONTENTS

Attachments

1.0 SCOPE

This specification establishes the Documentation Requirements from Contractors

All documents/data against the Tender / Contract shall be developed and submitted to EIL/Owner by the contractor for review / records, in line with this specification.

2.0 DEFINITIONS

2.1 Contractor

For the purpose of this specification, the word "CONTRACTOR" means the person(s), firm, company or organization who is under the process of being contracted by EIL / Owner for delivery of some products and services. The word is considered synonymous to bidder, supplier or vendor.

2.2 Owner

Owner means the owner of the project for which services / products are being purchased and includes their representatives, successors and assignees.

3.0 REFERENCE DOCUMENTS

6-78-0001	Specification for Quality Management System Requirements from Bidders

4.0 DOCUMENTATION REQUIREMENTS

4.1 Documents/Data to be submitted by the Contractor

4.1.1 The contractor shall submit the documents and data against the Tender/Contract as per the list specified in respective Tender/Contract.

4.1.2 Review of the contractor drawings by EIL would be only to review the compatibility with basic designs and concepts and in no way absolve the contractor of his responsibility/contractual obligation to comply with Tender/Contract requirements, applicable codes, specifications and statutory rules/regulations. Any error/deficiency noticed during any stage of manufacturing/execution/installation shall be promptly corrected by the contractor without any extra cost or time, whether or not comments on the same were received from EIL during the drawing review stage.

4.1.3 Unless otherwise specified, submission of documents for Review/Records shall commence as follows from the date of Fax of Intent / Letter of Intent/ Fax of Acceptance (FOA)/ Letter of Acceptance (LOA):

QMS	- 1week
Drawing/Document Control Index	- 2weeks
Other Documents/Drawings	- As per approved Drawing/Document Control Index/Schedule

4.1.4 Documents as specified in Tender/Contract are minimum requirements. Contractor shall submit any other document/data required for completion of the job as per EIL/Owner instructions.

4.2 Style and Formatting

4.2.1 All Documents shall be in ENGLISH language and in M.K.S System of units.

4.2.2 Before submitting the drawings and documents, contractor shall ensure that the following information are properly entered in each drawing:

Tender Number
Name of Equipment / Package
Equipment / Package Tag No.
Name of Project
Owner
Main Contractor (if work is sub-contracted)
Drawing / Document Title
Drawing / Document No.
Drawing / Document Revision No. and Date

4.3 Review and Approval of Documents by Contractor

4.3.1 The Drawing/Documents shall be reviewed, checked, approved and duly signed/stamped by contractor before submission. Revision number shall be changed during submission of the revised contractor documents and all revisions shall be highlighted by clouds. Whenever the contractor require any sub- contractor drawings to be reviewed by EIL, the same shall be submitted by the contractor after duly reviewed, approved and stamped by the contractor. Direct submission of sub-contractor's drawings without contractor's approval shall not be entertained.

4.4 Document Category

4.4.1 Review Category

Following review codes shall be used for review of contractor Drawings/Documents:

Review Code 1	-	No comments. Proceed with manufacture/ fabrication/ Construction as per the document.
Review Code 2	-	Proceed with manufacture/ fabrication/ Construction as per commented document. Revised document required
Review Code 3	-	Document does not conform to basic requirements as marked. Resubmit for review
R	-	Document is retained for Records. Proceed with manufacture/ fabrication
V	-	Void

4.5 Methodology for Submission of Documents to EIL/Owner

4.5.1 Document Control Index (DCI)

Contractor shall create and submit Document Control Index (DCI) for review based on PO/PR/MR along with schedule date of submission of each drawing/document on EIL eDMS. The DCI shall be specific with regard to drawing/document no. and the exact title. Proper sequencing of the drawings/documents should be ensured in schedule date of submission.

4.5.2 **Submission of Drawings/Documents**

Drawings/documents and data shall be uploaded on the EIL eDMS Portal. The detail guidelines for uploading documents on EIL eDMS Portal are available on following URL

http://edocx.eil.co.in/vportal

4.5.3 **Statutory Approvals**

Wherever approval by any statutory body is required to be taken by Contractor, the Contractor shall submit copy of approval by the authority to EIL.

4.5.4 **Details of Contact Persons of Contractor**

After placement of order contractor shall assign a Project Manager for that order. The details are to be filled online through the portal. The details include e-mail address, mailing address, telephone nos., fax nos. and name of Project Manager. All the system generated emails pertaining to that order shall be sent to the assigned Project Manager.

4.5.5 **Schedule and Progress Reporting**

Contractor shall submit monthly progress report and updated procurement, engineering and manufacturing status (schedule vs. actual) every month. First report shall be submitted within 2 weeks from FOA/LOA. In case of exigencies, EIL/Owner can ask for report submission as required on weekly/fortnightly/adhoc basis depending upon supply status and contractor shall furnish such reports promptly without any price implication. Format for progress report shall be submitted by the contractor during kick off meeting or within one week of receiving FOA/LOA, whichever is earlier.

4.5.6 **Quality Assurance Plan/Inspection and Test Plan**

Inspection and test plans attached if any, to the tender are generic and indicative only. Immediately after receipt of the order, contractor shall submit within one week of receiving FOA/LOA, job specific ITPs based on the indicative ITPs. Further, contractor shall also submit Quality Assurance Plan for project activities in the scope of contract, starting from manufacturing to handing over/ commissioning, these plans shall cover/identify the activities, relevant procedure, if any, code of conformance, resources for performance and checking/monitoring, approval requirements and authority, records to be generated and audit scope by EIL/Owner.

For EPCC/LSTK/Package contracts, the contractor shall prepare a list of items/ equipments and their inspection categorization plans for all items included in the scope of supply immediately after receipt of order and obtain approval for the same from EIL. The items shall be categorized into different categories depending upon their criticality for the scope of inspection of TPIA and/or EIL.

4.5.7 **Inspection Release Note (IRN)/ Inspection Certificate (IC)**

Contractor shall ensure that all documents viz. documents reviewed, manufacture's test certificate etc., mentioned in Inspection Release Note(IRN), issued by EIL/third party against the materials supplied by contractor., are sent to EIL along with the IRN.

IRN/ IC shall be issued by EIL Inspector/ third party inspection agency only after all the drawings/documents as per DCI are submitted and are accepted under review code-1 & code R. Material/Equipments dispatch from contractor's/sub vender's works shall not commence till above condition is met.

Note: Non fulfilling above requirement shall result into appropriate penalty or with-holding of payment as per conditions of Tender/Contract.

4.6 Final Documentation

4.6.1 As built Drawings

Shop/Site changes made by contractor after approval of drawings under 'Code 1' by EIL and deviations granted through online system , if any, shall be marked in hard copies of drawings which shall then be stamped 'As-built' by the contractor. These 'As-built' drawings shall be reviewed and stamped by EIL Inspector/Site engineer/TPIA also. Format for completeness of final documents (Format No. 3-78-0004) is attached with this specification. Contractor shall prepare scanned images files of all marked – up 'As – built' drawings. Simultaneously contractor shall incorporate the shop/site changes in the native soft files of the drawings also.

4.6.2 As built Final Documents

As built final documents shall be submitted as listed in Tender/Contract.

4.6.3 Packing/Presentation of Final Documents

Final Documents shall be legible photocopies in A4, A3 size only. Drawings will be inserted in plastic pockets (both sides transparent, sheet thickness minimum 0.1 mm) with an extra strip of 12 mm wide for punching so that drawings are well placed.

Final Documentation shall be bound in hard board plastic folder(s) of size 265 mm x 315 mm ($10^1/_2$ inch x $12^1/_2$ inch) and shall not be more that 75 mm thick. It may be of several volumes and each volume shall have a volume number, index of volumes and index of contents of that particular volume. Where numbers of volumes are more, 90mm thickness can be used. Each volume shall have top PVC sheet of minimum 0.15 mm thick duly fixed and pressed on folder cover and will have 2 lever clips. In case of imported items documents, 4 lever clip shall also be accepted. All four corners of folders shall be properly metal clamped. Indexing of contents with page numbering must be incorporated by contractor. Spiral/Spico bound documents shall not be acceptable. As mentioned above, books should be in hard board plastic folders with sheets punched and having 2/4 lever clips arrangement.

Each volume shall contain on cover a title block indicating Tender No., name of project, name of customer, package equipment tag no. & name (if applicable). Each volume will have hard front cover and a reinforced spine to fit thickness of book. These spines will also have the title printed on them. Title shall include also volume number (say 11 of 15) etc.

4.6.4 Submission of Soft copies

Contractor shall submit to EIL, the scanned images files as well as the native files of drawings/documents, along with proper index.

In addition to hard copies, contractor shall submit electronic file (CD-ROM) covering soft copies of all the final drawings and documents, all text documents prepared on computer, scanned images of all important documents (not available as soft files), all relevant catalogues, manuals available as soft files (editable copies of drawings/text documents, while for catalogues/manuals/proprietary information and data PDF files can be furnished).

All the above documents shall also be uploaded on the EIL eDMS portal.

4.6.5 Completeness of Final Documentation

Contractor shall get the completeness of final documentation verified by EIL/TPIA and attach the Format for Completeness of Final Documentation (Format No. 3-78-0004) duly signed by EIL or TPIA as applicable to the document folder.

COMPLETENESS OF FINAL DOCUMENTATION

Name of Supplier/Contractor	:
Customer	:
Project	:
EIL's Job No.	:
Purchase Order No./ Contract No.	:
Purchase Requisition No./ Tender No.	:
Name of the Work/ Equipment	:
Tag. No.	:
Supplier's/ Contractor's Works Order No.	:

Rev. No. :

Certified that the Engineering Documents/ Manufacturing & Test Certificates submitted by the supplier are complete in accordance with the Vendor Data Requirements of Purchase Requisition.

Signature	:	Signature	: .....
Date	:	Date	: .....
Name	:	Name	: .....
Designation	:	Designation	: .....
Department	:	Department	: .....

Supplier/Contractor

EIL/TPIA

अनुमोदित/APPROVED
हस्ताक्षर/Sign: .....
नाम/Name: M.P. JAIN
दिनांक/Date: 12-3-2015

VENDOR LIST FOR SUPPLY OF STEEL & CEMENT

[ANNEXURE – XIV TO SPECIAL CONDITIONS OF CONTRACT]

Annexure-I

Contract Clause for Structural Steel

1. Structural steel shall be procured from manufacturers having valid BIS license. Structural steel shall conform to IS:2062 & IS:808 and will meet the technical specifications of the contract. This shall be subject to establishment of correlation with manufacturer's MTC for conformance to the applicable code.

2. In case of non availability of Structural steel from the listed Manufacturer (SAIL, TISCO, RINL, ESSAR, JINDAL, JSIW steel & other listed Manufacturer in the CPWD approved list), Engineer In Charge may accord Project specific approval to the Contractor to use structural steel procured from other reputed manufacturer of structural steel fulfilling the Technical requirements. However, such approvals shall be considered subject to the contractor offering rebate as per following:

   Rebate rate per MT shall be difference in Base Price for Structural Steel as per the Memorandum issued by CPWD corresponding to the period of procurement of structural steel by contractor (sample Memorandum attached) and the price of Structural Steel as per the tax invoice of the material procured by contractor from other than listed Manufacturer.

   Note :

   a) For working out the rebate rate, price of structural steel as per tax invoice exclusive of taxes & duties shall be considered.

   b) The sample memorandum of CPWD mentioned above shall be applicable irrespective of the geographical locations.

3. In addition to establishment of traceability with manufacturer's MTC, for structural steel procured from other than listed manufacturers, for each category/size of steel procured, one sample from every 50 Tons or part there of shall be drawn and tested.

4. In case of assorted lot, sample shall be drawn from each lot, irrespective of lot size.

Annexure - I

CONTRACT CLAUSE FOR ACCEPTANCE OF CEMENT MANUFACTURERS.

1. Cement manufacturers having valid BIS certificate and listed in the BIS website as on date of procurement of cement shall be allowed for supply of cement and contractor shall procure cement from them with prior intimation to Engineer-in-charge.

2. **Tests after receipt of cement at site:** Each batch of cement (week wise as mentioned on cement bags) supplied by the contractor after delivery at site shall be subjected to the tests and analysis required by the relevant Indian Standard Codes. The contractor shall carry out and bear the cost of all tests and analysis to ensure quality of cement before using in actual works.

9/4/15

Annexure-III

Approved manufacturers for TMT Bars and Methodology for obtaining rebate

1.1 List of Approved Manufacturer of TMT bars :

Sl No	Name of Company	Product
1.	SAIL	All types of bars having validity of BIS approval on the date of ordering.
2.	RINL	All types of bars having validity of BIS approval on the date of ordering.
3.	TATA STEEL LTD (TSL)	All types of bars having validity of BIS approval on the date of ordering.
4.	JINDAL STEEL & POWER LIMITED	All types of bars having validity of BIS approval on the date of ordering.
5.	JSW STEEL LIMTED	All types of bars having validity of BIS approval on the date of ordering.

1.2 CONTRACT CLAUSE FOR OBTAINING REBATE ON TMT REINFORCEMENT BARS

In case of non availability of steel from the listed Producers as above and forming part of the contract, Engineer In Charge may accord Project specific approval to the Contractor to use TMT reinforcement bars procured from other reputed producers of TMT bars subjected to fulfilling Technical requirements. However, such approvals shall be considered subject to the contractor offering rebate as per following:

Difference in Base price of TMT reinforcement bars procured from "Primary Manufacturer" (Listed) & "Secondary Manufacturer" (Non Listed) shall be as per Memorandum issued by CPWD (Sample Memorandum attached for reference and available on CPWD website) & shall be considered as rebate rate per MT. The Memorandum of CPWD as applicable on the date of receipt of material at site shall be considered for working out the rebate rate. Base price of TMT bars issued by CPWD shall be applicable for all types/grade of reinforcement bars. The sample memorandum of CPWD mentioned above shall be applicable irrespective of the geographical locations.

1.3 TECHNICAL REQUIREMENTS APPLICABLE TO TMT BARS

- Availability of valid BIS license shall be verified from BIS website.
- Availability of valid ISO Certification from recognized body.
- Inspection reports of the products from the reputed third party inspection like DNV, LRS, CEIL, TU, BV, etc.
- Infrastructural and testing facilities with methodology of quality control of products.
- List of products being manufactured in the plant.
- The contractor shall furnish documentary evidence towards non availability of TMT bars from the listed suppliers
- Materials supplied by producers having Integrated steel plants shall have capacity of production of crude steel of 0.5 million tons per annum
- The producers must have valid license from BIS to produce High Strength Deformed (HSD) rebars / TMT bars conforming to IS: 1786. In addition to BIS license for HSD rebars, the producers must have valid license from any of the firms Tempcore, Thermex,

Evcon Turbo & Turbo Quench to produce Thermo-Mechanically Treated (TMT) rebars and shall conform to the specifications laid by these firms for particular grade of TMT rebars.

- Steel material procured shall meet the provisions of IS: 1786 for respective grade of TMT rebars like Fe500, Fe500D, etc. and shall preferably have IS mark on them.
- The contractor shall furnish manufacturer's test certificates to the Engineer-in-Charge in respect of all supplies of rebars brought by him to site for incorporation in permanent work.
- In addition to verification of delivery orders and delivery challans of the steel manufacturer, samples shall be taken and got tested by the Engineer-in-Charge in an approved test house duly witnessed by Reputed third party agency like DNV, LRS, CEIL, TU, BV, etc. as per the provisions laid down in EIL Specifications/BIS codes. The sample size shall be as under in case of TMT bars.

Size of Bar	For Consignment below 100 MT	For Consignment above 100 MT
Under 10 mm dia bars	One sample for each 25 MT or part thereof	One sample for each 40 MT or part thereof
10mm to 16 mm dia bars	One sample for each 35 MT or part thereof	One sample for each 45 MT or part thereof
Over 16 mm dia bars	One sample for each 45 MT or part thereof	One sample for each 50 MT or part thereof

The cost for all the tests and the test certificates shall be borne by the contractor. In case the test results indicate that the rebars arranged by the contractor does not conform to the specifications, the same shall stand rejected as per discretion of EIC, and shall be removed immediately from the site of work by the contractor at his own expense and without any claim for compensation due to such rejection

CENTRAL PUBLIC WORKS DEPARTMENT

OFFICE MEMORANDUM

DG/10 CA/13

ISSUED BY AUTHORTY OF DIRECTOR GENERAL, CPWD

NIRMAN BHAWAN, NEW DELHI DATED: 10.06.2014

Subject: Indices for operation of clause 10-CA in contract forms PWD 7 & 8 for the month of MAY- 2014

MEMORANDUM

Sl. No.	Material	May 2014	
		Base Price per MT	All India Price Index (Base Oct. 12=100)
1.	Cement (OPC)	6100.00	108.93
	Cement (PPC)	6040.00	-
2.	Reinforcement Bars TMT 500-12MM		
i)	Primary Manufacturer	48642.00	91.24
ii)	Secondary Manufacturer	44500.00	101.02
3.	Structural Steel	48510.00	98.89

Note: The above indices are in accordance with O M No DGW / CON/237 dtd. 14/10/08, 237A dtd 31/12/2008, and amended time to time. These base prices are applicable for Delhi, Faridabad, Gurgaon, Ghaziabad and Noida.

Executive Engineer (TAS)-II

No: 137/SE (TAS)/10CA/2014-15/ 2411-E

Copy to: 1) PPS to DG, CPWD, PS to all ADGs, CPWD.
2) CPWD website http://cpwd.gov.in".

10/6/14
Executive Engineer (TAS)-II

APPROVAL OF SUB-CONTRACTOR

[ANNEXURE – XV TO SPECIAL CONDITIONS OF CONTRACT]

APPROVAL OF SUB-CONTRACTOR

1) NAME OF MAIN CONTRACTOR :_____

2) NAME OF WORK, LOCATION :_____ _____

3) NAME OF PROPOSED SUB-CONTRACTOR :_____

4) SCOPE OF WORK PROPOSED TO BE SUB-CONTRACTED (BRIEF) :_____

5) ESTIMATED VALUE OF THE PROPOSED WORK TO BE SUB-CONTRACTED (INR):_____

6) QUALIFYING CRITERIA FOR SUB-CONTRACTOR:

For Civil-Structural & Architectural / Electrical / Instrumentation Works (as applicable):

i) Similar Work experience in Civil-Structural & Architectural / Electrical / Instrumentation Works:

Completed one Contract of 80% or two Contracts each of 50% or three Contracts each of 40% of estimated value of proposed work to be sub-contracted, in preceding

ii) Annual Turnover

Not less than 100% of estimated value of proposed work to be sub-contracted, in any one of the preceding three years.

7) EXPERIENCE AND FINANCIAL DETAILS OF PROPOSED SUB-CONTRACTOR:

i) Contract Value of similar work executed (as evidenced by work Order & Completion Certificate):

During the last 7 years ending last day of the month pervious to the one in which applications are invited.

ii) Maximum Annual Turnover during last 3(three) years (as evidenced by Balance Sheets) :

8) CRITERIA FOR QUALIFICATION OF SUB-CONTRACTOR:

i) Sl.No. 7(i) $\geq$ 6 (i) : YES / NO

ii) Sl.No. 7 (ii) $\geq$ 6 (ii) YES / NO

9) Based on above information, we M/s_____ (Name of Main Contractor) propose M/s._____ (Name of proposed sub-contractor) as our sub-contractor for the above mentioned works. We understand that notwithstanding above approval, we shall remain fully responsible for the performance of the said sub-contractor and any failure of the sub-contractor shall not absolve/relieve us of our responsibility to complete the works as per the terms and conditions of the Contract.

NOTE: Bidders to fill all the details in the above proforma. Further Bidder shall also fill-in the details at Sl.No.5 above based on the estimated value of the proposed work to be subcontracted.

(STAMP & SIGNATURE OF CONTRACTOR)

10) QUALIFICATION STATUS (TO BE STAMPED BY OWNER):

SAFETY PARAMETERS TO BE FOLLOWED BY CONTRACTOR

[ANNEXURE – XVI TO SPECIAL CONDITIONS OF CONTRACT]

Annexure-XVI to SCC

SAFETY PARAMETERS TO BE FOLLOWED BY CONTRACTOR MOBILIZED AT SITE

You are, hereby, being given this Contract for starting work in BPCL premise with BPCL motto of "Safety First, Safety Must".
A brief of safety precautions to be taken by you and your workforce including sub-contractors is given below, which need to be always maintained by you as a responsible business associate of BPCL.

- The Contractor and his workers shall abide by all security / Safety rules / regulations in force at locations and the laws, bye laws, and statues of Government, Semi-Government and other local authorities such as requirements / liability under enactment like The Minimum Wages Act 1948, The Factories Act 1948, The Contract Labor (Regulations & Abolition) Act 1970, The building & other construction Worker Act 1948, The Employees State Insurance Act 1948, The Employees Provident Funds & Miscellaneous Provision Act 1952, Labor license in case of more than 20 contract labors at a time working at site and the Company shall stand indemnified against any claims on these scores.
- Site Organogram /statutory registers are to be maintained. Contractor has to follow work permit system.
- To arrange safety and security of manpower/materials deployed at site. To keep First aid and services of Doctor on temporary/ call basis.
- Fully participate in safety talks, safety committee meetings, tool Box Meeting, safety workshop and safety audit being carried out at site by BPCL.
- To implement 100% usage of Personal Protective Equipments inside the working premises without exception.
- The Contractor shall arrange for at least one competent supervisor to be present at site at all times during the progress of the work and give their name, qualification, and experience before starting of job.
- The Contractor and his workers shall strictly abide by "No Smoking" and other petroleum regulations on the premises.
- Work shall be carried out in presence of authorized supervisor.
- The Contractor to provide following facilities at site at his own cost ::
  i. Arrangement for first aid
  ii. Arrangement for clean drinking water
  iii. No men / materials not covered by valid passes/identification proof shall be permitted within project area and no material / equipment shall be permitted to be taken out of the project area unless authorized by the concerned authorities of the project.
- Electrical Works: Contractor should have valid/renewed electrical license and supervisor`s license to carry out electrical job. A copy of the same to be submitted to Site engineer prior to start of job.
- Hot work is to be carried out only at earmarked area with safety precautions and after obtaining hot work permit. Other works i.e. Excavation/ Work at height/ Electrical work will also be carried out after issuance of Work permit only.
- Proper barricades should be erected by the contractor depending on type of job.
- Scaffolding should be done as per standard practice as per IS 1896 (Part I & II).
- Excavation and trenching work shall be done as per technical specification and following safety guidelines mentioned in Notice Inviting Tender.
- Wherever work has to be carried out inside tank/ hazardous area, necessary protection need to be taken and proper screening of the area to be done. Explosive meter /mask/ gloves as required to be used while carrying out the job and to be done strictly in presence of BPCL representative
- To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by contractor shall be opened to inspection by site –in –charge.
- Contractor should submit PF & ESI code of contract labor before starting works.
- Contractor shall submit photo ID card along with Government issued photo ID card of contract labors working under him.

Please note that the above details are indicative and all contractors must follow and implement safety instructions based on Contract Document and regular instructions received from Site Engineers and Project Leaders.

CALIBRATION REQUIREMENTS OF MONITORING AND MEASURING DEVICES AT CONSTRUCTION SITE

[ANNEXURE – XVII TO SPECIAL CONDITIONS OF CONTRACT]

निर्माण स्थलों पर निगरानी और मापने के उपकरणों की अंशांकन आवश्यकताएँ

CALIBRATION REQUIREMENTS OF MONITORING AND MEASURING DEVICES AT CONSTRUCTION SITES

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
0	28.04.2015	Issued as Standard	DJ	SRB	MD	SC

Abbreviations:

ABS	:	ABS Consultancy
BIS	:	Bureau of Indian Standards
BV	:	Bureau Veritas
CEIL	:	Certification Engineers International Ltd.
DNV	:	Det Norske Veritas
IRS	:	Indian Registrar for Shipping
LRS	:	Llyod's Register Group Limited
NABL	:	National Accreditation Board for Testing and Calibration Laboratories
PMI	:	Positive Material Identification

Construction Standards Committee

Convenor: Sh. M Deshpande, ED (Construction)

Members: Sh. S N Bhatnagar, GM (Construction)
Sh. Rakesh Nanda, GM (Piping)
Sh. Rajeev Jain, DGM, (C&P)
Sh. Janak Kishore , DGM (Projects)
Sh. Ravindra Kumar , AGM (Construction)
Sh. D Jana, AGM (Construction)

Requirement for control of monitoring and measuring devices.

Sl. No.	Description	Calibration requirements	Frequency	Remarks
A.	**Civil-Survey**			
A.1.	Theodolite	To check for permanent adjustments by traversing and observing the closing error	once in a year or project duration whichever is earlier	Record to be maintained **(See note below)**
A.2.	Levels	To check by Backsight/ Foresight readings, the temporary adjustments of level	Every use	Record to be maintained (See note below)
A.3.	Steel measurement tapes	----	----	a. "Freemans" make or BIS approved make shall be used. b. Mutilated, or broken tapes shall not be used. c. Marking on the tape shall be legible
A.4.	Cross staff	---	---	Same as 3b&3c above
A.5.	Distomat	Actual Physical Verification at Site	Before using first time at site	Records to be maintained
A.6.	Total Station	To check for permanent adjustments by traversing and observing the closing error,etc.	once in a year or project duration whichever is earlier	Record to be maintained (See note below)
B.	**Civil Laboratory**			
B.1.	All balances-Mechanical	Check for zero error	Whenever used	---
B.2.	Weigh Batcher/Batching Plant	Calibration of scales	Once in three Months	Records to be maintained
B.3.	Cube testing machine	Calibration certificate from manufacturers or from reputed calibrating agency.	As per manufacturer specification or once a year whichever is earlier	Records to be maintained
B.4.	Moisture Meter	Calibration of scales	6 months	Records to be maintained

Note: If Error is found, it has to be sent to manufacturers or their authorized agents for rectification and certification. Reputed calibrating agency shall be NABL accredited for relevant testing.

Sl. No.	Description	Calibration requirements	Frequency	Remarks
C.	**Mechanical/ Electrical/Welding**			
C.1	Pressure Gauges	Calibration certificate from reputed laboratories or calibrate by dead weight testers with standard weights or with master Gauge	Once in 6 months	Records to be maintained
C.2	Dial gauges	Check for Zero Error	Whenever used	---
C.3	Dead Weight Tester	Calibration from manufacturer or reputed Calibrating agency. Calibration certificate shall not be older than one month from the date of mobilization.	As per manufacturer's recommendation or once in a six month whichever is earlier.	Records (Calibration certificate) to be maintained
C.4	Vernier caliper/ screw gauge	Check for Zero error	Whenever used	---
C.5	Holiday tester	Calibration from manufacturer or reputed calibrating agency or by calibrating by zeep meter.	Once in 6 months	Records to be maintained
C.6	Elcometer	Check with standard test films supplied by the manufactures	Before use	Records to be maintained
C.7	Universal Testing Machine	Calibration Certificate from any reputed third party inspection agency. viz, CEIL, LRS, BV, ABS, DNV or IRS.	As per manufacturer's recommendation or once a year whichever is earlier	Records to be maintained
C.8	Charpy V-notch Impact testing machine	Calibration Certificate from any reputed third party inspection agency. viz, CEIL, LRS, BV, ABS, DNV or IRS.	As per manufacturer's recommendation or once in a year whichever is earlier	Records to be maintained
C.9	Hardness Testing Machine	Check with the standard test block supplied with the machine as per manufacturer's Recommendation	Before use	Records to be maintained
C.10	Chemical Analysis ,ex :PMI etc.	Check with the standard samples	Before use	Records to be maintained
C.11	Various Digital and Analog meters	Calibration Certificate from reputed laboratories or the manufacturer	Once in Six Months or as per manufacturer's recommendation whichever is earlier.	Records to be maintained

Note: If Error is found, it has to be sent to manufacturers or their authorized agents for rectification and certification. Reputed calibrating agency shall be NABL accredited for relevant testing.

Sl. No.	Description	Calibration requirements	Frequency	Remarks
C.12	Variable current, voltage and resistance generators	Calibration Certificate from reputed laboratories	Once in Six months	Records to be maintained
C.13	Temperature/ Pressure Recorders	Calibration from manufacturer or any reputed calibrating agency	Once in Six months	Records to be maintained
C.15	Temperature gauges	Calibration Certificate from reputed laboratories	Once in Six months	To be discarded in case of damage or malfunctioning
C.16	Thermocouples	Manufacturer's Certificate or Chemical Check	---	---
C.17	Vibration probes	Calibration from reputed laboratory	Once in a year	To be discarded in case of damage or malfunctioning
C.18	Decibel-meter	Calibration from reputed laboratory	Once in a Year	- do -

Note: If Error is found, it has to be sent to manufacturers or their agents for rectification and certification & reputed laboratory shall be NABL accredited for relevant testing.

GENERAL REQUIREMENTS FOR RADIOGRAPHY & OTHER NDT FOR MECHANICAL / COMPOSITE ITEM RATE CONTRACTS

1. CONTRACTOR shall appoint radiography/ NDT agency(ies) only after acceptance of such agency(ies) by OWNER/EIL. However, acceptance of radiography/ NDT agency by OWNER/EIL shall not absolve the CONTRACTOR of his responsibility to execute radiography work as per requirements of the Contract.

2. CONTRACTOR shall mobilize Radiography/ NDT agency at site along with adequate number of radiography resources/ NDT equipments & appliances, commensurate with the welding activity and quantum of Radiography/NDT work load to avoid delays in Radiography/ NDT and consequent generation of back log. In the event of generation of back log leading to Delay/ Holdup of subsequent activities OWNER/EIL has right to engage additional agency for carrying out the radiography at the risk and cost of CONTRACTOR including 100% overhead charge.

3. Date and extent of mobilization of radiography/ NDT agency/resources shall be agreed by the CONTRACTOR and the Engineer-in-Charge at the start of work.

4. Radiography Check Shots

   a) To verify that radiographs are being taken on the prescribed / selected welds / spots only, 5% of already radiographed spots shall be selected by the Engineer-in-Charge or his designated person for check shots. The check shots shall be taken up before any further radiography work.

   b) The CONTRACTOR will be paid for the check shots at the quoted rates if no variation is found. If mismatch / variation is found in any of the check shot as per para 1.4 (a), CONTRACTOR shall have to take re-radiography of the entire lot represented by mismatched check shot (a days production or more as decided by Engineer In-Charge). In such cases, no payment will be made for the check shots as well as the re-radiography of the entire lot represented by the check shot.

   c) In the event of any non-matching / variation is observed in re-radiography of the entire lot as per para 1.4(b) above with reference to the earlier radiographs taken, the radiography agency shall be forthright debarred from site. CONTRACTOR shall then carryout re-radiography up to maximum of 100% of all the prescribed / selected welds/ spots radiographed by the debarred radiography agency (as per direction of the Engineer In-Charge) at his own cost by engaging a separate Radiography agency acceptable to OWNER/EIL. The process for verification of radiographs through check shots shall be continued as per clause 1.4(a) above from the lots selected by the Engineer In- Charge till 2 (two) consecutive lots are found with matching check shot radiographs to the satisfaction of EIL/ OWNER.

SCHEDULE OF RATES

(PREAMBLE)

NAME OF WORK: : **PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH FOR INDIA BANGLADESH PIPELINE PROJECT OF M/s NRL**

BIDDING DOCUMENT NO. : **SM/B185-000-CE-T-8000/1002**

PREAMBLE TO SCHEDULE OF RATES

1 The Schedule of Rates shall be read in conjunction with all other sections of this Bidding Document.

2 The Contractor is deemed to have studied the drawings, specifications and details of works to be done including scope of work, scope of supply and technical specification within the Time Schedule and should have acquainted himself of the conditions prevailing at site.

3 In case any activity though specifically not covered in description of item under `Schedule of Rate (SOR)' 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 cost incurred for such activity. No extra claim on this account shall be entertained, since Schedule of Rates is to be read in conjunction with all other documents forming part of the Contract.

4 All duties and taxes and other levies or any other statutory payment payable by the Contractor under the Contract, or for any other cause, shall be included in the Schedule of Rates **except GST and taxes & duties applicable in Bangladesh** in line with the provisions mentioned in Special Conditions of Contract.

5 Bidder shall be presumed to have quoted against the tendered description of work as per the detailed Schedule of Rates and the same shall be binding on the Bidder.

6 The Quoted Price shall remain firm and fixed till the completion of Work in all respects and no escalation in prices on any account shall be admissible to the Contractor except for the provisions indicated in the Bidding Document. The Bids of all such bidders not complying this requirement shall not be accepted.

7 The quantities given in SOR format are tentative and shall be used to evaluate the bidder's position. Owner / EIL shall not make any commitment for quantities to be ordered on daily or monthly basis and payment shall be released for actual quantities ordered and supplied.

8 No claim shall be entertained during currency of this Contract towards any items due to the above including where the Contractor has quoted low/ high rates.

9 All items of work mentioned in the Schedule of Rates shall be carried out as per the specifications, drawings and instructions of Owner and the rates are deemed to be inclusive of material, consumable, labour, supervision, tools & tackles and detailing of construction/fabrication drawings, isometric wherever required as called for in the detail specification and conditions of the Contract.

10 EIL reserves the right to cancel/ delete/ curtail any item or group of work if necessary. Such a step shall not be construed as reason for changing the rates.

11 Bidder shall quote rates/ prices in "Schedule of Rates" FORM SP-0.

12 Input Credit of GST shall not be considered for evaluation purposes (i.e. for arriving at L1 Bidder).

(SIGNATURE & STAMP OF BIDDER)

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

Item descriptions provided in this Excel Sheet are in brief. While quoting and filling the rate in this Schedule of Rates (Short Description), Bidder shall take into consideration complete scope of work/ item description as mentioned in Schedule of Rates (Detailed Description) for the relevant item, provided in the Bidding Document. The rate quoted in Schedule of Rates (Short Description) shall be deemed to include all activities of work mentioned in item description of Schedule of Rates (Detailed).
Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
	SOR NO	**B185-000-81-41-CE-SOR-8000-0-0M**				
	SOR TITLE	**Piling works for SV-04, SV-05 & RT stations**				
1	G000.00.00	GEOTECHNICAL				
2	G202.00.00	CONSTRUCTION OF BORED CAST-IN-SITU RCC PILES				
3	G202.03.00	Bored cast-in-situ st. shafted piles(cement by contractor)				
4	G202.03.02V25	Rate per meter length in INCREASE in pile length over specified length (cement Supplied by Contractor at his own cost and duly approved by Engineer-in-Charge)Diameter of pile 450 mm , Length of pile above 14 M , - Diameter of pile 450 mm , Length of pile above 14 M ,	880.00	M	0	0.00
5	G202.04.00	EMPTY BORING				
6	G202.04.01V01	Boring up to a depth of cut-off level of pile as per the specification & requirement of AFC drawings & carry out any ancillary work adjunct to piling work, disposal of surplus materials including earth, muck etc beyond□ specified lead, shifting plant and equipments from one pile location to another, all complete as per specifications,drawings & directions of Engineer-In-Charge.□ Diameter of pile 450 mm , - Diameter of pile 450 mm ,	1,160.00	M	0	0.00
7	G202.07.00	BORED CAST-IN-SITU ST. SHAFTED PILES (CEMENT BY CONTRACTOR)				

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

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Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
8	G202.07.01V25	Construction of Bored cast-in-situ RCC straight shafted piles as specified in specific requirements and as per items given below by approved techniques to depths specified using stone chips of 20mm and down size, through all types of soil strata, maintaining borehole sides in position by bentonite slurry by suitable method, tremie concreting, supply of necessary material including plastisizers if required, mobilization of piling rigs and other ancillary equipments/accessories as specified including demobilization etc complete, labour & carry out any ancillary work adjunct to piling work, disposal of surplus materials including earth, muck etc beyond specified lead, shifting plant and equipments from one pile location to another, all complete as per specifications, drawings & direction of Engineer-in-charge (Cost of reinforcement is excluded, cement supplied by contractor at his own cost and duly approved by Engineer-in-Charge).Diameter of pile 450 mm , Length below COL 14 , Grade of concrete 30 , - Diameter of pile 450 mm , Length below COL 14 , Grade of concrete 30 ,	8,150.00	M	0	0.00
9	G205.00.00	STEEL REINFORCEMENT				
10	G205.03.00	Steel R/F HYSD bars (Steel suppli by Contractor at own cost				
11	G205.03.07	R/F HYSD bars Bored Cast in Situ piles (SteelByContr)Fe500D	130.00	MT	0	0.00
12	G206.00.00	INITIAL PILE LOAD TESTS				
13	G206.01.00	Conducting initial pile load test by direct loading on piles				

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

Item descriptions provided in this Excel Sheet are in brief. While quoting and filling the rate in this Schedule of Rates (Short Description), Bidder shall take into consideration complete scope of work/ item description as mentioned in Schedule of Rates (Detailed Description) for the relevant item, provided in the Bidding Document. The rate quoted in Schedule of Rates (Short Description) shall be deemed to include all activities of work mentioned in item description of Schedule of Rates (Detailed).
Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
14	G206.01.04V50	Conducting INITIAL VERTICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of Pile Bored cast in-situ at SV-04 , - Diameter of pile 450 mm , Type of Pile Bored cast in-situ at SV-04 ,	1.00	EACH	0	0.00
15	G206.01.04V51	Conducting INITIAL VERTICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of Pile Bored cast in-situ at SV-05 , - Diameter of pile 450 mm , Type of Pile Bored cast in-situ at SV-05 ,	1.00	EACH	0	0.00
16	G206.01.04V52	Conducting INITIAL VERTICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of Pile Bored cast in-situ at RT , - Diameter of pile 450 mm , Type of Pile Bored cast in-situ at RT ,	1.00	EACH	0	0.00

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

Item descriptions provided in this Excel Sheet are in brief. While quoting and filling the rate in this Schedule of Rates (Short Description), Bidder shall take into consideration complete scope of work/ item description as mentioned in Schedule of Rates (Detailed Description) for the relevant item, provided in the Bidding Document. The rate quoted in Schedule of Rates (Short Description) shall be deemed to include all activities of work mentioned in item description of Schedule of Rates (Detailed).
Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
17	G206.01.05V49	Conducting INITIAL PULL OUT pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT ,	1.00	EACH	0	0.00
18	G206.01.06V45	Conducting INITIAL LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-04 , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-04 ,	1.00	EACH	0	0.00
19	G206.01.06V46	Conducting INITIAL LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-05 , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-05 ,	1.00	EACH	0	0.00

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

Item descriptions provided in this Excel Sheet are in brief. While quoting and filling the rate in this Schedule of Rates (Short Description), Bidder shall take into consideration complete scope of work/ item description as mentioned in Schedule of Rates (Detailed Description) for the relevant item, provided in the Bidding Document. The rate quoted in Schedule of Rates (Short Description) shall be deemed to include all activities of work mentioned in item description of Schedule of Rates (Detailed).
Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
20	G206.01.06V47	Conducting INITIAL LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT ,	1.00	EACH	0	0.00
21	G207.00.00	ROUTINE PILE LOAD TEST				
22	G207.01.00	Conducting routine pile load test by direct loading on pile				
23	G207.01.04V49	Conducting ROUTINE VERICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-04 , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-04 ,	1.00	EACH	0	0.00

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

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Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
24	G207.01.04V50	Conducting ROUTINE VERICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-05 , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-05 ,	1.00	EACH	0	0.00
25	G207.01.04V51	Conducting ROUTINE VERICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT ,	1.00	EACH	0	0.00
26	G207.01.05V52	Conducting ROUTINE PULL OUT pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT ,	1.00	EACH	0	0.00

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

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Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
27	G207.01.06V46	Conducting ROUTINE LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-04 , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-04 ,	1.00	EACH	0	0.00
28	G207.01.06V47	Conducting ROUTINE LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-05 , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at SV-05 ,	1.00	EACH	0	0.00
29	G207.01.06V48	Conducting ROUTINE LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded)Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT , - Diameter of pile 450 mm , Type of pile Bored cast in-situ at RT ,	1.00	EACH	0	0.00

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

Item descriptions provided in this Excel Sheet are in brief. While quoting and filling the rate in this Schedule of Rates (Short Description), Bidder shall take into consideration complete scope of work/ item description as mentioned in Schedule of Rates (Detailed Description) for the relevant item, provided in the Bidding Document. The rate quoted in Schedule of Rates (Short Description) shall be deemed to include all activities of work mentioned in item description of Schedule of Rates (Detailed).
Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
30	G209.00.00	INTEGRITY TEST ON PILES				
31	G209.01.00	LOW STRAIN INTEGRITY TEST				
32	G209.01.01V63	Conducting Low Strain Integrity Test on piles as per ASTM D 5882, including pile head□ preparation,mobilisation & demobilisation of testing apparatus/ equipments, skilled personnel, data collection/recording,analyzing the results, preparing comprehensive report and submitting the same in 5 copies, all complete as per specifications and instructions of Engineer-in-Charge.□ Diameter of pile 450 mm , Length below COL 14 M , Grade of Concrete 30 , - Diameter of pile 450 mm , Length below COL 14 M , Grade of Concrete 30 ,	30.00	EACH	0	0.00
	SUB TOTAL					**0.00**
	TOTAL					0.00

SCHEDULE OF RATES (SP-0)

BIDDING DOC NO	**SM/B185-000-CE-T-8000/1002**
BIDDER NAME	
JOB NO	B185
PART NO	0
TENDER TITLE	Piling Works
CLIENT	Numaligarh Refinery Limited
PROJECT	IBFPL

Item descriptions provided in this Excel Sheet are in brief. While quoting and filling the rate in this Schedule of Rates (Short Description), Bidder shall take into consideration complete scope of work/ item description as mentioned in Schedule of Rates (Detailed Description) for the relevant item, provided in the Bidding Document. The rate quoted in Schedule of Rates (Short Description) shall be deemed to include all activities of work mentioned in item description of Schedule of Rates (Detailed).
Bidders are requested to fill in the RATE column only

					IN INR	
SL NO	**ITEM NO**	**SHORT DESCRIPTION**	**QTY**	**UOM**	**RATE**	**AMOUNT**
	OVERALL REBATE			0.00		0.00
	FINAL AMOUNT					**0.00**

FORM SP-1

BIDDING DOCUMENT NO. : **SM/B185-000-CE-T-8000/1002**
NAME OF WORK : **PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH**
NAME OF BIDDER :

STATEMENT FOR DETAILS OF GST

S.No.	Tax	Ceiling Amount on which the GST is applicable (CGST & SGST / UTGST or IGST) in INR	Applicable Rate of GST (CGST & SGST / UTGST or IGST) (in %age)	Amount of GST (CGST & SGST / UTGST or IGST) in INR
(1)	(2)	(3)	(4)	(5 = 3 x 4)
1	GST	100% of quoted Contract Value as per SP-0		

Notes:

1 GST amount shall not be included by the Bidder in their quoted price and the same shall be paid extra by Owner subject to the provisions of the Bidding Document.

WORK: **PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH**

BIDDING DOCUMENT NO: **SM/B185-000-CE-T-8000/1002** **SP-02**

CIF VALUE OF IMPORTED MATERIALS

DESCRIPTION			CIF value of Import Content included in quoted prices for column (2) Qty. (CURRENCY_____)	RATE OF CUSTOM DUTY INCLUDED IN QUOTED PRICES				
Sl.No	Description of Imported Items	Qty. (Unit__) *(1)		CUSTOM TARRIF NO.	BASIC CUSTOMS DUTY (%)	SOCIAL WELFARE SURCHARGE (%)	IGST (%)	TOTAL CUSTOM DUTY (%)
	1	2	3	4	5	6	7	8
	i)_____							
	ii)_____							
	iii)_____							
	i)_____							
	ii)_____							
	iii)_____							
	i)_____							
	ii)_____							
	iii)_____							
TOTAL CIF VALUE								

Schedule of Rates
for
Piling works for SV-04, SV-05 & RT stations

Tender No.	B185-000-81-41-CE-T-8000 Part 0	0		Issued for Tender	NK	SLB	VKP
Tender Name	Piling Works						
		REV	DATE	PURPOSE	BY	CHECKED	APPROVED

ENGINEERS INDIA LTD NEW DELHI	Bidder's Stamp			Client : Numaligarh Refinery Limited Project : IBFPL	SCHEDULE OF RATES B185-000-81-41-CE-SOR-8000-0 SHEET 1 OF 8
		Date	Bidder's Signature	Div.: STRUCTURAL Dept.: STRUCTURAL	Rev 0

S. No.	Item No	Description of Items	Unit	Quantity	Rate in Rupees		Amount in Rs.
					Figures	Words	
1	G000.00.00	GEOTECHNICAL					
2	G202.00.00	CONSTRUCTION OF BORED CAST-IN-SITU RCC PILES					
3	G202.03.00	Construction of bored cast-in-situ RCC straight shafted piles (CEMENT SUPPLIED BY CONTRACTOR at his own cost and duly approved by engineer in charge)					
4	G202.03.02V25	Rate per meter length in INCREASE in pile length over specified length (cement Supplied by Contractor at his own cost and duly approved by Engineer-in-Charge) (Diameter of pile - 450 mm, Length of pile above - 14 M)	M	880			
5	G202.04.00	EMPTY BORING					
6	G202.04.01V01	Boring up to a depth of cut-off level of pile as per the specification & requirement of AFC drawings & carry out any ancillary work adjunct to piling work, disposal of surplus materials including earth, muck etc beyond specified lead, shifting plant and equipments from one pile location to another, all complete as per specifications,drawings & directions of Engineer-In-Charge. (Diameter of pile - 450 mm)	M	1160			
7	G202.07.00	BORED CAST-IN-SITU ST. SHAFTED PILES (CEMENT BY CONTRACTOR)					
8	G202.07.01V25	Construction of Bored cast-in-situ RCC straight shafted piles as specified in specific requirements and as per items given below by approved techniques to depths specified using stone chips of 20mm and down size, through all types of soil strata, maintaining borehole sides in position by bentonite slurry by suitable method, tremie	M	8150			

S. No.	Item No	Description of Items	Unit	Quantity	Rate in Rupees		Amount in Rs.
					Figures	Words	
		concreting, supply of necessary material including plastisizers if required, mobilization of piling rigs and other ancillary equipments/accessories as specified including demobilization etc complete, labour & carry out any ancillary work adjunct to piling work, disposal of surplus materials including earth, muck etc beyond specified lead, shifting plant and equipments from one pile location to another, all complete as per specifications, drawings & direction of Engineer-in-charge (Cost of reinforcement is excluded, cement supplied by contractor at his own cost and duly approved by Engineer-in-Charge). (Diameter of pile - 450 mm, Length below COL - 14 , Grade of concrete - 30)					
9	G205.00.00	STEEL REINFORCEMENT					
10	G205.03.00	Steel reinforcement of HYSD bars confirming to IS:1786 (latest version) (steel supplied by contractor at his own cost and duly approved by engineer in charge)					
11	G205.03.07	Placing in position high strength deformed steel bars reinforcement of grade Fe500D conforming to IS:1786, (latest version) for RCC Bored Cast- in -situ piles for full length of pile, straightening, cleaning, decoiling, cutting, bending to required shape & lengths as per details, binding with contractor's own 18 SWG black soft annealed binding wire, supplying and placing with proper cover blocks, supports, chairs, spacers, welding, if required, to form a rigid cage, complete as per instructions of the Engineer-in-Charge (steel supplied by contractor at his own cost and duly approved by Engineer in charge)	MT	130			
12	G206.00.00	INITIAL PILE LOAD TESTS					
13	G206.01.00	Conducting INITIAL PILE LOAD TESTS by direct loading on piles as per specifications and directions of Engineer-					

S. No.	Item No	Description of Items	Unit	Quantity	Rate in Rupees		Amount in Rs.
					Figures	Words	
		in-Charge.					
14	G206.01.04V50	Conducting INITIAL VERTICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of Pile - Bored cast in-situ at SV-04)	EACH	1			
15	G206.01.04V51	Conducting INITIAL VERTICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of Pile - Bored cast in-situ at SV-05)	EACH	1			
16	G206.01.04V52	Conducting INITIAL VERTICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of Pile - Bored cast in-situ at RT)	EACH	1			
17	G206.01.05V49	Conducting INITIAL PULL OUT pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as	EACH	1			

S. No.	Item No	Description of Items	Unit	Quantity	Rate in Rupees		Amount in Rs.
					Figures	Words	
		per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at RT)					
18	G206.01.06V45	Conducting INITIAL LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at SV-04)	EACH	1			
19	G206.01.06V46	Conducting INITIAL LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at SV-05)	EACH	1			
20	G206.01.06V47	Conducting INITIAL LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at RT)	EACH	1			

S. No.	Item No	Description of Items	Unit	Quantity	Rate in Rupees		Amount in Rs.
					Figures	Words	
21	G207.00.00	ROUTINE PILE LOAD TEST					
22	G207.01.00	Conducting ROUTINE PILE LOAD TESTS by direct loading on piles as per specifications and directions of Engineer-in-Charge.					
23	G207.01.04V49	Conducting ROUTINE VERICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at SV-04)	EACH	1			
24	G207.01.04V50	Conducting ROUTINE VERICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at SV-05)	EACH	1			
25	G207.01.04V51	Conducting ROUTINE VERICAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at RT)	EACH	1			

S. No.	Item No	Description of Items	Unit	Quantity	Rate in Rupees		Amount in Rs.
					Figures	Words	
26	G207.01.05V52	Conducting ROUTINE PULL OUT pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at RT)	EACH	1			
27	G207.01.06V46	Conducting ROUTINE LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at SV-04)	EACH	1			
28	G207.01.06V47	Conducting ROUTINE LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at SV-05)	EACH	1			
29	G207.01.06V48	Conducting ROUTINE LATERAL pile load test by direct loading on piles including finishing pile head, supply & erection of kentledge of suitable magnitude, labour, excavation, back filling, compaction etc. all complete as per specifications and directions of Engineer-in-Charge, analysing the results, making the report and submitting	EACH	1			

S. No.	Item No	Description of Items	Unit	Quantity	Rate in Rupees		Amount in Rs.
					Figures	Words	
		the same in 5 copies (cost of pile is excluded) (Diameter of pile - 450 mm, Type of pile - Bored cast in-situ at RT)					
30	G209.00.00	INTEGRITY TEST ON PILES					
31	G209.01.00	LOW STRAIN INTEGRITY TEST					
32	G209.01.01V63	Conducting Low Strain Integrity Test on piles as per ASTM D 5882, including pile head preparation,mobilisation & demobilisation of testing apparatus/ equipments, skilled personnel, data collection/recording,analyzing the results, preparing comprehensive report and submitting the same in 5 copies, all complete as per specifications and instructions of Engineer-in-Charge. (Diameter of pile - 450 mm, Length below COL - 14 M, Grade of Concrete - 30)	EACH	30			

Numaligarh Refinery Limited

INDIA BANGLADESH FREINDSHIP PIPELINE PROJECT

(BIDDING DOCUMENT NO. SM/B185-000-CE-T-8000/1002)

BIDDING DOCUMENT

FOR

PILING WORKS AT SV-04, SV-05 & RT PARBATIPUR, LOCATED IN BANGLADESH

Part - II: TECHNICAL SECTION

Prepared by:

इंजीनियर्स इंडिया लिमिटेड
(भारत सरकार का उपक्रम)
ENGINEERS INDIA LIMITED
(A Govt. of India Undertaking)

MASTER INDEX

TENDER

FOR

PILING WORKS FOR INDO-BANGLA FRIENDSHIP PIPELINE PROJECT

(TENDER NO: B185-000-81-41-CE-T-8000)

Rev. No	Date	Purpose	Prepared by	Checked by	Approved by
0	07.08.2019	ISSUED FOR TENDER	VSNK	LmlsB	VKP

1.0 LIST OF ATTACHMENTS

1.1 SPECIFIC REQUIREMENTS

Sl. No.	Title	Doc. No.	Rev	No. of Sheets
1	Specific Requirement for RCC Piling works.	B185-000-81-41-SP-0012	0	14

1.2 SPECIFICATIONS

Sl. No	Specification No.	Rev	Pages	Title of Document
1	6-74-0006	3	7	Standard Specification for Materials for Reinforcement Concrete Piles
2	6-74-0011	3	8	Standard Specification for Construction and installation of RCC Bored Cast in-situ Piles
3	6-74-0013	3	11	Standard Specification for Testing of Concrete Piles

1.3 DRAWINGS

Sl. No	Drawing No.	Rev	Title of Drawing
1	B185-000-81-41-31001	A	Reinforcement details of pile

NUMALIGARH REFINERY LIMITED (NRL)

SPECIFIC REQUIREMENTS FOR RCC PILING WORKS FOR INDO-BANGLA FRIENDSHIP PIPELINE PROJECT

(TENDER NO.: B185-000-81-41-CE-T-8000)

PROJECT : INDO- BANGLA FRIENDSHIP PIPELINE PROJECT

CLIENT : NUMALIGARH REFINERY LIMITED (NRL)

JOB NO. : B185

Rev. No	Date	Purpose	Prepared by	Checked by	Approved by
0	Aug 07, .2019	ISSUED FOR TENDER	VSNK	LmlsB	VKP

CONTENTS

1.0 SCOPE OF WORK

1.1 The work covers the installation & testing of straight shaft Bored cast-in-situ piles for the proposed Indo Bangla friendship pipeline of Numaligarh Refinery Limited (NRL).

1.2 The work involves but not limited to the following:

a) Construction of straight shaft RCC bored cast-in-situ piles. The approximate length of piles below cut-off level and approximate number of piles are as follows:

Table-1:

Stations	Diameters (mm)	Approx. no. of piles	Approx. length below cut-off level (m)
SV-04, SV-05 & RT-Parbatipur	450	582	13-15

b) Carrying out of Initial Load tests as specified on the test piles specifically installed for the purpose and Routine Load tests as specified on job piles randomly selected by Engineer-in-charge.

c) Carrying out Low Strain Integrity test on job piles randomly selected by Engineer-in-charge.

2.0 AVAILABLE INFORMATION

Representative Bore logs of SV-04, SV-05 & RT-Parbatipur are enclosed for reference.

3.0 REQUIREMENT

All work shall be carried out in accordance with the specifications enclosed herewith and contractor shall ensure minimum requirements as laid down hereunder:

3.1 Termination of Pile

Pile shall be terminated in dense sand strata. The termination layer of pile shall be decided by conducting standard penetration test (confirming SPT N-value more than 30 for minimum three consecutive tests at an interval of 750mm) in pile bore. SPT shall be conducted in one in ten piles.

3.2 Safe Load carrying Capacity

The estimated safe load capacities for RCC bored cast-in-situ piles are given in Table-2:

Table-2:

MODE	DESIGN PILE HEAD LOAD IN TONNES
Vertical Compression	40
Uplift	10
Lateral	2.5

Notes:

i) The tenderer shall guarantee the above safe load of pile as minimum. The Pile capacities shall be established at site by carrying out Load test on test piles and job piles as per EIL standard specification no.6-74-0013 enclosed.

ii) COL is assumed at 2.0m below Finished Ground Level. However, exact COL shall be as per AFC drawings.

3.3 Material

Materials shall conform to EIL specification no. 6-74-0006 enclosed and forming a part of the tender.

3.3.1 Concrete

The concrete shall have a minimum strength of 30 N/mm^2 at 28 days. The cement for concrete shall be Ordinary Portland/Portland Pozzolana/Portland Slag cement having minimum cement content not be less than 400 kg/m^3 with maximum water-cement ratio of 0.40. The allowable slump shall be as per relevant latest revision of IS code (IS: 2911 Part I/ Sec.2). The Engineer-in-charge may allow marginal adjustment in water/cement ratio to obtain concrete of good workability. The other concrete specifications shall be as per relevant clauses of "Design, Construction & Installation of Bored *cast-in-situ* piles", EIL Specification No. 6-74-0011 forming part of this tender.

3.3.2 Reinforcement

Reinforcement shall be TMT high strength deformed bars of grade Fe500D conforming to IS: 1786 (latest revision). The reinforcement in the pile shall consist of the following:

i) Longitudinal Reinforcement:
Main reinforcement in the piles shall be 8 nos. 16 mm diameters up to 6m followed by 8 nos. 12mm diameter up to termination depth of pile.

ii) Stirrups:
Stirrups in the form of helical/circular shall be of 8mm diameter high strength deformed bars of grade Fe500D conforming to IS 1786 (latest revision) at 250mm c/c all through the length of pile.

iii) Stiffeners:
Stiffener bar shall be of 16 mm diameter reinforcement provided all through the length of pile at spacing of about 2.5m c/c al through the length of pile.

iv) Cover:
Clear cover to reinforcement shall be 50 mm.

4.0 INSTALLATION

4.1 Installation of piles shall be carried out in accordance with the pile lay out drawings which shall be available to the contractor at the time of execution of work.

4.2 Cut-off level of the piles shall correspond to those given in the working drawings.

4.3 To ensure dense and sound concrete up to cut-off level, concreting shall extend 750mm above cut-off level. However, no extra payment shall be made for this and quoted rates shall be inclusive of this.

4.4 In case the reinforcement cage is made up of more than one segment, the same shall be assembled by welding only, before lowering, as per IS: 456-2000 by providing necessary laps.

4.5 The vertical reinforcement shall project 50 times its diameter above the cut -off level.

4.6 Pile shall be constructed by continuous mud circulation technique and the concrete shall be placed by tremie. All precautions for obtaining clean and sound pile shaft shall be strictly observed.

4.7 For tremie concreted piles, a sample of drilling fluid shall be taken from the base of the borehole by means of an approved sampling device in the first few piles and at suitable interval of piles thereafter. Concreting shall not proceed if density of fluid exceeds 1250 kg/m^3. The sand content in the fluid shall not exceed 7 percent.

4.8 Site for piling will be developed by earth filling of 4m depth (approx.) from finished ground level (FGL). Further, soil from natural ground level (NGL) upto substantial depth is soft in consistency and ground water table is close to NGL. Hence, temporary casing may be required for execution. Quoted rates shall be inclusive of this and no extra payment shall be made on this account.

5.0 MEASUREMENT OF PILES

5.1 The piles shall be measured and paid for the actual pile length from pile tip to the cut off level, given in the working drawings or as indicated by the Engineer-in-charge. No extra payment shall be made for concreting above cut-off level.

5.2 However, Payment shall be made for empty boring from FGL[1] / EGL[2] to pile cut-off level.

5.3 No extra payment shall be made for conducting SPT (to fulfill the termination criteria) in pile bores or in separate boreholes. Cost shall be included under the supply and installation item.

5.4 Payment for routine load tests which shows unsatisfactory results shall not be made.

5.5 Piles showing unsatisfactory results shall be treated as defective piles. Defective piles shall be removed or left in place and replaced by additional piles as directed by Engineer-in-charge at no additional cost to the owner.

5.6 Reaction piles, if required for the purpose of conducting load tests on piles shall not be paid extra. Quoted rate for tests shall be inclusive of this. However, for routine lateral and uplift tests, if required, job piles may be used as reaction piles.

5.7 Cost of initial test piles shall be paid as per relevant regular item of job pile.

6.0 PILE TESTING

6.1 Load Test on Pile

6.1.1 Initial Load Test

i) Prior to commencement of the job piling, initial load tests shall be done.

ii) The Bidder shall be allowed to proceed with job piling only after successful completion of the initial tests to the satisfaction of the Engineer-in-charge. Test load shall be 3

[1] Finished Ground Level

[2] Existing Ground Level

times the design load. Location of the test piles shall be indicated on working drawings by the Engineer-in-charge. The number of such tests is given in the schedule of quantities.

6.1.2 Routine Load Test

Routine load tests shall be carried out up to one and half times the design load. The piles for the test shall be randomly selected by the Engineer-in-charge. The no. of routine vertical, uplift and lateral load tests is mentioned in the schedule of quantities.

6.1.3 Pile Load Test Details

i) For pile load tests, the test set up shall be as per IS: 2911 Part IV and "Specifications for testing of concrete piles", EIL standard no.6-74-0013.

ii) All testing shall be done by Direct method of loading in successive increments, as per the relevant clauses of IS 2911 Part IV and EIL Standard no.6-74-0013.

iii) Each stage of loading shall be maintained till the rate of movement is less than 0.2 mm per hour.

Test shall be carried out at the cut-off level.

6.1.4 Maximum test loads shall be as follows:

i) Initial Vertical pile load test: Load corresponding to a total settlement of 10% of the pile diameter or three times the safe load whichever occurs earlier.

ii) Routine Vertical Pile load test: Load corresponding to 12mm settlement or one and half times the safe load whichever occurs earlier.

iii) Initial Lateral pile load test: Load corresponding to a total settlement of 12mm or three times the safe load whichever occurs earlier.

iv) Routine lateral pile load test: Load corresponding to 5mm settlement or one and half times the safe load whichever occurs earlier.

v) Initial Uplift pile load test: Load settlement curves shows clear break or three times the safe load whichever occurs earlier.

vi) Routine Uplift pile load test: Load corresponding to 12 mm settlement or one and half times the safe load whichever occurs earlier.

NOTE: Kentledge load shall be at least 25% higher than the maximum test loads.

6.1.5 Criteria for Assessment of Safe Loads

3.6.4.1 Safe vertical load on single pile shall be the least of the following:

i) Two third of the final load at which the total settlement attains a value of 12mm.

ii) 50% of the final load at which the total settlement equals to 10% of the piles diameter.

6.1.5.2 Safe lateral load on single pile shall be least of the following:

i) 50% of the final load at which the lateral displacement equals to 12 mm.

ii) Final load corresponding to the total displacement of 5mm.

6.1.5.3 Safe uplift load on single pile shall be least of the following:

i) Two thirds of the final load at which the total settlement attains a value of 12 mm or the load corresponding to a specified uplift.

ii) Half of the load at which the load deflection curve shows a clear break (downward trend).

6.1.6 Pile Test Record

A full record of pile load test results shall be submitted in triplicate to the Engineer-in-Charge immediately on completion of each test. The record shall also include the plots of load-settlement (for various stages of loads) characteristics of pile and also the interpolation of the pile load test curve as per criteria for safe loads as mentioned in EIL Standards and Specification 6-74-0013. Any special observations shall be duly explained by the contractor.

6.2 Low Strain Integrity Test of Pile

This test shall be carried out on job piles as per testing procedures out line in ASTM D 5882-96. The piles to be tested shall be selected by Engineer-in charge. The test procedures shall be submitted to Engineer-in charge for its approval from owner/EIL. The test report shall indicate quality of pile in respect of soundness, honey comb, necking etc indicating depth of defect in shaft. Payment shall not be made for defective piles and defective pile shall be replaced by additional pile.

7.0 LIST OF ATTACHMENTS

Standards and Specifications – Geotechnical

6-74-0006	Standard Specification for Materials for Reinforcement Concrete Piles
6-74-0011	Standard Specification for Construction and installation of RCC Bored Cast-in-situ Piles
6-74-0013	Standard Specification for Testing of Concrete Piles

ANNEXURE-I: (BORE-LOGS)

SV-04

SWAYIN & ASSOCIATES
77,SATYANAGAR, BHUBANESWAR
Web Site : www.swayinassociates.com

BORELOG DATA SHEET

NAME OF PROJECT :-BALANCE SURVEY WORKS FOR INDO BANGLA FRIENDSHIP PIPELINE(IBFPL) PROJECT

TYPE OF BORING-	ROTARY DRILLING	CLIENT :-NRL(NUMALIGARH REFINERY LIMITED)	
DIA OF HOLE -	150MM	JOB NO :- SA-1013	BORE HOLE NO:-01 / SHEET NO:-01
DEPTH -	20.00M		
COMMENCED ON :-16.12.2018	COMPLETED ON :-16.12.2018	LOCATION :-SV-04	CO-ORDINATES: E:-673914.6873 N:-2875829.578 / RL:-51.638M
WATER TABLE :-2.00M			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN MTRS.	DEPTH IN MTRS.	SYMBOL	SAMPLE DEPTH IN MTRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES (20 40 60 80 100 120 140)	'N' VALUES	SAMPLE TYPE	SAMPLE REFNO.	CORE RECOVERY	RQD%	G.W.L OBSER
CLAY-(MEDIUM PLASTICITY)	CI	0.00	0.00		1.00			DS	01			
			1.00		1.50		01	SPT	01			
			2.00		2.50			DS	02			
		2.60	3.00		3.00		03	SPT	02			
FINE SAND	SP				4.00			DS	03			
		4.00	4.00		4.50		08	SPT	03			
CLAYEY SAND	SC		5.00		5.50			DS	04			
		5.20			6.00		05	SPT	04			
CLAY-(HIGH PLASTICITY)	CH		6.00		7.00			DS	05			
			7.00		7.50		06	SPT	05			
					8.00			UDS	01			
		8.20	8.00		9.00		04	SPT	06			
SILTY CLAY-(MEDIUM PLASTICITY)	CI		9.00		10.00			DS	06			
		10.00	10.00		10.50		04	SPT	07			
CLAYEY SAND	SC		11.00		11.50			DS	07			
		11.40			12.00		25	SPT	08			
			12.00		13.00			DS	08			
FINE SAND	SP				13.50		27	SPT	09			
			14.00									
		15.00	15.00		15.00		27	SPT	10			

LEGEND:- UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST
W- WATER SAMPLE, ▽-WATER LEVEL P- PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample :- 10	No. of Undisturbed sample-01	No. of Vane Shear Test :- NIL
No. of Large diameter sample :- NIL	No. of CORE :- NIL	No. of Water Sample :-NIL
	No. of S.P.T. :- 13	

SWAYIN & ASSOCIATES

77,SATYANAGAR, BHUBANESWAR
Web Site : www.swayinassociates.com

BORELOG DATA SHEET

NAME OF PROJECT :- BALANCE SURVEY WORKS FOR INDO BANGLA FRIENDSHIP PIPELINE(IBFPL) PROJECT

TYPE OF BORING-	ROTARY DRILLING	CLIENT :-NRL(NUMALIGARH REFINERY LIMITED)	
DIA OF HOLE -	150MM	JOB NO :- SA-1013	BORE HOLE NO:-01 / SHEET NO:-02
DEPTH -	20.00M		
COMMENCED ON :-16.12.2018	COMPLETED ON :-16.12.2018	LOCATION :- SV-04	CO-ORDINATES: E:-673914.6873 N:-2875829.578 / RL:-51.638M
WATER TABLE :-2.00M			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN MTRS.	DEPTH IN MTRS.	SYMBOL	SAMPLE DEPTH IN MTRS.	'N' VALUES	SAMPLE TYPE	SAMPLE REFNO.	CORE RECOVERY	RQD%	G.W.L OBSER
FINE SAND	SP	15.00	15.00		15.00	27	SPT	10			
			16.00		16.00		DS	09			
					16.50	35	SPT	11			
			17.00								
			18.00		18.00	47	SPT	12			
			19.00		19.00		DS	10			
TERMINATED		20.00	20.00		20.00	30	SPT	13			
			21.00								
			22.00								
			23.00								
			24.00								
			25.00								
			26.00								
			27.00								
			28.00								
			29.00								
			30.00								

GRAPHICAL REPRESENTATION OF 'N' VALUES (20, 40, 60, 80, 100, 120, 140)

LEGEND:- UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST
W- WATER SAMPLE, ▽-WATER LEVEL P- PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample :- 10	No. of Undisturbed sample:-01	No. of Vane Shear Test :- NIL
No. of Large diameter sample :- NIL	No. of CORE :- NIL	No. of Water Sample :-NIL
	No. of S.P.T. :- 13	

SV-05

SWAYIN & ASSOCIATES
77,SATYANAGAR, BHUBANESWAR
Web Site : www.swayinassociates.com

BORELOG DATA SHEET

NAME OF PROJECT :-BALANCE SURVEY WORKS FOR INDO BANGLA FRIENDSHIP PIPELINE(IBFPL) PROJECT

TYPE OF BORING-	ROTARY DRILLING	CLIENT :-NRL(NUMALIGARH REFINERY LIMITED)	
DIA OF HOLE -	150MM	JOB NO :- SA-1013	BORE HOLE NO-01 / SHEET NO-01
DEPTH -	20.00M		
COMMENCED ON :-04.01.2019	COMPLETED ON :-04.01.2019	LOCATION :-SV-05	CO-ORDINATES: E-686127.0000 N-2851548.0000 / RL:-42.335M
WATER TABLE :-1.80M			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN MTRS.	DEPTH IN MTRS.	SYMBOL	SAMPLE DEPTH IN MTRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES (20 40 60 80 100 120 140)	'N' VALUES	SAMPLE TYPE	SAMPLE REF.NO.	CORE RECOVERY	RQD%	G.W.L OBSER
FINE SAND	SM	0.00	0.00									
			1.00		1.00			DS	01			
					1.50		04	SPT	01			
			2.00									
		2.80	3.00		3.00		03	SPT	02			
SANDY CLAY-(LOW PLASTICITY)	CL											
		4.00	4.00		4.00			DS	02			
					4.50		03	SPT	03			
			5.00									
					5.50			DS	03			
CLAY-(MEDIUM PLASTICITY)	CI		6.00		6.00		04	SPT	04			
		7.20	7.00		7.20			DS	04			
					7.50		13	SPT	05			
			8.00									
					8.50			DS	05			
FINE SAND	SM		9.00		9.00		26	SPT	06			
			10.00									
					10.50		28	SPT	07			
			11.00		11.00			DS	06			
		11.50										
FINE TO MEDIUM SAND	SM		12.00		12.00		21	SPT	08			
					12.50			DS	07			
		13.00	13.00									
					13.50		42	SPT	09			
FINE SAND	SP		14.00		14.00			DS	08			
		15.00	15.00		15.00		44	SPT	10			

LEGEND:- UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST
W- WATER SAMPLE, ▽-WATER LEVEL P- PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample :- 10	No. of Undisturbed sample-NIL	No. of Vane Shear Test :- NIL
No. of Large diameter sample :- NIL	No. of CORE :- NIL	No. of Water Sample :-NIL
	No. of S.P.T. :-13	

SWAYIN & ASSOCIATES

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BORELOG DATA SHEET

NAME OF PROJECT :- BALANCE SURVEY WORKS FOR INDO BANGLA FRIENDSHIP PIPELINE(IBFPL) PROJECT

TYPE OF BORING-	ROTARY DRILLING	CLIENT :-NRL(NUMALIGARH REFINERY LIMITED)	
DIA OF HOLE -	150MM	JOB NO :- SA-1013	BORE HOLE NO-01 / SHEET NO-02
DEPTH -	20.00M		
COMMENCED ON :-04.01.2019	COMPLETED ON :-04.01.2019	LOCATION :-SV-05	CO-ORDINATES: E-686127.0000 N-2851548.0000 / RL-42.335M
WATER TABLE :-1.80M			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN MTRS.	DEPTH IN MTRS.	SYMBOL	SAMPLE DEPTH IN MTRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES (20 40 60 80 100 120 140)	'N' VALUES	SAMPLE TYPE	SAMPLE REF.NO.	CORE RECOVERY	RQD%	G.W.L OBSER
		15.00	15.00		15.00		44	SPT	10			
					15.50			DS	09			
			16.00		16.50		47	SPT	11			
			17.00									
FINE SAND	SP											
			18.00		18.00		50	SPT	12			
			19.00		19.00			DS	10			
TERMINATED		20.00	20.00		20.00		54	SPT	13			
			21.00									
			22.00									
			23.00									
			24.00									
			25.00									
			26.00									
			27.00									
			28.00									
			29.00									
			30.00									

LEGEND:- UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST
W- WATER SAMPLE, ▽-WATER LEVEL P- PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample :- 10	No. of Undisturbed sample-NIL	No. of Vane Shear Test :- NIL
No. of Large diameter sample :- NIL	No. of CORE :- NIL	No. of Water Sample :-NIL
	No. of S.P.T. :-13	

RT-Parbatipur

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BOREL OG DATA SHEET

NAME OF PROJECT :- BALANCE SURVEY WORKS FOR INDO BANGLA FRIENDSHIP PIPELINE(IBFPL) PROJECT

TYPE OF BORING-	ROTARY DRILLING	CLIENT :-NRL(NUMALIGARH REFINERY LIMITED)	
DIA OF HOLE -	150MM	JOB NO :- SA-1013	BORE HOLE NO:-01 / SHEET NO:-01
DEPTH -	20.00M		
COMMENCED ON :-20.12.2018	COMPLETED ON :-21.12.2018	LOCATION :-RT	CO-ORDINATES: E:-691843.52 N-2840615.02 / RL:-36.216M
SUBMERGED IN WATER :-1.80M			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN MTRS.	DEPTH IN MTRS.	SYMBOL	SAMPLE DEPTH IN MTRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES (20 40 60 80 100 120 140)	'N' VALUES	SAMPLE TYPE	SAMPLE REF.NO.	CORE RECOVERY	RQD%	G.W.L OBSER
		0.00	0.00		0.70			DS	01			
			1.00		1.70		07	SPT	01			
			2.00		2.20			DS	02			
CLAY-(HIGH PLASTICITY)	CH		3.00		3.20		10	SPT	02			
					3.70			DS	03			
			4.00		4.70		12	SPT	03			
			5.00									
		5.70			5.70			DS	04			
SILTY CLAY-(MEDIUM PLASTICITY)	CI		6.00		6.20		01	SPT	04			
			7.00		7.20			DS	05			
					7.70		22	SPT	05			
			8.00									
			9.00		9.20		32	SPT	06			
FINE SAND	SP	10.00	10.00		10.20			DS	06			
					10.70		36	SPT	07			
			11.00		11.70			DS	07			
			12.00		12.20		37	SPT	08			
		13.10	13.00		13.20			DS	08			
COARSE SAND	SM				13.70		57	SPT	09			
			14.00									
FINE SAND	SP				14.70			DS	09			
		15.00	15.00		15.00							

LEGEND:- UDS-UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT-STANDARD PENETRATION TEST
W- WATER SAMPLE, ▽-WATER LEVEL P- PENETROMETRE TEST, V- VANE SHEAR TEST, C-CORE RECOVERY

No. of disturbed sample :- 11	No. of Undisturbed sample:-NIL	No. of Vane Shear Test :- NIL
No. of Large diameter sample :- NIL	No. of CORE :- NIL	No. of Water Sample :-NIL
	No. of S.P.T. :- 13	

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BOREHOLE DATA SHEET

NAME OF PROJECT :- BALANCE SURVEY WORKS FOR INDO BANGLA FRIENDSHIP PIPELINE(IBFPL) PROJECT

TYPE OF BORING-	ROTARY DRILLING	CLIENT :-NRL(NUMALIGARH REFINERY LIMITED)	
DIA OF HOLE -	150MM	JOB NO :- SA-1013	BORE HOLE NO:-01 / SHEET NO:-02
DEPTH -	20.00M		
COMMENCED ON :-20.12.2018	COMPLETED ON :-21.12.2018	LOCATION :-RT	CO-ORDINATES: E:-691843.52 N:-2840615.02 / RL:-36.216M
SUBMERGED IN WATER :-1.80M			

DESCRIPTION OF STRATA	IS CLASSIFICATION	CHANGE OF STRATA IN MTRS.	DEPTH IN MTRS.	SYMBOL	SAMPLE DEPTH IN MTRS.	GRAPHICAL REPRESENTATION OF 'N' VALUES (20 40 60 80 100 120 140)	'N' VALUES	SAMPLE TYPE	SAMPLE REFNO.	CORE RECOVERY	RQD%	G.W.L OBSER
		15.00	15.00		15.00							
					15.20		37	SPT	10			
			16.00		16.20			DS	10			
					16.70		41	SPT	11			
FINE SAND	SP		17.00									
			18.00		18.00		48	SPT	12			
			19.00		19.20			DS	11			
TERMINATED		20.00	20.00		20.00		51	SPT	13			
			21.00									
			22.00									
			23.00									
			24.00									
			25.00									
			26.00									
			27.00									
			28.00									
			29.00									
			30.00									

LEGEND:- UDS- UNDISTURBED SAMPLE, DS- DISTURBED SAMPLE, SPT- STANDARD PENETRATION TEST
W- WATER SAMPLE, ▽-WATER LEVEL P- PENETROMETRE TEST, V- VANE SHEAR TEST, C- CORE RECOVERY

No. of disturbed sample :- 11	No. of Undisturbed sample:-NIL	No. of Vane Shear Test :- NIL
No. of Large diameter sample :- NIL	No. of CORE :- NIL	No. of Water Sample :-NIL
	No. of S.P.T. :- 13	

प्रबलित कंक्रीट भूस्तंभ की सामग्री हेतु मानक विनिर्देश

STANDARD SPECIFICATION FOR MATERIALS FOR REINFORCED CONCRETE PILES

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	
3	26.09.2014	REVISED & ISSUED AS STANDARD SPECIFICATION	GK	VKP	SD	S Chanda
2	03.03.2008	REVISED & ISSUED AS STANDARD SPECIFICATION	VKP	SDN	VK	VC
1	26.03.1998	REVISED & ISSUED AS STANDARD SPECIFICATION	SDN	UB	ECHGR	ASONI
0	21-05-1985	ISSUED AS STANDARD SPECIFICATION	RKMB	MI	MI	JRP

Abbreviations:

IS: Indian Standard

Geotechnical Standards Committee

Convenor : Mr. S.Debnath

Members:
Mr. V.K.Panwar
Mr. B.N.Mandal
Mr. Rajanji Srivsatava
Mr. Vipan Goel
Mr. Samir Das
Mr. VS Chhaya (Proj.)
Mr. Ravindra Kumar (Constn.)

CONTENTS

1.0 GENERAL

1.1 Scope

1.1.1 This specification establishes the material specifications of reinforced cement concrete to be used in pile foundations. Any special requirements as shown or noted on the drawings shall govern over the provisions of these specifications.

1.1.2 For specific work requirements concerning design and construction or otherwise modifying or supplementing the provision of this specification, refer to the specific requirements. In case of conflict between specific requirements and provision of this specification, former shall govern.

1.2 Definitions

1.2.1 Reference to Indian Standard Codes shall always mean reference to the latest issue of the relevant standards including all its amendments up to date.

1.3 Codes

All design and construction shall be performed in accordance with the Indian Standard Code of Practice for Plain and Reinforced Concrete IS: 456.

2.0 MATERIALS FOR CONCRETE

2.1 General

All materials which may be used in the Plain or Reinforced Cement concrete work shall be of standard quality conforming to IS or equivalent and shall have IS certification mark as far as possible unless otherwise approved by the Engineer-in-Charge. The contractor shall get all materials approved by Engineer-in-Charge shall have the right to determine whether all or any of the materials offered or delivered for use in the works are acceptable. Any material brought to site and not conforming to specification and instruction of Engineer-in-Charge shall be rejected and the contractor shall have to remove the immediately from site at his own expenses.

2.2 Cement

2.2.1 General

The cement used shall be ordinary Portland Cement or Portland slag cement conforming to IS: 455 or Portland pozzolana cement conforming to IS: 1489 or as specified and / or directed by the Engineer-in-Charge.

2.2.2 Tests after Delivery

Each consignment of cement, may after delivery on the site and at the discretion of the Engineer-in-Charge , be subjected to any or all of tests and analysis required by the relevant Indian Standard Specifications. Facilities for testing shall be provided by contractor at his own cost.

2.2.3 Storage on the Site

The cement shall be stored in a suitable weather-tight building and in such a manner as to permit easy access for proper inspection to prevent deterioration. Cement of different types and brands shall be kept in separate storage.

All accepted cement stored on the site shall be arranged in batches and used in the same order as received from the manufacturer. The contractor shall maintain a cement register in which all entries shall be completed day to day showing the quantities received, date of receipt, source of dispatch, type of cement, etc. and also the daily cement consumption on site. The register shall be accessible to the Engineer-in-Charge for his verification.

2.2.4 Rejection of Cement

The Engineer-in-Charge may reject any cement as a result of any tests thereof, notwithstanding the manufacturer's certificate. He may also reject cement which has deteriorated owing to inadequate protection from moisture or due to intrusion of foreign matter or other causes. Any cement which is considered defective by the Engineer-in-Charge shall not be used, and shall be promptly removed from the site of the work by the contractor at his own expense.

2.3 Aggregates for Concrete

2.3.1 General

Coarse and fine aggregates for concrete shall conform in all respect to IS: 383, "Specification for Coarse and Fine Aggregates from Natural Sources for Concrete". Aggregates shall be obtained from a source known to produce those satisfactory for concrete. Aggregates shall consist of naturally occurring sand and gravel or stone, crushed or uncrushed, or a combination thereof. They shall be chemically inert, hard, strong, dense, durable, clean and free from veins, adherent coatings and shall be of limited porosity.

Flaky and elongated pieces shall not be used.

The source of aggregates shall be approved by the Engineer-in-Charge and shall not be changed during the course of the job without his approval. Rejected aggregates shall be removed from the work site by the contractor at his own expense.

2.3.2 Deleterious Materials

Aggregates shall not contain any harmful materials such as iron pyrites, coal, mica, shale or similar laminated materials, clay, alkali, soft fragments, sea shells, organic impurities etc. in such quantities as to affect the strength or durability of the concrete. In addition to the above, for reinforced concrete, any material which might cause corrosion of the reinforcement and aggregates which are chemically reactive with the alkalies of cement shall not be used.

The maximum quantities of deleterious materials in the aggregates, as determined in accordance with IS: 2386 (part-II) "Methods of Test for Aggregates for Concrete" shall not exceed the limits given in Table – I of IS: 383.

The sum of the percentages of all deleterious materials shall not exceed five. Deleterious materials also include material passing 75 micron IS sieve.

2.3.3 Coarse Aggregates

Coarse aggregate is aggregate most of which is retained on 4.75mm IS sieve. These may be obtained from crushed or uncrushed gravel or stone as per CL.2.3.1 and may be supplied as single sized or graded aggregates given in Table –II of IS: 383.

2.3.4 **Fine Aggregates**

Fine aggregate is aggregate most of which passes 4.75mm IS Sieve but not more than 10% pass through 150micron IS Sieve. These shall comply with the requirements of grading zones I, II and III and given in Table – III of IS: 383. Fine aggregate conforming to grading zone IV shall not be normally used in reinforced concrete unless tests have been made by the contractor to ascertain the suitability of the proposed mix proportions and approved by the Engineer-in-charge.

Fine aggregate shall consist of sand resulting from natural disintegration of rock and which has been deposited by streams or glacial agencies, or crushed stone sand or crushed gravel sand.

2.3.5 **Sampling and Testing**

In case of doubt the Engineer-in-Charge may require the contractor to carry out tests, at the contractor's expense in accordance with.

IS: 516 – Method of Tests for Strengths of Concrete; and

IS: 2386 – Method of Tests for Aggregates for Concrete.

2.3.6 **Storage of Aggregates**

The contractor shall at all times maintain at the site of work such quantities of aggregate as are considered by the Engineer-in-Charge to be sufficient to ensure continuity of work.

Each type and grade of aggregate shall be stored separately on hard firm ground having sufficient slope to provide adequate drainage to rain water.

Any aggregate delivered to site in a wet condition or becoming wet at site due to rain shall be kept in storage for at least 24 hrs. to obtain adequate drainage, before it is used for concreting, or the water content of mix must be suitably adjusted as directed by Engineer-in-Charge.

2.4 Water

Water used for concrete shall be clear and free from injurious amounts of Oil, Acid Alkali, Organic matters or other harmful substances in such amount that may impair the strength or durability of structure. Potable water shall generally be considered satisfactory for mixing and curing concrete.

The Engineer-in-Charge may require the contractor to prove at latter's expense, that the concrete mixed with water proposed to be used should not have a compressive strength, lower than 90% of the strength of concrete mixed with distilled water.

The Engineer-in-Charge may require the contractor to get the water tested from an approved laboratory at his own expenses and in case the water contains any sugar or excess of acid, alkali, any injurious salts etc. the Engineer-in-Charge may refuse to permit its use.

3.0 ADMIXTURES

3.1 Admixtures such as CICO grade I or puddlo or equivalent may be used in concrete only with the approval of Engineer-in-Charge.

4.0 REINFORCEMENT

4.1 Hard-Drawn Steel wire Fabric

4.1.1 When specified on the drawings, hard-drawn steel wire fabric shall be used conforming to IS: 1556; it shall be of an approved type and of the weights and dimensions shown on the drawing.

4.2 High Yield Deformed Steel Reinforcement

4.2.1 Cold twisted high yield deformed steel bars, shall conform to IS: 1786.

4.3 Other Bars & Sections

4.3.1 Any other type of reinforcement bars specified on the drawings shall conform to its respective Indian Standard specification. Medium tensile steel bars when specified on the drawings shall conform to IS; 432.

4.4 Welding

4.4.1 Field welding of reinforcing bars will not be permitted without the written consent of the engineer-in-charge. Where welding is permitted it must be at staggered locations. Tests shall be made to prove that the joints are of the full strength of bars connected. Welding of reinforcement shall be done in accordance with the recommendation of IS; 2751.

4.5 Storage

4.5.1 The steel reinforcement shall be stored in such a way as to avoid distortion and to prevent deterioration and corrosion.

4.6 Other Specifications

4.6.1 General construction details and workmanship relative to reinforcement including bars bonds, lap splices and installation shall be in accordance with IS;2502 – Code of Practice for Bonding and Fixing of Bars for concrete reinforcement, as well as the detailing of reinforcement given in IS:456.

4.6.2 Hot bending of bars shall not be allowed.

4.6.3 The number sizes, shape and position of all the reinforcement shall, unless otherwise directed or authorized by the Engineer-in-Charge, be strictly in accordance with the drawings. The reinforcement shall be adequately secured and held in position by metal chairs and spacers. Ties of inter-sections shall be made with 16 SWG soft black annealed binding wire.

4.6.4 The contractor must obtain the approval of the Engineer-in-Charge for the reinforcement placed, before any concrete is placed in the forms. The reinforcement of this time shall be free from loose rust or scale or other coatings that will des troy or reduce bond.

4.6.5 Concrete spacer blocks of the same strength as parent concrete shall be used to ensure correct cover to the reinforcement. This clear cover shall be as shown on the drawings or as per instructions of the Engineer-in-Charge.

4.6.6 All the reinforcing bars shall be so tied as to form a rigid cage to prevent displacement before or during concreting.

आर.सी.सी. बोर्ड कास्ट-इन-सिटू पाइलों के निर्माण तथा अधिष्ठापन के लिए मानक विनिर्देश

STANDARD SPECIFICATION FOR CONSTRUCTION AND INSTALLATION OF RCC BORED CAST-IN-SITU PILES

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	GM	Standards Bureau Chairman
					Approved by		
3	18.06.14	Updated & Reissued	Shobha	VKP	SD	SC	S.Chanda
2	21.04.09	Updated & Issued as Standard Specs.	S.Bhowmik	S.Debnath	V.Kumar	-	N.Duari
1	23.06.98	Revised & Issued as Standard Specs.	S.Debnath	ECHGR	ECHGR	-	AS
0	22.12.88	Issued as standard specification	ECHGR	SM	RKMB	-	AS

Abbreviations:

IS	:	Indian Standards
RQD	:	Rock Quality Designation
SPT	:	Standard Penetration Test

Geotechnical Standards Committee

Convenor: Mr. S.Debnath

Members:
Mr. V.K.Panwar
Mr. B.N.Mandal
Mr. Rajanji Srivsatava
Mr. Vipan Goel
Mr. Samir Das
Mr. VS Chhaya (Proj.)
Mr. Ravindra Kumar (Constn.)

CONTENTS

1.0 SCOPE

1.1 This standard specification covers the construction and installation of load bearing reinforced concrete bored cast-in-situ piles.

1.2 For specific work requirements concerning construction or otherwise modifying or supplementing the provisions of this specification, reference may be made to 'Specific Requirements'. In case of any conflict between requirements set forth in 'Specific Requirements' and the provisions of this specification, the 'Specific Requirements' shall govern.

2.0 CODES

2.1 IS:2911 (Part I/Sec.2) - Indian Standard Code of Practice for Design and Construction of pile foundations for Bored Cast-in-Situ Piles, shall be referred to in conjunction with these specifications during the entire design, construction and installation work.

2.2 Reference to any code shall always mean reference to the latest revised edition of the code including all its amendments upto date, unless otherwise specified. In the event of any conflict between the requirements of this specification and those of the referred codes, the former shall govern.

3.0 MATERIALS

3.1 All materials, viz. cement, steel, aggregates, water etc. which are to be used in the construction work, shall conform to EIL Standard Specification for Reinforced Concrete Piles No. 6-74-006.

3.2 Concrete

3.2.1 Methods of the manufacture of cement concrete shall in general, be in accordance with IS:2911 (Part I/Sec.2) and as per following clauses.

3.2.2 The grade of concrete shall be M-25 with a minimum cement content of 400 kg/m^3.

3.2.3 **Slump of Concrete**

Slump of concrete shall range between 150 to 180 mm depending on the manner of concreting. The table below gives the general guidance:

PILING	SLUMP (in mm)		TYPICAL CONDITIONS OF USE
	Min.	Max.	
A.	100	180	Poured into water-free unlined bore having widely spaced reinforcement. Where reinforcement is not spaced widely enough, cut-off level of pile is within the casing and diameter of pile is less than or equal to 600mm, higher order of slump within this range may be used.
B.	150	180	Where concrete is to be placed under water or drilling mud, by tremie or by placer.

4.0 DESIGN CONSIDERATIONS

4.1 Structural Design

The piles shall have necessary structural strength to transmit the loads imposed on it, to soil. Relevant parts of IS:2911 (Part I/Sec.2) and specific requirements shall be considered to apply for assessing the structural capacity of piles.

4.2 Reinforcement

4.2.1 The minimum longitudinal reinforcement shall be 0.4% of the cross sectional area of the pile.

4.2.2 Clear cover to the main reinforcement shall be 50mm. This shall be increased to 75mm in case of aggressive soils and ground water conditions.

4.2.3 The vertical reinforcement shall project 40 times its diameter above the cut-off level.

4.2.4 The minimum clear distance between the two adjacent main reinforcement bars should normally be 100mm for the full depth of cage. The bars shall be so placed as not to impede the placing of concrete.

4.2.5 The lateral ties in the reinforcing cage shall be preferably spaced not closer than 150 mm centre to centre.

4.2.6 The minimum diameter of the lateral ties shall be 8mm.

5.0 EQUIPMENT & ACCESSORIES

5.1 The equipment and accessories for installation of bored cast-in-situ piles shall be selected giving due consideration to the subsoil conditions and the method of installation etc. These shall be of standard type and shall have the approval of the Engineer-in-Charge.

5.2 The capacity of the rig shall be adequate so as to reach the desired depth.

5.3 Provision shall be kept for chiselling within the borehole in case of any underground obstruction/hard strata. However, chiselling shall be carried out only with the approval of Engineer-in-Charge.

5.4 In case pile is required to be socketted in medium or good quality rock strata, the equipment mobilized shall have adequate capability to do so upto the required socket length. For the purpose of classification of rock for the determination of length of socketting, pilot drill holes shall be carried out in the areas to be piled.

5.5 Pilot drill holes shall be of Nx or Bx size as per specific requirements. Rock drilling shall be carried out using double tube core barrel. Drilling and storing of rock cores shall conform to relevant IS codes. Rock quality shall be classified as under depending upon the RQD.

RQD (%)	ROCK QUALITY
<25	Poor
25 to 75	Medium
>75	Good

6.0 PILING INSTALLATION

6.1 Control of Alignment

6.1.1 The piles shall be installed as accurately as possible as per the designs and drawings. The permissible positional deviations shall be governed by IS: 2911 (Part I/ Sec.2). In case of piles deviating beyond such permissible limits, the piles shall be replaced or supplemented by additional piles, as directed by Engineer-in-Charge.

6.2 Boring

6.2.1 The boring shall be done by one of the following methods:

(a) Direct mud circulation

(b) Reverse mud circulation

(c) Bailer bentonite.

(d) Hydraulic auger bentonite

The actual method of construction to be followed shall be as per specific requirements.

6.2.2 In very soft soil a permanent liner shall be installed to ensure stability of borehole. A liner shall be used to protect the green concrete where a high hydrostatic pressure exists in the subsoil or where an underground flow of water exists and which is likely to damage the concrete on withdrawal of casing.

6.2.3 Use of temporary liner only in lieu of bentonite to stabilise sides of boreholes shall not be permitted.

6.2.4 Properties of bentonite used and quality control shall be as per IS:2911 (Part I/Sec.2).

6.3 Concreting of Piles

6.3.1 Reinforcement

6.3.1.1 The reinforcements shall be made into cages sufficiently rigid to withstand handling without damage. In case the reinforcement cage is made up of more than one segment, the same shall be assembled by providing necessary laps preferably by welding.

6.3.1.2 Stirrups to the main bars shall be tack welded.

6.3.1.3 Care shall be taken to ensure that the reinforcement bars do not come closer while the cage is lowered down the hole.

6.3.1.4 Proper cover and central placement of the reinforcement shall be ensured by use of suitable concrete spacers or rollers, cast specifically for the purpose.

6.3.2 Concreting

6.3.2.1 Concreting shall not be commenced until the Engineer-in-Charge satisfies himself that at final borehole depth the soil is not weaker than that taken as the basis for pile design. If necessary, SPT or similar test shall be conducted to ensure the above.

6.3.2.2 Borehole bottom shall be thoroughly cleaned to make it free from sludge or any foreign matter before lowering the reinforcement cage. The full length of reinforcement cage shall be in position before start of concreting.

6.3.2.3 Concreting shall be done by tremie method. The operation of tremie concreting shall be governed by IS: 2911 (Part I/Sec.2).

6.3.2.4 The concrete placing shall not proceed if specific gravity of fluid near about the bottom of borehole exceeds 1.2. Determination of the specific gravity of the drilling mud from the base of the borehole shall be carried out by taking samples of fluid by suitable slurry sampler approved by the Engineer-in-Charge, in first few piles and at a suitable interval of piles thereafter and the results recorded. Control of consistency of drilling mud shall be carried out throughout boring as well as concreting operations.

6.3.2.5 Care shall be exercised to preserve correct cover and alignment of reinforcements and avoid any damage to it throughout the complete operation of placing the concrete.

6.3.2.6 The top of the pile shall be brought up above the cut off level minimum by 0.75 m so as to permit removal of all laitance and weak concrete before capping and to ensure good and sound concrete at the cut-off level for proper embedment into the pile cap. Any defective concrete in the head of the completed piles shall be cut-away and made good with new concrete.

7.0 DEFECTIVE PILES

7.1 Defective piles shall be removed or left in place, as judged convenient by the Engineer-in-Charge, without affecting the performance of adjacent piles or capping above and additional piles shall be provided to replace them.

8.0 RECORDING OF DATA

8.1 A competent supervisor shall be present to record the necessary information during the installation of piles. The data to be recorded shall include:

a) The dimensions of the piles, including the reinforcement detail and the mark of the pile.

b) The boring method employed.

c) The type of soil/rock in which pile is terminated.

d) The depth bored.

e) The depth of water table.

f) When drilling mud is used, the specific gravity of the fresh supply and contaminated mud in the borehole before concreting is taken up, in case of first few piles and subsequently at suitable interval of piles.

g) The time taken for concreting.

h) The cut-off level/working level, and

i) The consumption of concrete and cement.

j) Any other important observations.

8.2 Typical data sheets of recording piling data shall be as given in Appendix - D of IS:2911 (Part I/Sec.2).

8.3 Any deviation from the designed location, alignment or load carrying capacity of any pile shall be noted and promptly reported to the Engineer-in-Charge.

कंक्रीट पाइलों के परीक्षण के लिए मानक विनिर्देश

STANDARD SPECIFICATION FOR TESTING OF CONCRETE PILES

Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	GM	Standards Bureau Chairman
					Approved by		
3	18.06. 14	Updated & Reissued	Shobha	VKP	SD	SC	S.Chanda
2	21.04.09	Updated & issued as standard specs.	R.Besra	S Debnath	V.Kumar	-	N Duari
1	12.06.98	Revised & issued as standard specs.	KRS	AN	ECHGR	-	AS
0	22.12.88	Issued as standard specification Recomposed March, 1994	SM	ECHGR	RKMB	-	AS

Abbreviations:

IS : Indian Standards

Geotechnical Standards Committee

Convenor : Mr. S.Debnath

Members :
Mr. V.K.Panwar
Mr. B.N.Mandal
Mr. Rajanji Srivsatava
Mr. Vipan Goel
Mr. Samir Das
Mr. VS Chhaya (Proj.)
Mr. Ravindra Kumar (Constn.)

CONTENTS

1.0 GENERAL

1.1 Scope

1.1.1 This specification covers the requirements and methods of testing of a single pile for evaluating its safe capacity in :

a) Vertical loading (Compression)

b) Lateral Loading

c) Pull Out(Tension)

d) Combined Vertical and Lateral Loading

e) Special type of loading such as vibratory loadings

1.1.2 These specifications shall be applicable for all types of piles in general excepting sheet piles.

1.1.3 For specific work requirements or otherwise modifying or supplementing the provisions of this specification, refer to specific requirements. In case of conflict between requirements set forth in the specific requirements and the provisions of this specification, the specific requirements shall govern.

1.2 Definitions

1.2.1 Reference to Indian Standard Codes shall always mean reference to the latest issue of the relevant standards, including all the amendments upto date.

1.3 Codes

1.3.1 All testing shall be performed in accordance with the following codes and the provisions of these specifications :

IS:2911-(Part IV) - Code of Practice for Design and Construction of pile Foundations - Load Test on Piles.

1.4 Requirements

1.4.1 The load test shall be required to provide data regarding the load deformation characteristics of the pile up to failure or otherwise specified and the safe design capacity.

1.4.2 Full details of the equipment proposed to be used and the test set up shall be submitted to the Engineer-in-Charge with detailed sketches for approval. Approval of the Engineer-in-Charge shall also be obtained after the test set up is complete, prior to commencement of loading.

1.4.3 All measuring devices shall be tested for satisfactory performance and accuracy at an approved institution and a certificate to that effect obtained and submitted to the Engineer-in-Charge prior to use.

1.4.4 The test pile shall be constructed using same equipment and technique as for the job piles.

1.4.5 A minimum time period of two weeks shall be allowed between the time of installation and testing in case of a precast pile and not less than four weeks from the time of casting in case of a cast-in-situ pile.

1.4.6 **Records**

A full record giving all details of the test in the proforma shown in Appendix-1 shall be submitted in triplicate to the Engineer-in-Charge immediately on completion of each test. The record shall also include the plot of load time settlement characteristics of piles.

2.0 VERTICAL LOADING TESTS

2.1 Equipment and Test Set-up

2.1.1 **Test Pile**

2.1.1.1 The test pile shall be decided by the Engineer-in-Charge. It may be one of the working piles or a separate test pile.

2.1.1.2 The head of the test pile shall be brought to the proper level and provided with a pile cap with a level and plane surface and with adequate space for proper seating of a jack and dial gauges.

2.1.1.3 Test pile surface shall be prepared for testing purposes on the expiry of not before one week after casting the pile and minimum one week before testing of pile .

2.1.2 **Loading Systems**

2.1.2.1 Loading shall be applied by the reaction method consisting of an hydraulic jack centrally against a loaded platform. Supports of the platforms shall be adequately designed. Special anchor piles or any other suitable type of anchorage systems may be used. However, use of the uplift capacity of neighbouring piles for providing the reaction shall normally not be permitted.

2.1.2.2 The loading system shall be adequate to ensure that the test can be carried upto the specified limit. The reaction to be made available for the test shall be atleast 25% greater than the maximum jacking force required.

2.1.3 **Measuring System**

2.1.3.1 **Loading on Piles**

The load applied on the pile shall be recorded on a calibrated pressure gauge mounted on the jack.

2.1.3.2 **Settlement of Pile**

a) Settlement of the pile shall be recorded by dial gauges suspended from datum bars. Four dial gauges of 0.01mm sensitivity shall be positioned on four corners around the pile.

b) The datum bars shall have rigid supports preferably of concrete pillars or steel sections, embedded well into the ground. The supports shall be located more than three times the pile diameter, subject to a minimum of 1.5m, clear away from the pile face and also sufficiently away from the supports of the loaded platform to avoid any disturbance on these accounts. Movements near the supports of the datum bar shall be avoided while the test is in progress.

2.2 Method of Conducting Test

The test shall be carried out by the direct method of loading in successive increments or by the cyclic loading method as specified and as directed by the Engineer-in-Charge.

2.2.1 Direct Method of Loading in Successive Increments

The test shall be carried out as per the procedure outlined.

a) The load shall be applied to the pile top in increments of about one fifth of the rated capacity of the pile or as specified. Settlement readings shall be taken before and after the application of each new load increment and at 2, 4, 8, 15, 30, 60 minutes and at every two hours until application of the next load increment.

b) Each stage of loading shall be maintained till the rate of movement of the pile top is not more than 0.2 mm per hour or until one hours have elapsed, whichever is later.

c) Further loading shall then be continued as in (a) above till one of the following occurs :

i) Yield of soil-pile system occurs causing progressive settlement of the pile exceeding a value of one tenth of the pile diameter.

ii) The loading on the pile top equals twice the rated capacity or as specified in the case of a separate test pile and 1.5 times the rated capacity of the pile in case of a working pile.

d) Where yielding of the soil does not occur, the full test load shall be maintained on the pile head for 24 hours or more if necessary and settlement readings shall be taken at 6 hours interval during the period.

e) Unloading shall be carried out in the same steps as loading. A minimum of half hour shall be allowed to elapse between two successive stages of load decrement. The final rebound shall be recorded 6 hours after the entire test load has been removed.

f) If so directed by the Engineer-in-Charge, loading and unloading cycles shall be carried out for all load stages within the assumed working load.

g) **Assessment of Safe Load**

The safe capacity of the pile shall be the least of the following values

i) Load corresponding to settlement specified in specific requirements which is based on the nature and type of structure.

ii) 50 percent of the final load at which the total displacement equals 10 percent of the pile diameter in case of uniform diameter piles and 7.5 percent of bulb diameter in case of under-reamed piles.

2.2.2 Cyclic Loading Test

The test shall be carried out as per procedure outlined by IS:2911-(Part-IV) and as described below :

a) The load shall be applied to the pile top in increments of about one fifth the estimated safe capacity of the pile or as specified. Settlement readings shall be taken before and after the application of each new load increment at 2, 4, 8, 15, 30, 60 minutes and at

every one hour till rate of settlement is 0.2mm per hour until application of the next load increment.

b) Alternate loading and unloading shall be carried out at each stage and the total and net settlements recorded as specified. If so directed by the Engineer-in-Charge, more than one cycle of loading and unloading shall be carried out at any or all of the stages.

c) Each stage of loading or unloading shall be maintained till the rate of movement of the pile top is not more than 0.2mm per hour provided that the minimum period is one and half hour for loading and one hour for unloading. The following load stages shall however be maintained for longer periods as given below:

i) At load of 1.5 times assumed safe capacity (for routine test only) - 24 hrs.

ii) At load of twice assumed safe capacity (for initial test only) - 24 hrs.

The loading shall be continued till one of the following occurs :

i) Yield of the soil pile systems occurs causing progressive settlement exceeding one tenth of the pile diameter.

ii) The loading on the pile top equals twice the estimated safe load in case of a separate test pile and 1.5 times the rated capacity of the pile in case of a working pile.

d) **Assessment of Safe Load**

The safe capacity of the pile shall be the least of the following :

i) Load corresponding to settlement specified in specific requirements which is based on the nature and type of structure.

ii) Half of the final load at which the total settlement equals one tenth of the pile diameter.

3.0 LATERAL LOADING TEST

3.1 Equipment and Test Set-up

3.1.1 Test Pile

The test pile shall be decided by the Engineer-in-Charge. It may be one of the working piles or a separate test pile.

The test pile shall be cut off at the proper level and provided with a cap with vertical plane sides having an adequate area for proper seating of the jack and dial gauges.

3.1.2 Loading System

3.1.2.1 Loading shall be applied by an hydraulic jack of adequate capacity, abutting the pile horizontally and reacting against a suitable system. The reaction may be provided by the wall of the excavated pit when the test is being conducted below ground level or by a neighbouring pile in which case thrust pieces shall be inserted on either end of the jack to make up the gap.

3.13 **Measuring System**

3.1.3.1 Lateral load applied on the pile shall be measured by a calibrated pressure gauge mounted on the jack, having a least count of 250 kg.

3.1.3.2 Deflection of the pile head shall be measured by dial gauges, fixed to datum bars and having a least count of 0.01 mm. The datum bars shall be provided with rigid supports as described in Clause 2.1.3.2 (b) above.

3.2 Method of Conducting Tests

The test shall be carried out in accordance with the provisions of IS:2911-(Part-IV) and as detailed below :

3.2.1 Loading shall be applied in increments of one fifth of safe capacity or as specified.

3.2.2 Each stage shall be maintained for a period till the rate of movement of the pile head is not more 0.2 mm/hr or 1 hr whichever is greater.

3.2.3 Loading shall be continued till one of the following occurs:

a) Deflection of the pile head exceeds 12 mm.

b) The applied load on the pile is twice the assumed lateral load capacity of the pile in case of a separate test pile and 1.5 times the rated capacity in the case of a working pile.

3.2.4 **Assessment of Safe Load**

The safe load shall be the smaller of the following :

i) Half of the final load for which the total deflection is 12 mm.

ii) Load corresponding to 5 mm total deflection

Note: The deflection is at the cut off level of the pile.

4.0 PULL OUT CAPACITY OF PILES

4.1 Equipment and Test Set up

4.1.1 **Test Pile**

4.1.1.1 The test pile shall be decided by the Engineer-in-Charge. The test shall be conducted on separate pile installed specifically for this purpose.

4.1.1.2 The test pile shall be built upto the proper length and the head provided with suitable arrangements for anchoring the load applying system.

4.1.2 **Loading System**

4.1.2.1 Load shall be applied using an approved reaction system. Uplift force on the pile may be applied directly to the test pile or through a lever system. The reaction may be provided by neighbouring piles or blocks may be constructed for the purpose. A hydraulic jack shall be used for load application.

4.1.3 **Measuring System**

4.1.3.1 Load applied by jack shall be measured by a calibrated pressure gauge with a least count of 500 kgs.

4.1.3.2 Movement of the pile shall be measured by dial gauges, fixed to datum bar and having a least count of 0.01 mm. A minimum of two dial gauges, placed diametrically opposite shall be used. Datum bars shall be provided with rigid supports as described in 2.1.3.2(b) above.

4.2 Method of Conducting Test

The test shall be conducted as outlined below:

4.2.1 Loading shall be applied to the pile top in increments of one fifth the rated capacity of pile.

4.2.2 Each stage shall be maintained for a period till the rate of movement of the pile head is not more than 0.2 mm/hr or one hour, whichever is greater.

4.2.3 Loading shall be continued till one of the following occurs:

a) Yield of soil pile system occurs causing progressive movement of the pile exceeding 12 mm.

b) The loading on the pile top equals twice the estimated safe load or as specified.

4.3 Assessment of Safe Load

The safe capacity of the pile shall be the least of the following :

a) Two-thirds of load at which the total displacement is 12 mm or the load corresponding to a specified permissible uplift, and

b) Half of the load at which the load-displacement curve shows a clear break (downward trend).

5.0 COMBINED VERTICAL AND LATERAL LOADING TEST

5.1 Equipment and Test set-up

5.1.1 The equipment and test set up shall be same as described in Clause 3.0. In addition a platform shall be constructed on the pile top, and loaded to 1.0 times the pile capacity in vertical loading.

The pile shall be first subjected to the full vertical load. The lateral load shall commence after all settlements due to the vertical load have ceased and while the full vertical load is in position.

5.1.2 The loading system, measuring system and recording of the results shall be the same as described in clause-3.

5.2 Method of Conducting Test and Assessment of Safe Load

This shall be in accordance with the provision of clause 3.2 above.

6.0 SPECIAL TYPE OF LOADING

This shall include evaluating the pile response to vibratory loads, both horizontal and vertical in nature. The test set up and method of conducting the test shall be covered under specific requirements.

APPENDIX-I

PILE LOAD TEST RECORD

Vertical/ Lateral/ Pull Out Test

Pile No..... Date of..... WT of Hammer.....

Type..... Driving..... AVR. Drop of Hammer.....

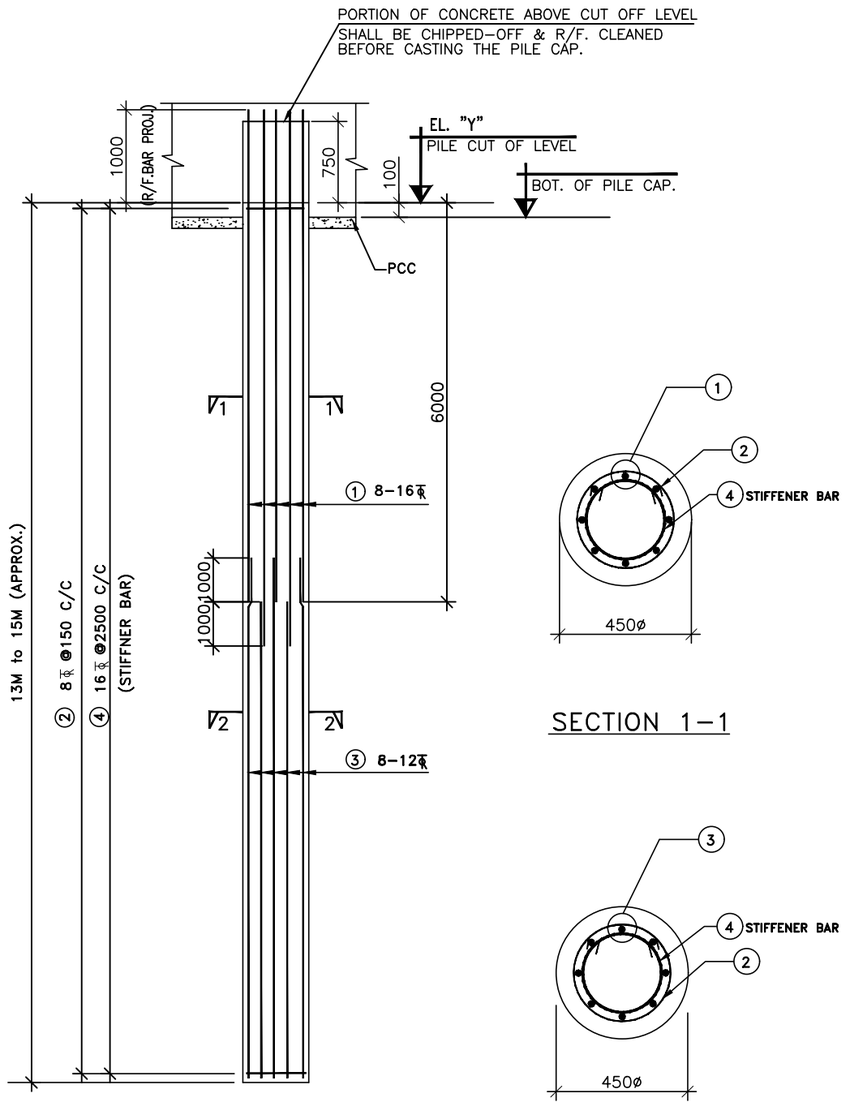
Diameter(Cm)..... Casting..... Total No of Blows.....

Length below G.L(M)..... Commence of Test ..... Sum of Temporary Compression in cms.....

Location..... Completion of Test..... . Ground level.....

Type of Test : Direct/Cyclic Loading

Date	Time	Total Time (Hr.)	Load on (T)	Load off (T)	Total Load (T)	Settlement (Deflection) Gauge mm		AVR. Settlmt (Defl'n) mm		Reb-ound mm	Rem-arks
						I	II	Total	Net		



R/F DETAIL OF PILE
(450 UNIFORM DIA BORED CAST-IN SITU)

SECTION 1-1

SECTION 2-2

REF. DRG. NO.	REFERENCE DRAWING TITLE

NOTES :-

1. ALL DIMENSIONS ARE IN MM AND LEVELS & COORDINATES ARE IN M.
2. THE DIMENSIONS ARE NOT TO BE SCALED, ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. CONC. GRADE SHALL BE M30 WITH MINIMUM CEMENT CONTENT NOT LESS THAN 400KG/M^3 WITH WATER CEMENT RATIO OF 0.45.
4. REINFORCEMENT SHALL BE HIGH STRENGTH DEFORMED BARS OF GRADE Fe 500D CONFORMING TO IS:1786(LATEST REVISION)
5. CLEAR COVER TO ALL REINFORCEMENT SHALL BE 50mm.
6. ALL PILES ARE STRAIGHT SHAFT VERTICAL BORED CAST-IN-SITU R.C.C PILES OF UNIFORM DIAMETER.
7. LOAD CARRYING CAPACITY OF PILES TO BE BASED ON SAFE LOAD AS FOLLOWS :-

		450ø
AXIAL COMP.	=	40T
UPLIFT	=	10T
LATERAL	=	2.5T

8. TO ENSURE DENSE & SOUND CONCRETE UPTO CUT-OFF LEVEL CONCRETING SHALL EXTEND 750 MM. ABOVE CUT-OFF LEVEL.
9. PILE BORING RECORDS SHALL BE ENTERED IN PROFORMA APPROVED BY ENGINEER-IN-CHARGE.
10. PILE LENGTH SHOWN IN DRG IS TENTATIVE AND SHALL BE ESTABLISHED AT SITE BY TERMINATION CRITERIA AS PER CLAUSE NO. 3.1 OF SPECIFIC REQUIREMENT FOR RCC PILING WORK (DOC. NO. B185-000-81-41-SP-0012).
11. CONSTRUCTION OF PILE SHALL BE AS PER RELEVANT IS CODE.
12. THE PILE CAPACITIES SHALL BE ESTABLISHED AT SITE BY CARRYING OUT OF LOAD TEST ON TEST PILES & JOB PILES AS PER SPECIFIC REQUIREMENT OF PILING WORK.
13. FOR PILE LOAD TESTING REFER SPECIFIC REQUIREMENT FOR PILING WORKS (DOC. NO. B185-000-81-41-SP-0012)
14. FOR REDUCED LEVELS (RL.) "Y" AND NO. OF PILES REFER PILE LAYOUT DRAWING.

REV.	DATE	REVISION	BY	CHK	APPROVED	APPROVED
A	07.08.2019	ISSUED FOR TENDER	VSNK	LmIsB	VKP	

ENGINEERS INDIA LIMITED
NEW DELHI

SV-04, SV-05 & RT STATIONS
INDO BANGLA FRIENDSHIP PIPELINE PROJECT

REINFORCEMENT DETAILS OF PILE

DRAWING NO.	REV.
B185-000-81-41-31001	A

1-1641-0503 REV.0 A3-420x297